President’s Message

Welcome to Utah State University!

Whether you are registering or still checking us out, Utah State is a wonderful choice for serious students. This is a university where academics come first. Here you will receive a complete learning experience—friendly, award-winning teaching and an opportunity to do cutting-edge research at an institution ranked by the Carnegie Foundation in the top four percent of research universities.

Our programs literally stretch from under the soil to soaring in space. We are both a land-grant university, begun more than a century ago as an agricultural college, and a space-grant university, whose students and faculty have sent more payloads through the atmosphere than any other university in the world. In between are courses in seven academic colleges leading to more than 200 undergraduate and graduate options.

Inside this catalog is an array of classes, mostly taught by full-time faculty, not by teaching assistants as at many other large universities. I encourage you to browse through the catalog and find classes that will help prepare you to make a living, as well as courses that will help you enjoy life. Both are important.

Your experience here should not end in the classroom and lab. There are more than 200 student clubs and organizations, for just about every interest. We have a large intramural sports program, and you can cheer on Aggie varsity teams, which play in the top division of the NCAA.

Some 80 percent of our students live on campus or in student houses and apartment complexes in this friendly, picturesque city. Our University family is a community within a community. It does not take long to feel at home here.

Again, welcome, and have a great school year.

Kermit L. Hall
President of Utah State University

Statement on Institutional Integrity

Utah State University adheres to the highest ethical standards in its representation to its constituencies and the public; in its teaching, scholarship, and service; in its treatment of its students, faculty, and staff; and in its relationships with regulatory and accrediting agencies.
Utah State University

The academic advantages of a large university, together with the friendliness of a small college, are offered at Utah State University. With a student body of more than 23,000, USU recognizes that the needs of the individual are of major importance, and many programs have been established to give the student the optimum of individual attention.

With 43 departments in seven academic colleges, a School of Graduate Studies, University Extension, and several research programs, Utah State University offers an excellent opportunity for students to study a wide range of subjects.

USU was founded in 1888 as part of the public educational system of Utah and operates under the constitution and laws of the state. It belongs to the family of institutions known as land-grant universities, which had their origin in 1862. The institution was originally called the Agricultural College of Utah, later becoming Utah State Agricultural College. The state legislature designated the name change to Utah State University in 1957.

A 16-member State Board of Regents governs the Utah state system of higher education. This board has the responsibility for state-wide master planning for higher education, assignment of roles to the several institutions in the state system, and control of operating and capital budgets for the institutions. USU has a 10-member Board of Trustees which is responsible for implementing the assigned roles, including the appointment of personnel and the enactment of rules and governing regulations.

Utah State University is one of two Tier One institutions in the state, the other being the University of Utah. Both universities are categorized as public research universities.


University Mission Statement

The mission of Utah State University is to be one of the nation’s premier student-centered land-grant and space-grant universities by fostering the principle that academics come first; by cultivating diversity of thought and culture; and by serving the public through learning, discovery, and engagement.

University Role Statement

Utah State University fulfills a unique role in the Utah System of Higher Education as the state’s land-grant and space-grant university. The land-grant designation makes Utah State responsible for programs in agriculture, business, education, engineering, natural resources, sciences, and the traditional core of liberal learning: humanities, arts, and social sciences. The University gives particular emphasis to programs involving the interaction of land, people, and the environment.

Utah State University is also a “Doctoral/Research University-Extensive” institution, as designated by the Carnegie Corporation, meaning that, in selected areas historically associated with its designation as a land-grant and space-grant university, it provides doctoral and master’s level education and supports and expects of its faculty significant research efforts. The University offers a broad array of doctoral and master’s level degrees in areas appropriate to its mission. Hands-on learning is also a hallmark of its undergraduate programs.

As a space-grant institution, Utah State University plays a pre-eminent role in the development of the sciences and engineering associated with research and teaching about outer space. This includes the mission of the Space Dynamics Laboratory and its related components on the Innovation Campus.

Utah State develops knowledge as part of its discovery mission, as reflected in research generated by the Utah Agricultural Experiment Station and the Utah Water Research Laboratory, and disseminates this knowledge through technical assistance provided by Cooperative Extension in each of the state’s 29 counties. The land-grant mission also means that Utah State delivers degrees through Continuing Education programs, whether through on-site or technologically delivered, time-enhanced methods throughout the state.

Taken together, these designations as a land-grant and space-grant university also mean that Utah State University has a leading role in economic development of the state and the region. These goals are realized through the effective transfer of research from the laboratory to commercial enterprises. To that end, Utah State University has an aggressive position in the identification of intellectual property, the commercialization of new technologies, and the development of research programs that will be of benefit to the state. USU also brings government, business, and education together on its Innovation Campus with the goal of stimulating economic development.
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Using This Catalog

USU maintains a semester system—three semesters or periods of classwork: fall, spring, and summer. Fall and spring semester are each of 15 weeks duration. Summer semester spans a total of 14 weeks and includes one four-week early session, two workshop weeks, one eight-week session, and two four-week sessions.

Credit Enrollment. The semester credit hour is the unit upon which credit is computed. Normally, the credit hour standard is based upon 150 minutes of lecture per week, for the duration of one semester, for a three-credit class. For more specific information, refer to the current Schedule of Classes. To obtain credit, a student must be properly registered and pay fees for the course. For further information, see Number of Credits Awarded for Courses on page 35.

Course Numbering. Each course listed in the Course Descriptions section of the catalog has a number, given before the name of the course. For example:

ENGL 1120   Elements of Grammar   (3)

This means the course, Elements of Grammar, is English 1120. The numbers are useful for reference and records.

Course Numbering Code. A standard code employed by all institutions in the State System of Higher Education was adopted by USU in 1970. Upon conversion to semesters, four-digit course numbers replaced the three-digit course numbers formerly used under the quarter system. The semester numbering system is as follows:

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<td>Remedial courses; will not satisfy baccalaureate requirements; nontransferable; not calculated in GPA.</td>
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<td>1000-2790</td>
<td>Lower division (freshman and sophomore courses)</td>
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<td>2800-2990</td>
<td>Lower division independent study designation (directed reading, individual projects, etc.)</td>
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<tr>
<td>3000-4790</td>
<td>Upper division (junior and senior courses)</td>
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<td>4800-4990</td>
<td>Upper division independent study designations (directed reading, individual projects, festival, institutes, workshops, etc.)</td>
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<td>5000-5990</td>
<td>Advanced upper division (may be used for a graduate degree with approval of the student’s supervisory committee)</td>
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<td>6000-7990</td>
<td>Graduate courses (students without baccalaureate degrees must obtain special permission to enroll)</td>
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<tr>
<td>5900-5990</td>
<td>Independent study designations (directed reading, individual projects, theses, dissertations, etc.)</td>
</tr>
<tr>
<td>6900-6990</td>
<td>Graduate seminars (includes methodology and research seminars)</td>
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“H” following regular course designation indicates Honors Program courses.

Freshmen or sophomores may take any lower-division course. If there is a prerequisite for a particular course, it will be so stated in the course description.

Juniors or seniors may take any lower- or upper-division course for which they have met the course requirements. Course requirements will be identified in the course description. Seniors may take graduate courses only upon written consent from the instructor. The use of undergraduate coursework for a graduate degree at USU is regulated by the School of Graduate Studies. See Split Form Policy (page 92) and Course-Level Numbering and Acceptability (page 92).

Graduate students may take any course for which they have met the course requirements, but only graduate courses and individually approved undergraduate courses may be used for a graduate degree.

Note: In some cases, additional college or departmental requirements (which may not be included in the course description) must be met before a student may take a particular course. For more information, students should consult their advisor or the department offering the course.

Following the title of each course, the number of credits given for the course is indicated in parentheses. The semester(s) it will likely be taught are indicated in abbreviated form in parentheses, following the course description. For example: (F) indicates that the course will likely be taught fall semester. The designation (F,Sp) indicates that the course will likely be taught all three semesters: fall, spring, and summer. It does not mean that the student has to take the class all three semesters, but rather that he or she has a choice of any semester. In some cases, such as (F,Sp), even though more than one semester is indicated, the course will not be offered each semester, but only one of these semesters, the exact one yet to be decided.

Some course listings do not indicate semester(s) offered. In some cases, these courses may be taken any semester (e.g., continuing graduate advisement, thesis, dissertation, or internship courses). In other cases, the semester(s) to be offered has not yet been determined (e.g., special topics courses, which are offered infrequently). For current information about semesters to be offered, consult the department offering the course.

For more definite up-to-date information, please refer to the University Schedule of Classes published prior to the beginning of each semester. All catalog listings are subject to change. The schedule will also update policies and practices of the University as changes occur. Catalog updates will also appear in the Online General Catalog, which may be found at: http://www.usu.edu/ats/generalcatalog/.

Occasionally, two or more closely related courses (which usually have the same title) will be listed above one course description, such as MATH 6110 and MATH 6120, Differential Geometry. Following each course title, the number of credits approved for each course will be shown. At the end of the course description will be two or more parenthetical entries, indicating the semester(s) the courses may be taught. The first entry refers to the semester(s) taught for the first course, the second entry refers to the second course, and so forth.

In some classes, the amount of credit for which students register can be individually arranged. One student may take 2 credits, another student 3 credits, etc. Academic credit is identified in parentheses following the course title: e.g., (1-3).

Following some credit designations in this catalog will be a single asterisk (*), a double asterisk (**), or a triple asterisk (***) Such courses are taught during alternate years, as explained in the footnotes. For more information, check the Schedule of Classes or consult the department offering the course.
Course Prefixes

Each course listing is preceded by one of the following prefixes:

- ACCT Accounting
- ADVS Animal, Dairy and Veterinary Sciences
- ANTH Anthropology
- ART Art
- AS Aerospace Studies
- ASTE Agricultural Systems Technology and Education
- AWER Aquatic, Watershed, and Earth Resources
- BA Business Administration
- BIE Biological and Irrigation Engineering
- BIOL Biology
- BIS Business Information Systems
- BMET Biometeorology
- BUS Business, College of
- CEE Civil and Environmental Engineering
- CHEM Chemistry and Biochemistry
- CHIN Chinese
- CLAS Classics
- COMD Communicative Disorders and Deaf Education
- CS Computer Science
- DE Dance Education
- ECE Electrical and Computer Engineering
- ECON Economics
- EDUC Education and Human Services, College of
- ELED Elementary Education
- ENGL English
- ENGR Engineering, General
- ENVIS Environment and Society
- FCHD Family, Consumer, and Human Development
- FCSE Family and Consumer Sciences Education
- FREN French
- FRWS Forest, Range, and Wildlife Sciences
- GEOG Geography
- GEOL Geology
- GERM German
- GRK Greek
- HASS Humanities, Arts and Social Sciences, College of
- HEP Health Education Professional
- HIST History
- HONR Honors
- ID Interior Design
- IELI Intensive English Language Institute
- INST Instructional Technology
- ITAL Italian
- ITDS Interdisciplinary Studies
- ITE Industrial Technology and Education
- JAPN Japanese
- JCOM Journalism and Communication
- KOR Korean
- LAEP Landscape Architecture and Environmental Planning
- LANG Languages (General)
- LAS Liberal Arts and Sciences
- LATN Latin
- LING Linguistics
- MAE Mechanical and Aerospace Engineering
- MATH Mathematics
- MHR Management and Human Resources
- MS Military Science
- MUSC Music
- NAV Navajo
- NEPA National Environmental Policy Act Certificate Program
- NFS Nutrition and Food Sciences
- NR Natural Resources, College of
- NURS Nursing
- PE Physical Education
- PEP Physical Education Professional
- PFP Personal Financial Planning
- PHIL Philosophy
- PHYX Physics
- PLSC Plant Science
- POLS Political Science
- PORT Portuguese
- PRP Parks and Recreation Professional
- PSB Plants, Soils, and Biometeorology
- PSY Psychology
- PUBH Public Health
- REH Rehabilitation Counseling
- RUSS Russian
- SCED Secondary Education
- SCI Science, College of
- SOC Sociology
- SOIL Soil Science
- SPAN Spanish
- SPCH Speech Communication
- SPED Special Education
- STAT Statistics
- SW Social Work
- THEA Theatre Arts
- USU University Studies
- WGS Women and Gender Studies

University Studies Designations

Courses approved for University Studies have one of the following designations, listed following the course number:

- BAI Breadth American Institutions
- BCA Breadth Creative Arts
- BHU Breadth Humanities
- BLS Breadth Life Sciences
- BPS Breadth Physical Sciences
- BSS Breadth Social Sciences
- CI Communications Intensive
- CL Communications Literacy
- DHA Depth Humanities and Creative Arts
- DSC Depth Life and Physical Sciences
- DSS Depth Social Sciences
- QI Quantitative Intensive
- QL Quantitative Literacy
Other Policies

Catalog Information

Catalog information and University requirements may change at any time. USU is not bound by requirements or regulations listed in this catalog. Information may change before a new catalog is issued, and students must adhere to changes. It is the student’s obligation to ascertain current rules, regulations, fees, and requirements.

Course descriptions in this catalog are an overview and generally reflect what will be taught, but students should not rely on them as a guarantee of what they will be taught during a given semester.

This catalog is also available on the Web, and can be accessed from the University Advising and Transfer Services Home Page: http://www.usu.edu/ats. Changes in catalog information will be entered on the Web.

To obtain a printed copy of this catalog, phone Express-a-book at one of the following numbers: (800) 662-3950, (435) 797-3950, or FAX (435) 797-3793.

Materials for Persons with Disabilities

This catalog is available in large print, disk, audio, and braille format upon request to the Disability Resource Center, University Inn 101, (435) 797-2444 or (800) 259-2966 Voice or (435) 797-0740 TTY. Further information about the services offered by the Disability Resource Center can be found at: http://www.usu.edu/drc.

Assumption of Risk

Some classes, programs, and extracurricular activities within the University involve some risk and some may also involve travel. The University provides these programs on a voluntary basis, and students ought not participate in them if they do not care to assume the risks. Students ought to inquire as to possible risks a program may generate, and if they are not willing to assume the risks, they should not select that program. By voluntarily participating in these types of classes, programs, and extracurricular activities, the student agrees not to hold USU or its staff liable.

Equal Opportunity/Affirmative Action

Utah State University is committed to providing equal educational and employment opportunity regardless of race, sex, color, religion, national origin, marital or parental status, physical or mental disability, veteran status, or age. USU also has a policy prohibiting sexual harassment of students, faculty, and staff. Equal opportunity applies to all aspects of employment: recruitment, hiring, promotion, training, benefits, and salary. Equal educational opportunities include admission, access to course offerings, financial assistance, housing, and extracurricular activities.

Privacy Rights

In compliance with the Family Educational Rights and Privacy Act of 1974, Utah State University has developed policy guidelines which (1) provide that eligible students will have access to inspect and review their educational records, and (2) protect the rights of a student to privacy by limiting access to the educational record without express written consent. Note: There are restricted situations in this act where access to an educational record does not require the express written consent of the student. For further information, see the Privacy Rights section on page 35.

University Smoking Policy

Utah State University conforms to the provisions of the 1992 Utah House Bill No. 197—Clean Air in Government Buildings, Utah Code Section 76-10-106. The provisions of this bill include the following: (a) A person may not smoke in a building, or portion of a building, that is owned, leased, or occupied by the state or any state agency; (b) Designated smoking areas in buildings are prohibited under this subsection; and (c) This subsection takes precedence over any conflicting provision of this section.

It is the responsibility of all University staff and students to adhere to this policy and to appropriately inform campus visitors of its provisions. Deans, department heads, and other supervisory personnel are responsible for the enforcement of the policy.

Credits

General Catalog Editor:
Sheri E. Peterson, Publications Editor, University Advising and Transfer Services

Cover Design:
Mike Hunstad, Carnegie Communications

General Catalog Coordinating Committee:
John D. Mortensen, Director, University Advising and Transfer Services
Joyce A. Kinkead, Vice Provost for Undergraduate Studies and Research, Provost’s Office
Juan N. Franco, Vice President for Student Services
Steven V. Beck, Assistant to the Dean, School of Graduate Studies
Jimmy Moore, Director, Admissions Office
Les Essig, ASUSU Student Advocate Vice President
## Administration

### Utah State Board of Regents
*Terms expire in the years listed.*

<table>
<thead>
<tr>
<th>Name</th>
<th>City</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nolan E. Karras (chair)</td>
<td>Roy</td>
<td>2007</td>
</tr>
<tr>
<td>E. George Mantes (vice chair)</td>
<td>Salt Lake City</td>
<td>2005</td>
</tr>
<tr>
<td>Jerry C. Atkin</td>
<td>St. George</td>
<td>2005</td>
</tr>
<tr>
<td>Linnea S. Barney</td>
<td>Orem</td>
<td>no set term</td>
</tr>
<tr>
<td>Daryl C. Barrett</td>
<td>Salt Lake City</td>
<td>2007</td>
</tr>
<tr>
<td>Bonnie Jean Beesley</td>
<td>Salt Lake City</td>
<td>2009</td>
</tr>
<tr>
<td>Kim R. Burningham</td>
<td>Bountiful</td>
<td>no set term</td>
</tr>
<tr>
<td>William Edwards</td>
<td>Salt Lake City</td>
<td>2004</td>
</tr>
<tr>
<td>David J. Grant</td>
<td>Cedar City</td>
<td>2007</td>
</tr>
<tr>
<td>James S. Jardine</td>
<td>Salt Lake City</td>
<td>2005</td>
</tr>
<tr>
<td>Michael R. Jensen</td>
<td>Price</td>
<td>2005</td>
</tr>
<tr>
<td>Charles E. Johnson</td>
<td>Salt Lake City</td>
<td>2009</td>
</tr>
<tr>
<td>David J. Jordan</td>
<td>Salt Lake City</td>
<td>2009</td>
</tr>
<tr>
<td>David L. Maher</td>
<td>Salt Lake City</td>
<td>2009</td>
</tr>
<tr>
<td>Jed H. Pitcher</td>
<td>Salt Lake City</td>
<td>2009</td>
</tr>
<tr>
<td>Sara V. Sinclair</td>
<td>Logan</td>
<td>2007</td>
</tr>
<tr>
<td>Marlon O. Snow</td>
<td>Orem</td>
<td>2007</td>
</tr>
<tr>
<td>Maria Sweeten</td>
<td>Salt Lake City</td>
<td>2005</td>
</tr>
<tr>
<td>Richard E. Kendell, Commissioner of Higher Education</td>
<td>Salt Lake City</td>
<td></td>
</tr>
</tbody>
</table>

### USU Board of Trustees

<table>
<thead>
<tr>
<th>Name</th>
<th>City</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gayle McKeachnie (chair)</td>
<td>Vernal</td>
<td>2005</td>
</tr>
<tr>
<td>David P. Cook</td>
<td>Farmington</td>
<td>2007</td>
</tr>
<tr>
<td>Lester C. Essig</td>
<td>Logan</td>
<td>2005</td>
</tr>
<tr>
<td>Linda J. Eyre</td>
<td>Salt Lake City</td>
<td>2005</td>
</tr>
<tr>
<td>L. J. Godfrey</td>
<td>Smithfield</td>
<td>2007</td>
</tr>
<tr>
<td>Lynnette T. Hansen</td>
<td>North Logan</td>
<td>2005</td>
</tr>
<tr>
<td>R. Brent Nyman</td>
<td>Logan</td>
<td>2007</td>
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<tr>
<td>Dinesh C. Patel</td>
<td>Salt Lake City</td>
<td>2005</td>
</tr>
<tr>
<td>Richard L. Shipley</td>
<td>Farmington</td>
<td>2007</td>
</tr>
<tr>
<td>Randy Watts</td>
<td>Logan</td>
<td>2005</td>
</tr>
<tr>
<td>Lee H. Burke (secretary)</td>
<td>Logan</td>
<td>no set term</td>
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### University Administrative Officers

<table>
<thead>
<tr>
<th>Position</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>President</td>
<td>Kermit L. Hall</td>
</tr>
<tr>
<td>Executive Vice President and Provost</td>
<td>Stan L. Albrecht</td>
</tr>
<tr>
<td>Vice Provost for Undergraduate</td>
<td></td>
</tr>
<tr>
<td>Studies and Research</td>
<td>Joyce A. Kinkead</td>
</tr>
<tr>
<td>Vice Provost for Academic and International Affairs</td>
<td>Christopher Fawson</td>
</tr>
<tr>
<td>Vice Provost for Libraries and Instructional Support</td>
<td>Linda L. Wolcott</td>
</tr>
<tr>
<td>Associate Vice Provost for Women’s Issues</td>
<td>Christine E. Hailey</td>
</tr>
<tr>
<td>Assistant Provost</td>
<td>Sydney M. Peterson</td>
</tr>
<tr>
<td>Assistant Executive Vice President for</td>
<td>Sue Guenter-Schlesinger</td>
</tr>
<tr>
<td>Affirmative Action and Diversity</td>
<td></td>
</tr>
<tr>
<td>Special Assistant to the President</td>
<td>Lee H. Burke</td>
</tr>
<tr>
<td>Assistant to the President</td>
<td></td>
</tr>
<tr>
<td>Government Relations</td>
<td>Lee H. Burke</td>
</tr>
<tr>
<td>Chief of Staff and University Counsel</td>
<td>Craig J. Simper</td>
</tr>
<tr>
<td>Assistant Attorney General</td>
<td>Robert D. Barclay</td>
</tr>
<tr>
<td>Vice President for Business and Finance</td>
<td>Ronald S. Godfrey</td>
</tr>
<tr>
<td>Associate Vice President</td>
<td>Kevin C. Womack</td>
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<tr>
<td>Assistant Vice President</td>
<td>Paul R. Sampson</td>
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<tr>
<td>Assistant Vice President for Facilities</td>
<td>Darrell E. Hart</td>
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<tr>
<td>Vice President for Information Technology Services</td>
<td>Barbara A. White</td>
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<tr>
<td>and Chief Information Officer</td>
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<tr>
<td>Vice President for Research</td>
<td>Brent C. Miller</td>
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<tr>
<td>Associate Vice President</td>
<td>M. K. Jeppesen</td>
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<tr>
<td>Associate Vice President</td>
<td>H. Paul Rasmussen</td>
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<tr>
<td>Associate Vice President</td>
<td>Joyce A. Kinkead</td>
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<tr>
<td>Vice President for Student Services</td>
<td>Juan N. Franco</td>
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<tr>
<td>Assistant Vice President for Student Life</td>
<td>Gary A. Chambers</td>
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<td>Vice President for University Advancement</td>
<td>Randy W. Talbot</td>
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<td>Associate Vice President</td>
<td>Joyce V. Albrecht</td>
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<tr>
<td>Vice President and Dean for</td>
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<tr>
<td>University Extension</td>
<td>Jack M. Payne</td>
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<tr>
<td>Associate Vice President and Associate Dean of Continuing Education</td>
<td>Weldon S. Sleight</td>
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<tr>
<td>Associate Vice President and Associate Director for Cooperative Extension</td>
<td>Charles W. Gay</td>
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<tr>
<td>Executive Director of Public Relations</td>
<td>John W. DeVilbiss</td>
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<tr>
<td>and Marketing</td>
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<tr>
<td>Director of Athletics</td>
<td>Rance Pugmire</td>
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<tr>
<td>Deans of Academic Units</td>
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<tr>
<td>Agriculture</td>
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<tr>
<td>Dean</td>
<td>Noelle E. Cockett</td>
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<tr>
<td>Associate Dean, Research</td>
<td>H. Paul Rasmussen</td>
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<tr>
<td>Associate Dean, Academic Programs</td>
<td>Donald L. Snyder</td>
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<tr>
<td>Business</td>
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<tr>
<td>Dean</td>
<td>Caryn L. Beck-Dudley</td>
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<tr>
<td>Senior Associate Dean</td>
<td>Clifford R. Skousen</td>
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<tr>
<td>Associate Dean, Graduate Studies</td>
<td>Glenn M. McEvoy</td>
</tr>
<tr>
<td>Associate Dean, Business Relations</td>
<td>Ross E. Robson</td>
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</tbody>
</table>
Continuing Education
Dean ................................................... Jack M. Payne
Associate Dean ................................ Weldon S. Sleight
Assistant Dean, Credit Programs ........ Ronda R. Menlove
Assistant Dean, Recruitment
and Conference Services .............. Daniel G. Peterson

Education and Human Services
Dean ................................................... Gerard R. Giordano
Associate Dean, Education Extension .... Michael K. Freeman
Associate Dean, Research ............... Carol J. Strong
Associate Dean, Teacher Education,
Graduation, and Educator
Licensing ................................................. Francine Fukui Johnson

Graduate Studies
Dean ................................................... Thomas L. Kent
Associate Dean ........................... Laurens H. Smith, Jr.
Assistant Dean .......................... Steven V. Beck

Humanities, Arts and Social Sciences
Dean ................................................... Gary Kiger
Associate Dean ................................ R. Edward Glarfelter
Associate Dean ................................ Christine Hull
Associate Dean ................................ Charlotte Thralls

Natural Resources
Dean ................................................... F. E. “Fee” Busby

Science
Dean ................................................... Donald W. Fiesinger
Associate Dean, Undergraduate Affairs .......... Kandy D. Baumgardner
Associate Dean ................................ Richard J. Mueller

Economics .............................. Keith R. Criddle
Electrical and Computer Engineering .... Tamal Bose
Elementary Education .................... Bernard L. Hayes
English ............................................. Jeffrey Smitten
Environment and Society .................. Terry L. Sharik
Family, Consumer, and Human Development ... Thomas R. Lee
Forest, Range, and Wildlife Sciences ............ To be appointed
Geology ............................................ John W. Shervais
Health, Physical Education
and Recreation .............................. Craig W. Kelsey
History .............................................. Norman L. Jones
Honors Program ...................... David F. Lancy
Industrial Technology and Education ...... Maurice G. Thomas
Instructional Technology ................ Byron R. Burnham
Intensive English Language Institute ....... Glenda R. Cole
Interior Design Program .................. Tom C. Peterson
Journalism and Communication .......... Edward C. Pease
Landscape Architecture and
Environmental Planning ........................ To be appointed
Languages, Philosophy, 
and Speech Communication .......... Charlie Huememann
Management and Human Resources ...... Gaylen N. Chandler
Mathematics and Statistics ............... Russell C. Thompson
Mechanical and Aerospace Engineering .... Byard D. Wood
Military Science .......................... Lt. Col. S. Rand Curtis
Music ............................................. Bruce M. Saperston
Nutrition and Food Sciences ................ Charles E. Carpenter
Nursing Program (with Weber State University) .... Joanne Duke
Physics .............................................. W. John Raitt
Plants, Soils, and Biometeorology .......... Larry A. Rupp
Political Science ............................. Randy T. Simmons
Psychology ........................................ David M. Stein
Secondary Education ......................... Barry M. Franklin
Sociology, Social Work
and Anthropology ............................ Richard S. Kranich
Special Education
and Rehabilitation ....................... Benjamin Lignugaris/Kraft
Theatre Arts ........................................ Colin B. Johnson

Enrollment Management Units
Admissions ................................. Jimmy Moore
Advising and Transfer Services, University ... John D. Mortensen
Financial Aid ................................. Judy LeCheminant
International Students and Scholars ......... Negr C. Davis
Registrar’s Office ............................. Glenn Davis

Student Services Units
Academic Resource Center ................ Noelle A. Call
Campus Recreation ......................... Kevin J. Kobe
Career Exploration Resource Center .......... Margaret “Peg” Hennon
Career Services .............................. David F. Hart
Children’s House ............................. Linda Ebersole-Gilgen
Counseling Center .............................. Mary E. Doty
Disability Resource Center ................ Diane C. Hardman
Housing and Food Services ................. Steven C. Jenson
Multicultural Student Services ............. To be appointed
Statesman (student newspaper) .............. Jay C. Wamsley

Heads of Academic Departments and Programs
Accountancy, School of .......................... Richard L. Jenson
Aerospace Studies .............................. Lt. Col. Jeffery S. Bateman
Agricultural Systems
Technology and Education .................. Gary S. Straquadine
Animal, Dairy and Veterinary Sciences .... Mark C. Healey
Aquatic, Watershed, and Earth Resources .... Chris Luecke
Art ..................................................... John Neely
Biological and Irrigation Engineering ......... Ronald C. Sims
Biology ............................................. Jon Y. Takemoto
Business Administration .......................... Alan A. Stephens
Business Information Systems ................. Karen A. Forcht
Chemistry and Biochemistry .................. Steve Scheiner
Civil and Environmental Engineering ......... Loren R. Anderson
Communicative Disorders and Deaf Education .... James C. Blair
Computer Science .............................. Donald H. Cooley

Statesman (student newspaper) .......... Jay C. Wamsley
Student Health and Wellness Center ........ James W. Davis
Student Involvement and Leadership Center .... Tiffany M. Evans
Student Support Services ................ Nazih T. Al-Rashid
Testing Services Supervisor ................ Eric W. Jensen
Women’s Center/Reentry Student Center ...... Janet L. Osborne

**Other Areas of Service**

Alumni Relations .......................... G. Carlos Smith
Banner Project ............................. Rory J. Weaver
Bookstore .................................. David V. Hansen
Budget Office .............................. Richard W. Jacobs
Cashiers Office ............................ William E. Jensen
Controllers Office ........................ Clinton G. Moffitt
Help Desk .................................. Stephen Funk
Human Resources ........................... Clark M. England
Licensing and Network Training ............ Michelle M. Smith
Network and Computing Services .......... Kim A. Marshall
Parking and Transportation Services ...... Lisa C. Leishman
Police (University) ......................... Steven J. Mechem
Publication Design and Production ........ Dale P. Smith
Purchasing Services ....................... J. Bud Covington
Space Dynamic Laboratory ............... Michael D. Pavich
Student Computer Labs ...................... Gary D. Egbert
Study Abroad Program ...................... Kay W. Forsyth
Technical Support Services ................. Jonathan B. Kavis
Telecommunications and Telephone Services . Scott N. Bradley
Ticket Office ............................... Clark Livsey
University Inn ............................. Leila M. Neilson
University Media Production ............... D. Shane Thomas
University Press and Scholarly Publications . Michael Spooner
Writing Center ............................. Charlene A. Hirschi
2004-2005 Calendar

Summer Session 2004

May 10-June 4  First 4-week Session
May 31       Holiday (Memorial Day)
June 7-11   First Workshop Session
June 14-August 6  8-week Session
June 14-July 9   Second 4-week Session
July 5       Holiday (Independence Day)
July 12-August 6 Third 4-week Session
July 23      Holiday (Pioneer Day)
August 6     Test Day
August 9-13  Second Workshop Session

Fall Semester 2004

August 30   Classes Begin
September 6 Holiday (Labor Day)
November 24-26 Holiday (Thanksgiving)
December 6-10 No-test Days
December 10 Last Day of Classes
December 13-17 Final Examinations

Spring Semester 2005

January 10  Classes Begin
January 17  Holiday (Martin Luther King, Jr. Day)
February 21 Holiday (Presidents’ Day)
March 14-18 Spring Break
April 20-22, 25-26 No-test Days
April 26     Last Day of Classes
April 27     Interim Day
April 28-29, May 2-4 Final Examinations
May 6-7      Graduation

Note: See semester Schedule of Classes for registration and fee payment deadlines.
Degrees Offered at USU

College of Agriculture
Agricultural Systems Technology and Education
Agricultural Education—BS
Agricultural Machinery Technology—One-year Certificate, AAS
Agricultural Systems Technology—BS, MS
Family and Consumer Sciences Education—BS

Animal, Dairy and Veterinary Sciences
Animal Science—BS, BA, MS, PhD
Bioveterinary Science—BS, BA, MS, PhD
Dairy Science—BS, BA, MS
VoTech Dairy Herdsman—One-year Certificate

Economics
Agribusiness—BS
Agricultural Economics—BS
Applied Economics—MS
Economics—BS, BA, MS, MA, PhD
International Agribusiness—BA

Nutrition and Food Sciences
Nutrition and Food Sciences—BS, MS, PhD
Food Microbiology and Safety—MFMS
Dietetics Administration—MDA

Plants, Soils, and Biometeorology
Biometeorology—MS, PhD
Crop Science—BS, BA
Environmental Soil/Water Science—BS, BA
Horticulture—BS, BA
Horticulture, Professional Studies in—MPSH
Ornamental Horticulture—One-year Certificate, AAS
Ecology—MS, PhD
Plant Science—MS, PhD
Soil Science—MS, PhD

Interdepartmental Program
Toxicology—MS, PhD

College of Business
Accountancy, School of
Accounting—BS, BA, MAcc

Business Administration
Business Administration—BS, BA
Finance—BS, BA
Marketing—BS, BA
Production Management—BS, BA

Business Information Systems
Business Information Systems—BS, BA, MS
Business Information Technology and Education—BS, BA
Marketing Education—BS, BA
Office Systems Support—AAS
Education—EdD*, PhD*

Economics
Economics—BS, BA, MS, MA, PhD

Management and Human Resources
Human Resource Management—BS, BA
Management—BS, BA
Human Resources—MS

College of Business Programs
Business—BS, BA
(Dual major and 2nd BS only)
Master of Business Administration—MBA

College of Education and Human Services
Communicative Disorders and Deaf Education
Communicative Disorders and Deaf Education—BS, BA, MS, MA, MEd, EdS
Audiology, Doctorate of—AuD

Elementary Education
Early Childhood Education—BS, BA
Elementary Education—BS, BA, MS, MA, MEd
Education—EdD*, PhD*

Family, Consumer, and Human Development
Early Childhood Education—BS, BA
Family and Consumer Sciences—BS, BA
Family and Human Development—MS, MFHD
Family, Consumer, and Human Development—BS, BA
Family Life—PhD

Health, Physical Education and Recreation
Health Education Specialist—BS
Health, Physical Education and Recreation—MS, MEd
Parks and Recreation—BS
Physical Education—BS

Instructional Technology
Instructional Technology—MEd, MS, EdS, PhD

Psychology
Psychology—BS, BA, MS, PhD

Secondary Education
Secondary Education—2nd BS, 2nd BA, MS, MA, MEd
Composite Teaching—Social Studies—BS, BA
Education—EdD*, PhD*

Special Education and Rehabilitation
Special Education—BS, BA, MS, MEd, EdS
Rehabilitation Counseling—MRC
Disability Disciplines—PhD
Education—EdD*

Interdepartmental Doctorate in Education
Education—EdD, PhD

College of Engineering
Biological and Irrigation Engineering
Biological Engineering—BS, MS, PhD
Irrigation Engineering—MS, PhD

Civil and Environmental Engineering
Civil and Environmental Engineering—CE, MS, ME, PhD
Civil Engineering—BS
Environmental Engineering—BS

Electrical and Computer Engineering
Computer Engineering—BS
Electrical Engineering—BS, MS, ME, EE, PhD
Industrial Technology and Education
   Aviation Technology (Maintenance Management)—BS
   Aviation Technology (Professional Pilot)—BS
   Technology and Industrial Education—BS
   Industrial Technology—MS

Mechanical and Aerospace Engineering
   Aerospace Engineering—BS
   Mechanical Engineering—BS, MS, ME, PhD

College of Humanities, Arts and Social Sciences
   Art—BA, BS, BFA, MA, MFA

   English
   American Studies—BS, BA, MS, MA
   English—BS, BA, MS, MA

   History
   History—BS, BA, MS, MA
   Social Sciences—MSS*

   Journalism and Communication
   Communication—MS, MA
   Journalism—BS, BA

Landscape Architecture and Environmental Planning
   Landscape Architecture—BLA, MLA
   Bioregional Planning—MS

Languages, Philosophy, and Speech Communication
   French—BA
   German—BA
   Philosophy—BA, BS
   Spanish—BA
   Speech—BA, BS
   Second Language Teaching—MSLT

Music
   Music—BM, BA
   Music Therapy—BS, BA

Political Science
   International Relations—Certificate
   International Studies—BA
   Political Science—BS, BA, MS, MA
   Law and Constitutional Studies—BS, BA
   Social Sciences—MSS*

Sociology, Social Work and Anthropology
   Anthropology—BS, BA
   Social Work—BS, BA
   Social Sciences—MSS*
   Sociology—BS, BA, MS, MA, PhD

Theatre Arts
   Theatre Arts—BA, BFA, MA, MFA

Interior Design Program
   Interior Design—BS, BA

Interdisciplinary HASS Program
   Asian Studies—BA

Interdisciplinary HASS and Science Program
   Liberal Arts and Sciences—BA

College of Natural Resources
   Aquatic, Watershed, and Earth Resources
   Ecology—MS, PhD
   Fisheries and Aquatic Sciences—BS
   Fisheries Biology—MS, PhD
   Watershed and Earth Systems—BS
   Watershed Science—MS, PhD

   Environment and Society
   Bioregional Planning—MS
   Environmental Studies—BS
   Geography—BS, BA, MS, MA
   Human Dimensions of Ecosystem Science and Management—MS, PhD
   Recreation Resource Management—BS, MS, PhD

Forest, Range, and Wildlife Sciences
   Conservation and Restoration Ecology—BS
   Ecology—MS, PhD
   Forestry—BS, MS, PhD
   Rangeland Resources—BS
   Range Science—MS, PhD
   Wildlife Biology—MS, PhD
   Wildlife Science—BS

Interdisciplinary Natural Resources Program
   Natural Resources—MNR

College of Science
   Biology
   Biology—BS, BA, MS, PhD
   Ecology—MS, PhD
   Public Health—BS
   Composite Teaching—Biological Science—BS, BA

   Chemistry and Biochemistry
   Biochemistry—MS, PhD
   Chemistry—BS, BA, MS, PhD
   Chemistry Teaching—BS, BA
   Composite Teaching—Physical Science (Chem)—BS, BA

   Computer Science
   Computer Science—BS, BA, MS, MCS, PhD

   Geology
   Geology—BS, BA, MS
   Composite Teaching—Earth Science—BS, BA

   Mathematics and Statistics
   Mathematics—BS, BA, MS, MMath
   Mathematics Education—BS, BA
   Composite Mathematics-Statistics Education—BS
   Mathematical Sciences—PhD
   Statistics—BS, BA, MS
   Industrial Mathematics—MS

   Physics
   Physics—BS, BA, MS, PhD
   Physics Teaching—BS, BA
   Composite Teaching—Physical Science (Physics)—BS, BA

Interdepartmental Program
   Toxicology—MS, PhD

Interdisciplinary HASS and Science Program
   Liberal Arts and Sciences—BA

Interdisciplinary University Degree
   Interdisciplinary Studies—BS, BA

*Department participates in interdepartmental degree program.
Undergraduate Admission

Director, Admissions Office: Jimmy Moore
Location: Student Center 102
Phone: (435) 797-1079, (435) 797-1129, or (800) 488-8108
FAX: (435) 797-3708
E-mail: admitit@usu.edu
WWW: http://www.usu.edu/admissions

Admission Requirements

The Utah State University admission policy is designed to admit undergraduate students who have the best chance to successfully complete a university program of study.

All freshmen, including transfer students with fewer than 24 semester hours of credit, must submit an official high school transcript and ACT/SAT scores as part of their application for admission.

Application for admission and credentials from schools previously attended should be received by the Admissions Office by April 1 for fall semester admission, by November 1 for spring semester admission, and by April 1 for summer semester admission. These materials should be sent to:

Admissions Office
Utah State University
0160 Old Main Hill
Logan UT 84322-0160

A student is admitted to the University on the basis of an application (which includes official transcripts of credit from each school previously attended), a $35 nonrefundable application fee, and ACT/SAT scores when applicable. A processing fee of $25 is required of students applying for readmission. Students applying after the deadline will be assessed an additional $15 late fee. For application and general information, contact the Admissions Office at the address above; or by phone, fax, or e-mail as listed at the top of this page.

Students who have attended home schooling, charter high schools, or performance/outcome-based high schools will need to submit an Application for Admission, the $35 application fee, and ACT/SAT results, and may need to have an interview as part of the admissions application process. Those students who have completed the GED must also submit a copy of the GED Certificate.

USU grants admission, without regard to race, color, creed, sex, or national origin, to those students who satisfy the admission requirements.

Students who have been denied admission to the University may initiate an appeal by contacting the Admissions Office. The appeal must be made no later than seven calendar days from the first class day.

Freshman Admission

Students attending the University for the first time are admitted on the basis of an index score, which is a reflection of high school grades and ACT or SAT scores. Entering students must have an acceptable index score in order to be admitted. (See Admission Index table on page 16.) USU regulations regarding the index score are as follows: Students having an index score of 90 or higher are very likely to be admitted. Students must have an ACT composite score of 19 or higher, regardless of what their overall admission index score is. A cumulative grade point average of 2.5 or higher in high school coursework is also required. In cases where the applicant is younger than 25 years, official ACT/SAT results are also required. Exceptions to the preceding regulations will be made for applicants who have not graduated from high school, who may substitute results of the GED. Admission decisions are made on an individual basis. Note: These requirements are based on the 2004-2005 applicant pool and are subject to change for Fall Semester 2005.

High School Curriculum

Students who have graduated from high school and who desire to attend Utah State University must have completed a preparatory course of study, including the following:

English. Four years (units), emphasizing composition/literature.

Mathematics. Three years (units), selected from elementary algebra, geometry, intermediate algebra, trigonometry, college or advanced algebra, or calculus. It is strongly recommended that students take mathematics up to at least trigonometry.

Biological/Physical Science. Three years (units), which meet either state or local graduation requirements. At least one unit must provide a laboratory experience.

American History. One year (unit).

Additional Courses. Four years (units), chosen from at least two of the following: history, English, mathematics beyond intermediate algebra, laboratory science, foreign language, social science, and fine arts.

Foreign Language. Two years (units) recommended, which must be of the same foreign language.

Students who meet the minimum index requirements, but have less than the required number of units, will be admitted on the condition that the deficiency is satisfied at the University within the first 30 semester hours of study.

When the admission decision is made, an official letter of notification will be sent to the student.

Testing. All freshmen, including transfer students with less than 30 semester hours of credit, must present the results of the ACT/SAT as part of their application for admission to the University.

Early Admission. A high school student who has completed his or her junior year and maintained a superior scholastic record may be granted special consideration for admission. An applicant must satisfy the following requirements:
General Studies. Students who do not qualify for enrollment into one of the academic colleges may be considered for enrollment in General Studies. These students include all those who have graduated from high school with an admission index score below 90. When a student has demonstrated ability to maintain a GPA appropriate for the intended major, that student may apply for admission to an academic college and department. Regular college admissions evaluation procedures will then be followed, and if there are no admissions restrictions, the student will be admitted to the department of his or her choice.

Advanced Placement. Students who present Advanced Placement examination scores of 3, 4, or 5 may receive 4 to 8 University credits for each Advanced Placement examination. These credits may be used to fill General Education requirements and to meet specific course requirements. For a list of examinations accepted and scores necessary to receive credit, see pages 53-54.

Credit by Special Examination. Matriculated students may challenge a course for credit by taking a special examination available in the University Testing Center. The examination will survey knowledge of course content. University credit is awarded for examinations in courses the student has not already taken. Students will be required to pay a fee (standard recording fee and course-specific examination fee). The Testing Center has a listing of available special examinations. Application forms for permission to take special examinations are available in the Testing Center. Language credits by special examination are initiated in the Department of Languages, Philosophy, and Speech Communication.

Students who take a special examination will receive the exam grade posted to their transcript, with a designation that it was earned by special examination. Credits earned through special examination cannot be used toward a graduate degree, nor be used to meet the minimum USU course requirement.

### Admission Index

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### Undergraduate Admission

1. Submit an official application, ACT/SAT scores, a high school transcript, and a $35 application fee.
2. Submit letters of approval and recommendation from:
   (a) Superintendent or principal
   (b) Parent or guardian
3. Admission is not automatic, and will be determined by the admissions committee.
4. Applications for admission and credentials from the high school must be received by the University according to the deadline dates listed under General Admission Policies.

Nontraditional Admission. An applicant who is not a high school graduate may be considered for admission by presenting satisfactory evidence of ability to do university work. This evidence may be demonstrated by scores on the General Education Development Test (GED). Admission will not be offered unless a student has a high school diploma or a GED Test score of 55 or higher. (Students in this category include those whose high school class has graduated and those over the age of 18.) Students must also take the ACT/SAT if not previously taken. If the student has been out of high school for seven years or more, this requirement is waived.

Home School Students. Home school students applying for admission to Utah State University who submit a transcript from an accredited home school organization will be evaluated the same as any traditional high school students. They must meet the University’s standard admission requirements of a minimum 2.5 grade point average, a minimum ACT score of 19, and a minimum Admissions Index score of 90.

Those home school students without transcripts must provide a list of classes they have completed and must meet an ACT test score of 21 or higher in order to be admitted to Utah State.

In consultation with the department of the student’s intended major, the Director of Admissions will review all materials and make a final decision.
Credit by Advanced Coursework (Language Credits). Students who are proficient in a foreign language offered by Utah State University may earn lower-division credit through successfully passing a more advanced course. Applications for these credits should be made in the Department of Languages, Philosophy, and Speech Communication. Students will be required to pay a posting fee.

Students who receive credit by advanced coursework will receive a grade posted to their transcript, with a designation that it was earned by advanced coursework. Credits earned through this option cannot be used to meet the minimum USU course requirement.

Credit by Departmental Examination. Matriculated students may challenge a course for credit by taking a departmental examination. Departments will determine if a course is appropriate for challenge; students should contact the instructor and/or department. If a challenge exam is available, the instructor should advise the student as to whether he or she has a reasonable chance of passing. The examination will survey knowledge of the course content and may include papers, projects, portfolios, etc.

Students challenging a course for which they are registered must do so within the first two weeks of the course. Students not registered will be required to pay a fee (standard recording fee and course-specific examination fee). Students who take a departmental examination will receive the exam grade posted to their transcript for that course. Credits earned through departmental examination can be used to meet the minimum USU course requirement.

CLEP Examinations. Credits may be acquired through the College Level Examination Placement (CLEP) examinations. These credits may be used to fill General Education requirements, and may also be accepted as equivalent to specific courses. AP and CLEP credit combined may fulfill requirements for a maximum of four Breadth areas of General Education. For a list of examinations accepted and scores necessary to receive credit, see pages 55-56.

Individual departments and/or colleges may specify the exact courses required to fill their requirements and may require more than the minimum General Education requirements. Some departments and colleges require specific coursework for General Education, which the CLEP exams may not satisfy.

If, prior to taking a CLEP examination, a student has received credit (including AP credit) for any coursework equivalent to the subject matter of a CLEP examination, the credits earned from the course will be deducted from the earned CLEP credits.

Other institutions have policies differing from those of USU regarding CLEP scores and credits granted for those scores. For transfer students, CLEP credit posted to another institution’s transcript is reevaluated based on USU’s standard.

International Baccalaureate. USU recognizes the International Baccalaureate diploma and awards credits for General Education requirements, excluding the Breadth American Institutions, Communications Literacy, and mathematics Quantitative Literacy requirements necessary for graduation.

Students who have not completed the International Baccalaureate diploma receive 8 credits for scores of 5, 6, or 7 achieved on the higher-level exams.

Credit achieved through the International Baccalaureate examinations may not be duplicated with AP credit.

For more information about the International Baccalaureate Organization, as well as a list of examinations accepted and scores necessary to receive credit, see page 57.

Credit for Military Service. The University may grant credit to students currently enrolled at the University who have served in the armed forces. Applications for credit are made by submitting the DD214 or DD295 form to the Admissions Office.

Army/ACE Registry Transcript System (AARTS). Enlisted soldiers who entered active duty on or after October 1, 1981 are eligible for an AARTS transcript. However, the AARTS transcript is not available to members of the U.S. Army Reserve, warrant officers, or commissioned officers. Those students who are eligible for an AARTS transcript and who are seeking credit for military service in the Army should provide the Admissions Office with an AARTS transcript instead of the DD214 or DD295 form. Eligible students may obtain transcript request forms from their Army education center counselors, or they may write directly to: Manager, AARTS Operations Center, 415 McPherson Avenue, Ft. Leavenworth KS 66027-1373. Each request must include the student’s name, basic active service date, social security number, and current mailing address.

Veterans Educational Benefits. Veterans or qualified dependents of disabled or deceased veterans who may be eligible for Veterans Educational Benefits should contact the Office of Veterans Services, or telephone (435) 797-1102 for information concerning their educational benefits. Veterans or eligible dependents must make application for admission and be matriculated in a degree program.

Transfer Student Admission

Applicants with at least 24 semester credits earned at another accredited institution will be admitted if they have a transfer GPA of 2.50 or higher. Those transfer students having a GPA between 2.20 and 2.49 will be considered on an individual basis. Many USU undergraduate majors require a higher GPA for admission. For specific GPA requirements, refer to this catalog or consult the departments. In cases where the student is admissible to the University but does not meet the minimum GPA requirement for admission to the desired major, admission will be offered as an “undeclared” major. Applicants having fewer than 24 semester transfer credits must submit an official high school transcript and ACT or SAT results.

Official transcripts of credit must accompany applications for admission when submitted by students who have attended other collegiate institutions. Transcripts submitted for admission become the property of the University and are not returned. Transcripts from all institutions previously attended are required.

At its discretion, the University may accept transfer credit from accredited and nonaccredited institutions and miscellaneous sources. These may include:

(1) accredited institutions, (2) foreign universities, (3) U.S. military credit for approved job and educational experiences, (4) credit by examination, (5) miscellaneous sources: internships, nontraditional learning experiences.
The following evaluation criteria for acceptance will be used:

1. Accreditation status of the institution.
2. Recognized national standards published by the American Association of College Registrars and by the American Council on Education.
3. Guidelines given by the State Board of Regents (including guidelines for CLEP and AP credit).
4. Recommendations given by various University units having appropriate academic competence, including: Faculty Senate, college and departmental curriculum committees.

Utah State University does not accept transfer credit from nonaccredited institutions in those cases where USU lacks an academic unit to evaluate such transfer credits.

Credit Transfer Policy of Utah System. An Associate of Arts or an Associate of Science degree earned at any institution within the Utah System of Higher Education, or at other non-Utah institutions with articulation agreements, will be considered as meeting the General Education requirement of any institution in the system. (At USU, this satisfies the General Education portion of the University Studies requirements, but not the Depth Education requirements as shown on pages 45-48.) When the General Education requirements of an institution not offering the Associate of Arts or Associate of Science degree have been met in earning a 60 to 63 semester credit hour diploma, a Registrar’s certification that the transferring student has completed baccalaureate-level General Education requirements at the sending institution will be accepted by the receiving USHE institution in lieu of the AA/AS degree. In the latter case, the Registrar at the sending institution will forward to the receiving institution an up-to-date description of the General Education requirements.

Credit for quarter courses numbered 100 or above, or for semester courses numbered 1000 or above, earned in the Utah System of Higher Education is transferable within the System and will be carried on the student’s transcript by the receiving institution. Acceptance of credit should not be confused with its application. Transfer credit may or may not apply to the graduation requirements of an institution, regardless of the number of credits transferred. Credit other than that intended wholly to meet the General Education requirements of the receiving institution will be applied on the basis of the appropriateness of credit to a particular institution’s specific degree program requirements as determined by the receiving institution.

For more transfer student information, including agreements with other states, see pages 59-61 of this catalog.

International Undergraduate Student Admission

For information about admission procedures for international students, see pages 20-21.

Graduate Admission

Any student who has graduated from USU or any other university must apply to the School of Graduate Studies for admission and present two copies of an official transcript.

Readmission

Students who were in attendance the previous spring semester are not required to reapply for fall semester unless the student withdrew from the University or if academic action (probation or suspension) or graduation occurred at the conclusion of the spring semester. Former students of the University returning after an absence of one year or longer are required to file an application for readmission, unless a Leave of Absence form was filed.

Readmission Deadlines. Students who desire to be readmitted following academic action (probation or suspension), must apply by March 1 in order to be considered for admission to fall semester, or by October 1 in order to be considered for admission to spring semester. All other students desiring readmission must apply by April 1 in order to be considered for admission to fall semester, or by November 1 in order to be considered for admission to spring semester.

Residency Application and Appeal

Nonresident students who feel they have met the requirements for in-state resident student status must file an official residency application with the Admissions Office, Taggart Student Center 102, no later than 10 calendar days from the first class day and not more than 30 days before the beginning of the semester for which residency is sought. Those missing the application deadline will have residency considered for the next semester, provided that the next appropriate deadline is met with adequate updated documentation.

If an application is denied by the Residency Officer, the student may appeal to the Residency Appeals Committee no later than the 14th calendar day of the semester. Appeals cannot be considered after this deadline.

Regulations concerning residency are as follows:

1. Persons claiming residency on their application for admission, but who are coded nonresident, will be notified in writing of their nonresident status.

2. Utah Residency for Tuition Purposes

Legislative action in the spring of 2002 changed the residency requirements. A person who has come to Utah and established residency for the purpose of attending an institution of higher education shall, prior to registration as a resident student: (a) live in Utah while completing 60 semester credit hours at a regionally accredited Utah higher education institution or an equivalent number of applicable contact hours at the Utah College of Applied Technology; and (b) demonstrate by additional objective evidence, including Utah voter registration, Utah driver’s license, Utah vehicle registration, employment in Utah, payment of Utah resident income taxes, and Utah banking connections, the establishment of a domicile in Utah and that the student does not maintain a residence elsewhere; or (c) live and work in Utah for 24 months prior to beginning school, after which he or she can apply for residency and begin school as a resident.

3. Aliens who are present in the United States on visitor, student, or other visas which authorize only temporary presence in this country do not have the capacity to intend to reside in Utah for an indefinite period and therefore must be classified as nonresident.

4. Aliens who have been granted immigrant or permanent resident status in the United States shall be classified for purposes of resident status according to the same criteria as citizens.

5. Any American Indian who is enrolled on the tribal rolls of a tribe whose reservation or trust lands lie partly or wholly within Utah or whose border is at any point contiguous with the border of Utah or any American Indian who is a member of a federally recognized or known Utah tribe and who has graduated from a high school in Utah, shall be entitled to resident status.

For other guidelines or exceptions, contact the Residency Officer within the Admissions Office, Taggart Student Center 102, (435) 797-8144, or visit: http://www.usu.edu/admissions/ua/residency.html
Western Undergraduate Exchange

Utah State University participates in the Western Undergraduate Exchange (WUE), a program of the Western Interstate Commission for Higher Education (WICHE). Through WUE, certain students who are not residents of the State of Utah may enroll at Utah State University by paying resident tuition plus 50 percent of that amount (plus other fees that are paid by all students).

Because Utah State University participates in the WUE program, residents of Utah may enroll under the same terms in designated institutions and programs in other participating states.

Information about and applications for WUE programs available at USU may be obtained from the USU Admissions Office, 0160 Old Main Hill, Logan UT 84322-0160, tel. (435) 797-1129 or (800) 488-8108. Utah residents may obtain information about WUE programs in other states from the Certifying Officer for Utah WICHE Student Exchange Program, #3 Triad Center, Suite 550, 355 West North Temple, Salt Lake City UT 84180-1205, tel. (801) 321-7124 or from WICHE Student Exchange Program, P.O. Box 9752, Boulder CO 80301-9752, tel. (303) 541-0214 or 0210, FAX (303) 541-0291.

Cooperative Education and/or Internships

Cooperative education involves faculty and employers in a partnership to provide a student with a blend of academic and on-the-job experiences that may qualify for academic credit. Interested students should contact their academic department or the Office of Cooperative Education, UI 102.
International Student Admission and Programs

The Office of International Students and Scholars (ISS) is committed to providing quality services to international students, scholars, and their families, and to helping them to succeed, both academically and personally, in a caring and nurturing environment. ISS provides leadership and support to enhance the academic, social, and personal interactions of students and scholars while at USU, in the Logan community, and beyond. These services include, but are not limited to, international admissions, academic and cultural orientation programs, general and academic advising, transportation, conflict resolutions and mediation, immigration matters including SEVIS, peer mentoring, and cultural events planning. ISS also provides referrals to other campus units, including Student Health and Wellness Center, Counseling Center, Academic Resource Center, University Advising and Transfer Services, Housing and Food Services, Intensive English Language Institute, Registrar’s Office, Cashiers Office, Student Employment, and Career Services, to ensure academic success through graduation.

Undergraduate Admission Requirements

International Undergraduate Student Admission. The following fees, documents, and information should be submitted to ISS four months (January 15, summer semester; April 15, fall semester; September 15, spring semester) prior to the beginning of the semester for which an international student wishes to be considered for admission:

1. Utah State University international application for admission and a $50 nonrefundable application fee. Applications submitted after the recommending filing date will be charged an additional $15 nonrefundable late fee.
2. Official transcripts and certificates or certified true copies for each secondary school, college, and university attended with official English translation of all documents.
3. Evidence of financial capability must be provided with the application, as specified on the application form.
4. International students must be proficient in the use of English. Proficiency is determined for undergraduates by a minimum TOEFL score of 500 on the manual (paper/pencil) test or 173 on the computerized test, a minimum IELTS score of 5.0, a Michigan test score of 80, or by passing level 4 (advanced level) of the Intensive English program at Utah State University.

Qualified students in level 4 (advanced level) of Intensive English may take one or more academic courses if approved by the Intensive English faculty and their academic advisor. Students at any level may audit academic courses with instructor’s approval. Audited courses are not recognized by the U.S. Citizenship and Immigration Services (USCIS) toward the requirement of carrying a full course of study.

Failure to carry a full course of study (at least 12 credits per semester for undergraduates), failure to make satisfactory progress toward the receipt of an undergraduate or advanced degree, or failure to comply with any other immigration requirements for students attending USU will be grounds for suspension or dismissal in accordance with existing University policy.

SEVIS. SEVIS is an internet-based system that allows schools and the U.S. Citizenship and Immigration Services (USCIS) to exchange data on the visa status of international students. Accurate and current information is transmitted electronically throughout an F-1 or J-1 student’s academic career and throughout a J-1 scholar’s stay in the United States. U.S. embassies and consulates will also have access to SEVIS.

The University is committed to assisting students in the following ways, to prevent status violations from occurring:
1. ISS will require mandatory orientation programs for all newly enrolled international students. The new rules and regulations will be thoroughly discussed and explained.
2. ISS will offer orientation for all newly arrived international scholars.
3. Informational sessions will be offered throughout the semester for students and scholars who are already on campus.

International Scholarships. Utah State University offers a limited amount of scholarships to international students. For more information, visit the ISS website: http://www.usu.edu/iss.

Transfer Student Admission. Applicants with at least 24 semester credits earned at another recognized institution will be admitted if they have a transfer GPA of 2.50 or higher. Those transfer students having a GPA between 2.20 and 2.49 will be considered on an individual basis. Many USU undergraduate majors require a higher GPA for admission. For specific GPA requirements, refer to this catalog or consult the departments. In cases where the student is admissible to the University but does not meet the minimum GPA requirement for admission to the desired major, admission will be offered as an “undeclared” major. Applicants having fewer than 24 semester transfer credits must submit an official high school transcript (including a translated version). Official transcripts of credit must accompany applications for admission when submitted by students who have attended other collegiate institutions. Transcripts submitted for admission become the property of the University and are not returned. Transcripts from all institutions previously attended are
required (including a translated version). At its discretion, the University may accept transfer credit from accredited and nonaccredited institutions and miscellaneous sources. Acceptance of credit should not be confused with its application. Transfer credit may or may not apply to the graduation requirements of an institution, regardless of the number of credits transferred. Students who would like their college or university work considered for transfer credit must include a course syllabus or description (translated into English) of this work.

Readmission. Students who have not been in attendance for a semester or more are required to reapply for admission for the next semester. They must also reapply for the next semester if they have withdrawn from the University or if suspension or graduation occurred at the conclusion of their previous semester. See page 18 for readmission deadlines for students who are subject to academic action (probation or suspension).

International Baccalaureate. USU recognizes the International Baccalaureate diploma and awards credits for General Education requirements, excluding the Breadth American Institutions, Communications Literacy, and mathematics Quantitative Literacy requirements necessary for graduation. Students who have not completed the International Baccalaureate diploma receive 8 credits for scores of 5, 6, or 7 achieved on the higher-level exams.

Credit achieved through the International Baccalaureate examinations may not be duplicated with Advanced Placement (AP) credit.

Graduate Admission. Any student who has graduated from USU or any other university must apply to the School of Graduate Studies for admission and present two copies of official transcripts. Refer to pages 90-91 for further information.

Required New International Student Orientation

Newly admitted or readmitted students must participate in New International Student Orientation. This orientation is designed to assist students in making a successful transition to USU. In addition to registering for classes, students have the opportunity to receive individual advice about degree requirements, as well as vital information about immigration, health insurance, housing, student services, campus life, and athletics. This orientation also gives students a chance to make new friends. New and returning international students should be aware that a registration hold will be placed on their file until some form of orientation is completed. After admission to USU, students will receive information about New International Student Orientation.

New students who are required to take the IELI Placement Examination will be able to schedule an appointment at the orientation.

For further information, contact the ISS office by phone at (435) 797-1124 or by e-mail at iss@cc.usu.edu.

Undergraduate Graduation Requirements

For further information, refer to pages 50-52 in this catalog.

Intensive English Language Institute. The Intensive English Language Institute (IELI) is an academic program in the College of Humanities, Arts and Social Sciences. IELI teaches international students, residents, and refugees the English skills and cultural knowledge they need to be successful university students. IELI also trains international teaching assistants (ITAs) for USU. Information about the ITA training is available through the School of Graduate Studies. The IELI program accepts students seeking a degree at Utah State University, as well as students who want to study English for personal or professional reasons. Students may enroll to study only English.

Undergraduate students who apply to USU without a TOEFL score of at least 173 computerized or 500 manual (paper/pencil), or a minimum IELTS score of 5.0; and graduate students applying without a minimum TOEFL score of 213 computerized or 550 manual (paper/pencil), or a minimum IELTS score of 6.0, must take the IELI Placement Examination, given the first day of each semester, including the first day of the IELI summer session. Based on the examination results, students will be required to study in the IELI or exempted from further study and permitted to take classes in their major fields. For additional information, contact the Intensive English Language Institute (IELI) office by phone at (435) 797-2081 or by e-mail at ieli@cc.usu.edu.

Special Programs

Community and University Friends of International Students and Scholars (CUFISS), CUFISS is a collaboration between the University and community which helps facilitate with activities, as well as with cultural and educational opportunities. For additional information, contact the ISS office by phone at (435) 797-1124 or by e-mail at iss@cc.usu.edu.

Study Abroad Programs. The USU Study Abroad Office provides information on a range of programs offering opportunities for study all over the world. USU offers many study abroad exchanges for a semester, academic year, or summer term in conjunction with other universities. Students can complete major or minor requirements while on study abroad. For further information, refer to page 69 in this catalog.
Financial Aid Office
Financial Aid and Scholarship Information

Financial Aid Office
Director: Judy LeCheminant
Location: Taggart Student Center 106
Phone: (435) 797-0173
FAX: (435) 797-0654
E-mail: finaid@cc.usu.edu
WWW: http://www.usu.edu/finaid/

Associate Director: Steven J. Sharp
Assistant Director: Sharon B. Robinette
Assistant Director: Todd Milovich
Computer Specialist: Tamara Allen
Business Manager: Karen S. Marshall
Counselor (A-C): Ho Williams
Counselor Assistant (A-C and S-Z): Brenda Bohm
Counselor (D-H): Cedra H. Jensen
Counselor Assistant (D-H and N-R): Marcela V. Gardner
Counselor (I-M): Jacob R. Brazell
Counselor Assistant (I-M): Tamera K. Larsen
Counselor (N-SL): Arthur S. Young
Counselor (SM-Z): Amanda Alles
Scholarship Counselor: Taya Flores
Loan and Collection Officer: William E. Jensen,
Student Center 228, (435) 797-1076, bjensen@cntr.usu.edu

Application for financial aid begins in January for any awarding anticipated during the following academic year. In most instances, early application benefits the applicant. Those who apply early have a greater chance of receiving more aid and of having aid available in time to meet school needs. Pell Grant and Stafford Loans are available throughout the year. Contact the Financial Aid Office for assistance. The free online application can be found at: http://www.fafsa.ed.gov.

Scholarships are awarded to qualifying applicants who apply on or before February 1, prior to the academic year. Students should contact the Admissions Office or the department of their major for the exact deadline. For 2005 admission, the priority deadline for scholarship application is December 1, 2004.

Financial aid programs, policies, and procedures described herein reflect the latest information at publication. Changes may occur in response to state and federal requirements. Appropriate notice will be made whenever possible before any change takes effect.

For further information concerning financial assistance available for graduate students, see pages 89-90 of this catalog.

Grants, Work-Study, and Loans
Federal Pell Grant. Available to undergraduates. Grants do not need to be repaid.

Federal Supplemental Educational Opportunity (SEOG) Grant. Available to undergraduates. Grants do not need to be repaid. The maximum award varies yearly. Awarding is based on need and funding.

Leveraging Educational Assistance Partnership (LEAP) Grant. Awarded to resident undergraduates who demonstrate exceptional need. Awards are based on availability of funds.

Utah Centennial Grant (UCOPE). Available to undergraduate residents of Utah. Awards are based on availability of funds.

Other Grants and Special Benefits. Contact the Financial Aid Office for details concerning BIA or Tribal Grants.

Federal Work-Study (CWS). Provides part-time on-campus employment to enable students to earn a portion of their educational expenses during the college year. Awarding is based on the availability of funds.

Federal Perkins Loan. Undergraduate students generally may borrow up to $3,000 per year, to a total school amount of not more than $15,000. Graduate students may borrow $4,000 per year, up to $30,000. Monthly payments and interest begin after graduation, withdrawal, or otherwise leaving school, or after dropping below 6 credits. A 5 percent simple interest rate applies. Awarding is based on need and funding.

Federal Stafford Loan. Low, variable interest loans. Freshmen may apply for up to $2,625 each regular school year; sophomores may apply for up to $3,500 a year; juniors, seniors, and second bachelor’s degree students may apply for up to $5,500 a year; and graduates may apply for up to $8,500 a year. Aggregate borrowing limits are $23,000 for undergraduates and second bachelor’s degree students, and $65,500 for graduates. Monthly repayment begins after completing or leaving school, or after dropping below 6 credits. Interest accrued prior to the beginning of repayment is paid by the federal government for “subsidized” Federal Stafford Loans. Maximum repayment period is generally 10 years.

PLUS Loans. PLUS loans are for parents who want to borrow for their children’s education. This loan provides additional funds for educational expenses. Repayment begins within 60 days after the last loan disbursement. This variable interest loan has an interest rate cap of 10 percent. This loan is available when other awarded federal aid to the student does not fully meet the school’s estimated cost of education.

Emergency Loan. An emergency loan for $400 is available for USU students with fees paid for at least 6 credits. Emergency loans are not available for tuition. The duration of emergency loans is eight weeks. A low rate of interest or service charge applies.

Method of Awarding Financial Aid
A student’s Estimated Family Contribution (EFC) is calculated from information provided by the student on the federal financial aid application. A student’s Financial Need is the difference between the estimated cost of education and the EFC. Financial aid is awarded to fill this need, as much as possible, using whatever funds are available.
**Estimated Cost of Undergraduate Education for Two Semesters for 2004-2005 Academic Year**

<table>
<thead>
<tr>
<th></th>
<th>Resident</th>
<th>Nonresident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition and Fees</td>
<td>See page 39</td>
<td>See page 39</td>
</tr>
<tr>
<td>Room and Board</td>
<td>$5,400</td>
<td>$5,400</td>
</tr>
<tr>
<td>Books and Supplies</td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>Transportation</td>
<td>1,260</td>
<td>1,260</td>
</tr>
<tr>
<td>Personal Expenses</td>
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<td>1,820</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>$9,480</strong></td>
<td><strong>$9,480</strong></td>
</tr>
<tr>
<td><strong>plus</strong></td>
<td><strong>$3,842.50</strong></td>
<td><strong>$3,842.50</strong></td>
</tr>
<tr>
<td>Resident</td>
<td>Nonres.</td>
<td>Tuition</td>
</tr>
</tbody>
</table>

**Repayment of Federal Funds Policy**

Students who are withdrawing from the University and who have Federal Financial Aid must meet with their financial aid counselor prior to withdrawing.

Students who completely withdraw from the University during the course of a semester are required to return a percentage of their Federal Student Financial Aid. All types of Federal Financial Aid are included in the repayment, including: Pell Grants, Supplemental Grants, Perkins Loans, and Stafford Loans. The amount of repayment is based on the percentage of the semester completed. For example, if a student withdraws after completing 40% of the semester (calculated using calendar days), the student must return 60% of his or her Federal Student Aid. Students who withdraw, or cease attending, after completing 60% of the semester are not required to return aid. (However, they will still face suspension from financial aid for failing to complete the required number of credits.) If the student is eligible for a refund of tuition and fees, according to the University refund policy, the refund will be applied to the Federal Financial Aid obligation. A refund may or may not completely repay the obligation. Either way, the student will not be allowed to register for future classes, nor be eligible for future financial aid, until the debt is repaid.

For example, suppose a student has Federal Aid in the following amounts:

- Pell Grant: $1,500
- Perkins Loan: 1,200
- Stafford Loan: 2,750

Total: $5,450

If the semester has 115 calendar days and the student completely withdraws from the University on day 20, the repayment would be calculated as follows: 115/20 = 17% of the semester completed, and 83% not completed. Therefore, 83% of the Federal Aid must be repaid (i.e., $5,450 x 83% = $4,523.50).

Withdrawal on day 20 would allow a 50% refund of tuition and student fees. If the student paid $1,400, the refund would be $690 (i.e., $700 minus the $10 nonrefundable registration fee). Therefore, after $690 is applied to the repayment, an additional $3,842.50 must be repaid (i.e., $4,523.50 - $690 = $3,842.50).

Students who receive all FSs for the semester must document participation in an academic activity (including attending class, taking exams, turning in assignments, etc.) through the mid-point of the semester or will have to repay 50% of the federal funds received.

**Note:** Loan funds to be repaid will go into repayment according to the terms of the loan. Grant funds to be repaid must be repaid immediately. More details are available from the Financial Aid Office.

**Responsibility of Financial Aid Recipients**

Undergraduate financial aid recipients are expected to maintain a USU GPA of at least 2.0 and complete the appropriate number of credits for the type of aid they receive. Most grants and work-study require enrollment for 12 credits, which is the federal definition of full-time enrollment. (Pell Grants are pro-rated for full-time, three-fourths-time, half-time, and less than half-time.) Loan recipients must maintain 6 credits each semester they receive a loan.

Graduate students must maintain a USU GPA of 3.0 and must complete 6 credits each semester they receive financial aid or defer student loans.

Students not maintaining either the required credits or the required grade point average will be placed on financial aid probation for a minimum of one semester. Students not meeting the required minimums during the period of probation will be suspended from further aid. In exceptional circumstances, students may appeal to have the suspension lifted.

In addition to maintaining academic progress as defined above, recipients may not owe a repayment on grants previously received, or be in default of any student loan fund at USU or any other institution.

**Scholarship Policy**

Scholarships for new undergraduate students and undergraduate transfer students are awarded by the Admissions Office. Scholarships for continuing students are awarded by the various colleges and academic departments.

**Scholarships for New Undergraduate Students.** To be considered for scholarships, applicants must be admitted to Utah State University, attend classes at the main Logan campus, and intend to graduate from USU. (Students majoring in programs sponsored by other academic institutions, such as the Cooperative Nursing Program with Weber State University, are not eligible for Utah State University sponsored scholarships.) Utah State University offers a variety of scholarships based on academic merit using the cumulative GPA (a four-point scale is used to determine cumulative GPA) and ACT or SAT score. Some other criteria may be used in determining eligibility, such as achievements, leadership, talent, family size and income, ethnicity, and first-generation college student status. The scholarship application deadline (as listed on the dual admissions and scholarship application) is different than the admissions deadline. To be considered for scholarships, students must apply by February 1. For 2005 admission, the priority deadline for scholarship application is December 1, 2004. See pages 24-25 for information about scholarships available to new freshmen. For more information, contact the Admissions Office by phone at 1-800-488-8108 or (435) 797-1129, or by e-mail at: admit@usu.edu.

**Scholarships for Home Schooled Students.** To be considered for scholarships, home schooled students must have a minimum ACT score of 25.
Freshman Resident Scholarships

The scholarships listed below are based on the 2004-2005 applicant pool and are subject to change without notice. For the latest information on freshman scholarships, visit:
http://www.usu.edu/scholarships.

Presidential Scholarship. Awarded for four years, this scholarship is worth approximately $11,000. During eight semesters (four years), $1,375 per semester is awarded toward tuition. To be considered, applicants must have an admissions index score of 124 or higher, a minimum 3.5 GPA, and a minimum ACT score of 25 or SAT score of 1130. This award applies only to undergraduate coursework. To remain eligible for this scholarship, a student must enroll for and complete at least 15 credits each semester, for a total of 30 credits per year, and achieve a 3.5 GPA at the end of each academic year.

Dean’s Scholarship. Awarded for four years, this scholarship is worth approximately $5,500. During eight semesters (four years), $687.50 per semester is awarded toward tuition. To be considered, applicants must have an admissions index score of 117 or higher, a minimum 3.5 GPA, and a minimum ACT score of 25 or SAT score of 1130. This award applies only to undergraduate coursework. To remain eligible for this scholarship, a student must enroll for and complete at least 15 credits each semester, for a total of 30 credits per year, and achieve a 3.5 GPA at the end of each academic year.

Educational Opportunity Scholarship. During eight semesters (four years), $1,375 per semester is awarded toward tuition. To be considered, applicants must have a minimum 3.0 GPA and a minimum ACT score of 19 or SAT score of 810, and must be admissible to USU. This award is based on financial need, first-generation college student status, and geographic location. Students apply by submitting an Application for Admission and Scholarship to USU.

University Ambassador Program Scholarship. During eight semesters (four years), $1,375 per semester is awarded toward tuition. To be considered, applicants must have a minimum 3.4 GPA and a minimum ACT score of 24 or SAT score of 1090. In addition to a separate application, applicants must submit an extensive recruitment portfolio and two letters of recommendation. This award applies only to undergraduate coursework. To remain eligible for this scholarship, a student must enroll for and complete at least 15 credits each semester, for a total of 30 credits per year. An application for this scholarship can be downloaded from:

Alumni Chapter Scholarships. For information about these scholarships, contact the Alumni Office at (435) 797-2055, or visit http://www.usu.edu/alumni/scholar.html.

ROTC Scholarships. For information about these scholarships, contact the Air Force ROTC Office at (435) 797-8723 or the Army ROTC Office at (435) 797-3637. Information is available on the Web at: http://www.afrotc.com/scholarships and http://www.armyrotc.com/scholars.

Freshman Nonresident Scholarships

The scholarships listed below are based on the 2004-2005 applicant pool and are subject to change without notice. For the latest information on freshman scholarships, visit:
http://www.usu.edu/scholarships.

National Level I Scholarship. Awarded for four years, this scholarship is worth approximately $17,500. During the first four semesters (two years), $3,000 per semester is awarded toward the out-of-state portion of tuition. During the remaining four semesters (two years), students receive $1,375 per semester. Students are encouraged to gain Utah residency during their first two years at USU. To be considered, applicants must have an admissions index score of at least 124, a minimum 3.5 GPA, and a minimum ACT score of 25 or SAT score of 1130. This award applies only to undergraduate coursework. To remain eligible for this scholarship, a student must enroll for and complete at least 15 credits each semester, for a total of 30 credits per year, and achieve a 3.5 GPA at the end of each academic year.

National Level II Scholarship. Awarded for two years, this scholarship is worth approximately $6,000. During two years, $1,500 per semester is awarded toward the out-of-state portion of tuition. To be considered, applicants must have an admissions index score of at least 117, a minimum 3.5 GPA, and a minimum ACT score of 25 or SAT score of 1130. This award applies only to undergraduate coursework. To remain eligible for this scholarship, a student must enroll for and complete at least 15 credits each semester, for a total of 30 credits per year, and achieve a 3.5 GPA at the end of each academic year.

Educational Opportunity Scholarship. Awarded for four years, this scholarship is worth approximately $17,500. During the first four semesters (two years), $3,000 per semester is awarded toward the out-of-state portion of tuition. During the remaining four semesters (two years), students receive $1,375 per semester. Students are encouraged to gain Utah residency during their first two years at USU. To be considered, applicants must have a minimum 3.0 GPA and a minimum ACT score of 19 or SAT score of 810, and must be admissible to USU. This award is based on financial need, first-generation college student status, and geographic location. Students apply by submitting an Application for Admission and Scholarship to USU.

ISU/USU Scholarship. This award is worth approximately $12,000. During four semesters (two years), $3,000 per semester is awarded toward the out-of-state portion of tuition. To be considered, an applicant must be a resident of Idaho, and must have an admissions index score of at least 117, a minimum 3.5 GPA, and a minimum ACT score of 25 or SAT score of 1130. This award applies only to undergraduate coursework. To remain eligible for this scholarship, a student must enroll for and complete at least 15 credits each semester, for a total of 30 credits per year, and achieve a 3.5 GPA at the end of each academic year.

100-Mile Radius Scholarship. This award is worth approximately $6,000. During four semesters (two years), $1,500 per semester is awarded toward the out-of-state portion of tuition. To be considered, an applicant must live within 100 miles of Utah State’s Logan campus, and must have an admissions index score of at least 113, a minimum 3.5 GPA, and a minimum ACT score of 25 or SAT score of 1130.

University Ambassador Program Scholarship. During the first four semesters (two years), $3,000 per semester is awarded toward the out-of-state portion of tuition. During the remaining four semesters (two years), students receive $1,375 per semester.
To be considered, applicants must have a minimum 3.4 GPA and a minimum ACT score of 24 or SAT score of 1090. In addition to a separate application, applicants must submit an extensive recruitment portfolio and two letters of recommendation. This award applies only to undergraduate coursework. To remain eligible for this scholarship, a student must enroll for and complete at least 15 credits each semester, for a total of 30 credits per year. An application for this scholarship can be downloaded from: http://www.usu.edu/admissions/forms/PLC-Application.pdf.

Transfer Resident Scholarships

Transfer Presidential Scholarship. Awarded for two years, this scholarship is worth approximately $5,500. During four semesters (two years), $1,375 per semester is awarded toward tuition. To be considered, applicants must have completed a minimum of 24 graded, transferable credits with a minimum 3.75 cumulative GPA.

Transfer Dean’s Scholarship. Awarded for two years, this scholarship is worth approximately $2,750. During four semesters (two years), $687.50 per semester is awarded toward tuition. To be considered, applicants must have completed a minimum of 24 graded, transferable credits with a minimum 3.50 cumulative GPA.

Educational Opportunity Scholarship. This award is worth approximately $5,500. During four semesters (two years), $1,375 per semester is awarded toward tuition. To be considered, applicants must have completed a minimum of 24 graded, transferable credits with a minimum 3.0 cumulative GPA.

Transfer Ambassador Program Scholarship. During four semesters (two years), $1,375 per semester is awarded toward tuition. To be considered, applicants must have completed a minimum of 24 graded, transferable credits with a minimum 3.75 cumulative GPA.

Transfer Dean’s Scholarship. Awarded for two years, this scholarship is worth approximately $2,750. During four semesters (two years), $687.50 per semester is awarded toward tuition. To be considered, applicants must have completed a minimum of 24 graded, transferable credits with a minimum 3.0 cumulative GPA.

ISU/USU Scholarship. This award is worth approximately $12,000. During four semesters (two years), $3,000 per semester is awarded toward the out-of-state portion of tuition. To be considered, applicants must have a minimum of 24 graded, transferable credits with a minimum 3.5 cumulative GPA.

100-Mile Radius Scholarship. This award is worth approximately $6,000. During four semesters (two years), $1,500 per semester is awarded toward the out-of-state portion of tuition. To be considered, an applicant must live within 100 miles of Utah State’s Logan campus, and must have a minimum of 24 graded, transferable credits with a minimum 3.0 cumulative GPA.

Educational Opportunity Scholarship. This award is worth approximately $12,000. During four semesters (two years), $3,000 per semester is awarded toward the out-of-state portion of tuition. To be considered, applicants must have completed a minimum of 24 graded, transferable credits with a minimum 2.75 cumulative GPA. This award is based on financial need, first-generation college student status, and geographic location. Students apply by submitting an Application for Admission and Scholarship to USU.

Transfer Ambassador Program Scholarship. During four semesters (two years), $3,000 per semester is awarded toward the out-of-state portion of tuition. This scholarship is awarded to a select group of students who demonstrate leadership and recruiting skills through experience, activities, and involvement in both school and community. In addition to the requirements for a baccalaureate degree, applicants must have an associate degree and geographic location. Students apply by submitting an Application for Admission and Scholarship to USU.

Transfer Nonresident Scholarships

National Level I Transfer Scholarship. This award is worth approximately $12,000. During four semesters (two years), $3,000 per semester is awarded toward the out-of-state portion of tuition. To be considered, applicants must have completed a minimum of 24 graded, transferable credits with a minimum 3.75 cumulative GPA.

National Level II Transfer Scholarship. This award is worth approximately $6,000. During four semesters (two years), $1,500 per semester is awarded toward the out-of-state portion of tuition. To be considered, applicants must have completed a minimum of 24 graded, transferable credits with a minimum 3.5 cumulative GPA.

ISU/USU Scholarship. This award is worth approximately $12,000. During four semesters (two years), $3,000 per semester is awarded toward the out-of-state portion of tuition. To be considered, an applicant must be a resident of Idaho, and must have a minimum of 24 graded, transferable credits with a minimum 3.5 cumulative GPA.

New Century Scholarship

The New Century Scholarship is funded by the Utah legislature to assist with the costs of postsecondary education for students who complete the equivalent of an associate degree by September 1 of the year their class graduates from high school.

The scholarship covers 75 percent of tuition costs at a Utah state-operated institution of higher education.

Terms of the Scholarship. The scholarship may be used for two years of full-time equivalent enrollment (60 credits) or until the requirements for a baccalaureate degree have been met, whichever is shorter.

The scholarship may be used at any higher education institution in the state accredited by the Northwest Association of Schools and Colleges that offers baccalaureate programs.

Recipients have four years after graduation from high school to use the award.

Eligibility. The New Century Scholarship is open to applicants who have graduated from a regionally accredited high school in the year 1999 or later. The applicant must have completed the equivalent of an associate degree from Utah State University by September 1 of the year that their class graduates from high school.

At Utah State University, the equivalent of an associate degree is defined as:

1. Completion of the General Education portion of the University Studies requirements.

2. Completion of 60 semester credits.
For more information on the classes needed to complete these requirements at Utah State University, contact:

Mary Leavitt  
Director, Science/HASS Advising Center  
Taggart Student Center, Room 302  
PO Box 1912  
Logan UT 84322-0107  
Phone: (435) 797-3883  
FAX: (435) 797-2096  
E-mail: mleavitt@hass.usu.edu

For an application, contact:  
New Century Scholarship Administrator  
State Board of Regents  
3 Triad Center  
Salt Lake City UT 84180  
Phone: (801) 321-7121  
FAX: (801) 321-7199

**Centennial Scholarship**

The Centennial Scholarship is a full- or partial-tuition scholarship that can be used at any postsecondary institution in Utah that is accredited by the Northwest Association of Schools and Colleges. To be eligible for the scholarship, students must enroll in an eligible postsecondary institution within one year of graduation.

**Amount Awarded**

1. The student who graduates at the end of the eleventh grade year shall receive a full Centennial Scholarship.

2. The student who graduates at the end of the first quarter of the twelfth grade year shall receive 75 percent of the Centennial Scholarship.

3. The student who graduates at the end of the second quarter of the twelfth grade year shall receive 50 percent of the Centennial Scholarship.

4. The student who graduates at the end of the third quarter of the twelfth grade year shall receive 25 percent of the Centennial Scholarship.

5. The student who graduates at the end of the first trimester of the twelfth grade year shall receive 67 percent of the Centennial Scholarship.

6. The student who graduates at the end of the second trimester of the twelfth grade year shall receive 33 percent of the Centennial Scholarship.

**Procedures for Using the Centennial Scholarship Certificate**

1. Upon graduation, the student obtains a Centennial Scholarship for Early Graduation certificate from his or her high school counselor.

2. The high school principal verifies that the student is an early graduate and signs the certificate. The original certificate is kept by the student. Additional copies are for school and district records.

3. The student enrolls full-time in an approved post-secondary educational institution and presents the certificate to the registrar.

4. The postsecondary educational institution verifies the student’s enrollment. The registrar completes, signs, and seals the certificate. The registrar sends the original completed certificate to the Utah State Office of Education (USOE), noting the cost of tuition.

5. USOE receives the completed certificate. It is verified for completion and duplication. USOE approves the certificate for funding and issues a warrant request to Utah State Finance for scholarship funds. A check is sent directly to the postsecondary institution for the student. Checks are sent to institutions within four to six weeks.

**University Research Fellowships**

Utah State University is known nationally for its emphasis on hands-on learning in research, scholarship, and the creative arts. University Research Fellowships of $1,000 per year (renewable) are awarded to students who successfully compete in the application and interview process. Fellows are paired with a faculty member and begin inquiry in their fields of study as freshmen, which prepares them to compete for prestigious scholarships and entry into graduate studies.

**Continuing USU Student Scholarships**

**College Scholarships.** Each college has its own scholarship application, which is available at the dean’s office and must be returned there by the given deadline. For most colleges, the application deadline is February 1.

Tuition waivers and other forms of academic scholarships are awarded to students who are or who have been students at USU. Such applicants compete with other students within their college. Student should check with their college for application requirements and deadlines.

**Private Endowment Scholarships.** Students interested in scholarships provided by private donors should contact their college to obtain information about scholarships for which they may be eligible. Application forms are available from the dean’s office of each college.
New Student Orientation and Academic Advising

New Student Orientation

New Freshmen

Newly admitted first-year students must participate in a Student Orientation, Advising, and Registration (SOAR) session before being permitted to register for classes. SOAR is designed to assist students in making a successful transition to USU. In addition to registering for classes, students have the opportunity to receive individual advice about degree requirements, as well as vital information about student services, campus life, and athletics. SOAR also gives students a chance to make new friends.

New students should be aware that a registration hold is placed on their file until some form of orientation is completed. After admission to USU, students will receive information about SOAR programs.

University Deposit. Beginning Fall Semester 2004, all new freshmen are required to reserve their spot at USU by paying a $100 deposit. The $100 will be applied toward a student’s account. It will cover the cost of the SOAR option selected, and any remaining balance will go toward tuition and fees for fall semester. A deposit is not required of students who begin classes in the spring or summer.

Course Clusters. There is an incentive for new freshmen who will begin attending USU during Fall Semester 2004. Those who pay the $100 deposit and register for SOAR prior to April 1 will be able to preregister for a cluster of courses, prior to registration for returning students. Those who pay the $100 deposit and register for SOAR after April 1, but before the May 1 deadline, will still be allowed to preregister for a cluster of courses. The earlier students submit their deposit and register for SOAR, the more likely they are to get the course cluster of their choice and the orientation date of their choice. Students will not be allowed to modify their schedules until they participate in SOAR.

Students who miss the May 1 deadline must still pay the University deposit and register for SOAR. However, they will not be able to preregister for a course cluster. Course clusters are not available for students who begin classes in the spring or summer.

For further information or to receive more information about SOAR, call New Student Orientation at (435) 797-0283 or (800) 606-4878, or visit the SOAR website at: http://www.usu.edu/soar.

New Transfer Students

New transfer students are required to contact their academic advisor before registering for classes. New transfer students are encouraged to participate in the entire SOAR process, but orientation is optional. A student is considered to be a transfer student if he or she has completed at least 24 semester credits of post-high school work at another institution. This does not include concurrent enrollment or AP credits.

Academic Advising

Upon admission to USU, all new students are assigned to an academic advisor. During the New Student Orientation, students meet with their advisors, plan their class schedules, and register for classes. Advising is the process encompassing development and delivery of accurate and up-to-date information regarding career options, educational programs, courses of instruction, resources, policies, and procedures to aid students in pursuing their educational goals.

Each student should consult with his or her academic advisor on a regular basis, and as needed, until the student’s program of study is completed. The advisor can help the student to select, plan, and complete a program of study which is consistent with the student’s interests, abilities, and needs, and can assist the student in selecting appropriate courses in the proper sequence to complete all requirements for graduation.

Each student is responsible for learning and completing graduation requirements for academic programs selected. Major Requirement Sheets showing University, college, and departmental requirements for each academic program are provided by the student’s academic department or college, and all sheets are also available in University Advising and Transfer Services. This office provides students with information and advisement concerning University academic requirements, policies, procedures, programs, and services.

The College or Division Academic Service Centers provide students with information and advisement concerning academic requirements, policies, procedures, programs, and services of that college or division. A listing of Academic Service Centers is provided below:

University Advising and Transfer Services
Student Center 304, (435) 797-3373

College Academic Service Centers
College of Agriculture
Agricultural Science 218, (435) 797-2383

College of Business
Business 310A, (435) 797-2274

College of Education and Human Services
Education 101, (435) 797-1443

College of Engineering
Engineering 310, (435) 797-2705

College of Humanities, Arts and Social Sciences
Student Center 302, (435) 797-3883

College of Natural Resources
Natural Resources 120, (435) 797-2448

College of Science
Eccles Science Learning Center 245, (435) 797-2478

An Advisor List by Major is available on the web at: http://www.usu.edu/ats/advisorlist.
**Glossary of University Terms**

“**A**” Pin. Presented to undergraduate students who have received all **A** grades (4.0 GPA) for 15 or more graded credits each semester during two consecutive semesters in residency. Courses for which a **P** (Pass) grade is received do not qualify for graded credits.

**Academic Advising.** Assistance to students in choosing courses by providing information about University Studies Requirements, majors, various academic programs, and academic policies and procedures. Advisors may also assist students in establishing their educational and career goals.

**Academic Dismissal.** The status of a student who becomes subject to suspension for a third time. Students who have been dismissed may apply for readmission to the University after a layout of five calendar years.

**Academic Probation.** The status assigned to a sophomore, junior, or senior with a cumulative GPA of less than 2.0. See page 37 for more information.

**Academic Standing.** A student’s academic standing is determined jointly by the number of credit hours attempted and the number of quality points earned. There are five categories of academic standing: good standing, academic warning, academic probation, academic suspension, and academic dismissal. See page 37 for more information.

**Academic Suspension.** The change in status that occurs when a student on academic probation has a semester GPA of less than 2.0. A student on academic suspension may apply for readmission after a one-semester layout. See page 37 for more information.

**Academic Warning.** The status assigned to a freshman student with a cumulative GPA of less than 2.0. See page 37 for more information.

**Adjunct Faculty.** Part-time certified instructors.

**Advanced Placement (AP).** Exams offered at the high school level only. University credits may be acquired through the AP examinations. These credits may be used to fill General Education requirements, and may also be accepted as equivalent to specific courses. See pages 53-54 for more information.

**Advisor.** A faculty or staff member who provides students with academic information about University, college, and departmental graduation requirements; assists students in the development of a course of study; helps students to understand the expected standards of achievement and likelihood of success in certain areas of study; and refers students to available campus resources to meet individual needs.

**Alumni.** Graduates or former students.

**Articulation.** A term that is used to indicate that a course taken at another institution is equivalent to a course at USU.

**Articulation Agreements.** Documents that formally acknowledge how credits or associate degrees from other institutions equate to USU courses and requirements.

**Attempted Hours (AHRS).** The number of credit hours for which a student is enrolled.

**Audit.** Registration for and participation in all functions of a course except tests and other graded exercises. Generally, no credit is given for an audit (a grade of AU is assigned), but courses that students have audited will appear on the transcript and may be repeated for credit.

**Bachelor of Arts Degree vs. Bachelor of Science Degree.** The main difference between these two degrees is a foreign language requirement. Students who complete two years’ training or equivalent in an approved foreign language, or one year or equivalent in each of two foreign languages, may qualify for a Bachelor of Arts degree. See page 50 for further information. Most other baccalaureate degrees are awarded as a Bachelor of Science degree.

**Bachelor’s Degree.** A degree in an academic discipline which requires completion of a minimum of 120 semester credit hours, University Studies requirements, and a chosen major. Students must meet the minimum GPA requirements for their intended major.

**Breadth Requirements.** Courses that are part of the General Education requirements, and are intended to introduce students to different disciplines. At USU, all students must take at least one course or its equivalent in each of the following six categories: American Institutions, Creative Arts, Humanities, Life Sciences, Physical Sciences, and Social Sciences.

**Call Number.** A five-digit code that identifies a specific course.

**Cashier.** The financial officer of the University who receives payment of tuition and miscellaneous fees.

**Certificate.** A document certifying that one has fulfilled the requirements of and may practice in a certain vocation.

**Class Rank.** Student’s ranking of being a freshman (less than 30 credits), sophomore (30-59 credits), junior (60-89 credits), or senior (90 or more credits), based on the number of college-level credit hours earned.

**Closed Class.** A class that has been filled by the maximum number of students allowed for that class.

**College.** An academic division in a university. A college is composed of academic departments and is headed by a dean. USU has
seven colleges: Agriculture; Business; Education and Human Services; Engineering; Humanities, Arts and Social Sciences; Natural Resources; and Science.

College Level Examination Program (CLEP). A standardized examination in college-level subject matter. Subject examinations cover material offered in specific advanced-level courses. Credits may be acquired through the CLEP examinations. These credits may be used to fill General Education requirements, and may also be accepted as equivalent to specific courses. See pages 55-56 for more information.

College Work-Study. A form of financial aid based on need which provides students with paid employment while in school.

Competency Test. A test which is used to determine if a student has the acquired knowledge of a college-level course.

Complete Withdrawal. The process of withdrawing from all courses before a semester has ended.

Composite Major. When elements of two major programs are combined into one major program. For example, the Elementary Education/Special Education major is an approved composite of two different majors.

Computer and Information Literacy (CIL). A computer examination that consists of six modules: information law and ethics, information resources, document processing, operating systems and environments, spreadsheets, and presentations. CIL is part of the General Education requirements.

Concurrent Enrollment. When a high school student is enrolled in a university course for which the student simultaneously receives high school and university credit.

Connections (University Connections Course). An orientation and transition-to-college course.

Convocations. A lecture series.

Co-op. Two or more related internship work experiences.

Corequisites. Two or more courses which must be taken during the same semester, because the work in one course supplements or reinforces what is taught in the other.

Course Fee. A fee that is attached to a specific course, in addition to tuition.

Course Load. The number of credit hours carried by a student during a given semester. Students need to average a minimum of 15 credit hours per semester in order to graduate in four years.

Credit Hours. Credits are related to the number of hours of instruction per week during the academic term.

Cum Laude. An honor designated for students who graduate with a cumulative GPA between 3.500 and 3.799.

Curriculum. A series of courses which meet a particular academic or vocational goal.

Dean. College or university administrative official. An academic dean usually heads a college within the university.

Dean’s List (Honor Roll). A recognition given to students who earn a minimum 3.500 GPA in 15 or more graded credits, except for summer semester for which 12 or more graded credits are required.

Declaration of Major. A process whereby students formally notify the Registrar’s Office of the major which they choose to include in their degree program.

Deferred Admission. When a student is accepted for a specific term, but chooses to defer his or her admission until a future term.

Degree Audit. A computer-generated summary of academic progress showing courses completed and courses needed. USU students can obtain an unofficial degree audit through On Course; an official degree audit is done for graduating students once they have completed their Application for Graduation.

Department Head. The administrative head of an academic department.

Depth Education Requirements. Courses that are part of the University Studies requirements and are intended to provide students with more in-depth background in different disciplines.

Discipline. A subject area. English, history, chemistry, and elementary education are examples of disciplines.


Drop/Add. The process used if students need to change a schedule for which they have already registered.

Dual Major. Any two majors that are completed at the same time. Students must complete all requirements for both majors. For example, a student may get a dual major in History and English.

Earned Hours (EHRS). The number of credit hours in which a student earns an A, B, C, D, or P grade. Earned hours count toward the 120 credits needed for graduation.

Elective. A college-level course or subject taken by a student which counts as credit earned toward graduation requirements, but is not required for a major, minor, or University Studies.

Emeritus Faculty Member. A faculty member who has honorably retired from his or her position with a university.

Emphasis. An approved area of study, having a specific curriculum, within a particular undergraduate major.

Extension Programs. Outreach programs for students who do not attend traditional daytime classes on the main campus. Extension programs include Independent Study and Time Enhanced Learning, as well as courses offered at remote locations.
**Family Educational Rights and Privacy Act (FERPA).** A law that (1) provides that students will have access to inspect or review their educational records and (2) protects the rights of a student to privacy by limiting access to the educational record without express written consent.

**Financial Aid.** Scholarships, grants, loans, and work assignments which are awarded to a student to help defray costs, in part or in whole, college-related expenses.

**Full-Time Student.** A student registered for 12 or more credit hours during a semester. In order to graduate after completing eight semesters of study, a student must register for an average of 15 credit hours per semester.

**General Catalog.** The official Utah State University document pertaining to academic, business, and extracurricular matters. It functions as a contract for graduation requirements for students upon their entry into the University.

**General Education Requirements.** A set of requirements that all candidates for a bachelor’s degree, regardless of major, must satisfy. At USU, General Education is part of the University Studies Requirements. For more information, see pages 43-44.

**Grade Point Average (GPA).** The ratio of the number of quality points earned divided by the number of quality hours.

**Graduate Student.** A student who has earned a bachelor’s degree and is working toward a master’s, doctorate, or other advanced degree.

**Graduation Guarantee Program.** A program designed to assist students in completing their degrees in the most efficient and cost-effective manner.

**Grant.** Student financial aid based on need. Grants do not have to be repaid.

**Hold.** An official action taken by the University to possibly prevent student registration or receipt of grades and transcripts until a student satisfies a requirement. For example, a registration hold is placed on a new student until he or she has met with an academic advisor.

**Honors Program.** A program for high-achieving students. Program members may work toward one of three different Honors degrees: Department Honors, Department Honors with Honors in University Studies, and University Honors.

**Incomplete Grade (I).** A temporary grade that may be assigned when a student is unable to complete all of the work in a course due to extenuating circumstances, but not due to poor performance. An incomplete grade request is initiated by the student. The student is then required to complete the work by the time agreed upon, up to a maximum of 12 months. A written plan is required and is filed with the student, instructor, and department.

**Independent Study Courses.** Courses for which a student does not have regular class meetings. The student works independently and makes arrangements with the instructor to submit assignments and to take examinations. At USU, these courses are offered through Continuing Education Time Enhanced Learning, usually by online correspondence and/or CD.

**Intent to Transfer Program.** A program designed to assist transfer students in their transition to USU. Students sign up for the program while they are still attending another institution. These students complete a contract that is signed by both the advisor at their current institution and a USU advisor. The program is designed to ensure that students transfer with as many completed credits as possible that will count toward the USU University Studies and major requirements.

**Internship.** An opportunity for students to combine a career-related work experience with academic coursework.

**Land Grant.** A grant of land made by the government. USU belongs to a family of institutions known as land-grant universities.

**Leave of Absence.** A program for undergraduate students who plan to leave USU at the end of a semester, intend to return, and have an expected return date. This program is beneficial for students who intend to perform humanitarian service or serve in the military.

**Letter of Completion.** A letter indicating that a student has completed the General Education requirements of a university. The letter is only used when a student transfers to another institution and needs verification that the General Education requirements have already been satisfied.

**Loan.** Loaned money which must be repaid over a period of time. Typically, a student must repay the loan amount plus interest.

**Lower-Division Courses.** Courses numbered at the 1000- and 2000-level that are usually taken during a student’s freshman and sophomore years.

**Magna Cum Laude.** An honor designated for students who graduate with a cumulative GPA between 3.800 and 3.949.

**Major.** An approved concentrated area of study, having a specific curriculum, in an academic discipline. A major usually requires 30 to 70 semester credit hours of coursework.

**Matriculated Student.** A student who enrolls or registers in a college or university as a degree candidate (necessary for financial aid).

**Matriculation.** The process of applying and gaining acceptance into a degree program at a college or university. Being matriculated is important for academic advisement and financial aid purposes, and allows students to take advantage of all services within the University.

**Minor.** An approved secondary or supplementary field of study. A minor does not require as much coursework as a major.

**Nonmatriculated Student.** An individual who may be enrolled in courses at a college or university, but is not working toward a degree.
Part-Time Student. A student who registers for fewer than 12 semester credit hours.

Philanthropy. An active effort to promote human welfare. At USU, this term often refers to philanthropic gifts to the University to be used for purposes such as scholarships, research, or construction of buildings and other facilities.

PIN Number. A personal identification number that is used as a password. At USU, a student’s initial PIN Number is his or her birthdate (MMDDYY). To maintain security, students are encouraged to change their PIN Number.

Placement Test. A test given to determine the appropriate level at which to “place” a student in certain courses. At USU, the most common placement tests are used for mathematics.

Plateau Tuition. A flat rate of tuition assessed to students who register for 13 to 18 credits. In general, the tuition amount increases for each credit a student takes up through 13 credits. There is no tuition increase between 13 and 18 credits. The tuition amount increases again for students who enroll for more than 18 credit hours.

Portfolio. An arrangement of documents and/or drawings that are used in some majors and degree programs for admission decisions, assessment, or career placement.

Practicum. A course of study designed especially for the preparation of teachers and clinicians. A practicum involves the supervised practical application of previously studied theory.

Prerequisite. A course students must take prior to (and in preparation for) another course (which is usually more advanced). A different kind of prerequisite may require a student to be enrolled in a certain major or certain academic classification in order to qualify for enrollment in the course.

Priority Registration. The order in which students may register for classes. A priority registration schedule indicates the earliest possible day a student may register for classes. Priority is given first to graduate students, followed by seniors, juniors, sophomores, and freshmen, based on earned credit hours.

Professional Ranks. Faculty rank, including lecturer, instructor, assistant professor, associate professor, and professor. Some faculty ranks are preceded by “research” or “adjunct.”

Provost. The chief academic officer of the University.

QUAD. This term has two meanings at USU. (1) The Quad is the grassy area directly behind Old Main. (2) QUAD (Quick Access to University Data) is the web-based computer program which USU students can access for grades, transcripts, financial aid, and account information. The QUAD program allows students to register, drop, and add classes.

Quality Hours (QHRS). Credit hours in which a student earns an A, B, C, D, or F grade. Quality hours are credit hours used in the calculation of the grade point average.

Quality Points (QPTS). The value assigned to each grade. For example, an A earns 4 quality points for each semester credit hour attempted. For a 3 semester credit hour course in which an A was earned, a student would receive 12 quality points.

Recitation. A class period especially in association with and for review of a lecture.

Registrar. The administrative officer who maintains enrollment records and certifies the academic standing, as well as the fulfillment of graduation requirements, for all enrolled students.

Registration. The process of enrolling in classes for an upcoming semester. Registration may be accomplished by submitting certain forms to the Registrar’s Office, or by using the QUAD program.

Remedial Course. A course numbered lower than 1000. Remedial courses will not satisfy baccalaureate requirements, are not transferable, and are not calculated in a student’s grade point average. USU offers remedial courses in English and mathematics. Students enrolling in a remedial course at USU must usually pay a remedial course fee, in addition to regular tuition.

Residency. A classification for tuition purposes. Utah residents pay lower tuition than nonresidents.

Rhetoric Associates. Students with outstanding communication skills in reading, writing, and speaking who are selected to help other students. Rhetoric Associates are assigned to serve as initial readers for 10-15 students in a class, following up their written comments with individual conferences.

Sabbatical Leave. A periodical leave of absence during which a person interrupts his or her normal work to wholly devote time to further intensive study. This term is usually applied to a sabbatical leave taken by a faculty member.

Schedule of Classes. The publication which includes courses offerings for a specific term and year.

Scholarship. Student financial aid based on academic achievement, need, or a combination of factors. Scholarships do not have to be repaid, but philanthropy is encouraged. In addition, students who receive endowed scholarships are highly encouraged to express gratitude to donors.

Semester. An academic term of 15 weeks, followed by one week of final exams. At USU, there are two 15-week semesters, plus summer sessions, during each academic year.

Space Grant. Funds distributed by the National Aeronautics and Space Administration (NASA) to USU as part of the National Space Grant College and Fellowship Program.

Specialization. An approved area of study, having a specific curriculum, within a particular graduate degree.

Student ID Number. A nine-digit code that uniquely identifies each student. For most students, the social security number is used as the student ID number.
Summa Cum Laude. An honor designated for students who graduate with a cumulative GPA between 3.950 and 4.000.

Supplemental Instruction (SI). A program in which a student who has successfully completed a University Studies class is hired to attend all class sessions and conduct review sessions. This student helps other students develop study strategies geared at enhancing academic achievement in that class.

Syllabus. The document that a professor provides as a course outline. A syllabus will usually include assignments, due dates, test dates, grading procedures, and attendance policies.

Tenure. A status granted to a faculty member after a trial period (usually six years). Tenure gives protection from summary dismissal. During the probationary period, faculty on a tenure track are reviewed intermittently on an annual review. Tenured faculty are subject to post-tenure review as well.

Thesis. A contribution to the field of knowledge based on a student’s own research or a treatment and presentation of known subject matter from a new point of view.

Transcript. The official record of a student’s academic work at a university, listing credit courses, grades, and credit hours earned or attempted by a student. At USU, an official transcript may be obtained from the Registrar’s Office, and an unofficial transcript can be viewed from the QUAD program.

Transfer Credit. Credit which was earned at another college or university, and which is accepted by USU.

Transfer Student. A student is considered to be a transfer student if he or she has completed at least 24 semester credits of post-high school work at another institution. This does not include concurrent enrollment or AP credits.

Tuition. The amount charged per semester credit hour for instruction at a college or university.

Tutor. An individual who provides private instruction or coaching.

Undeclared Major. The category for exploratory students who have not yet decided upon a major program.

Undergraduate. A college or university student who has not yet earned a bachelor’s degree.

Undergraduate Teaching Fellows. A program offering outstanding students an opportunity to work in meaningful academic employment within their major field. Students chosen as Teaching Fellows are assigned to work with a faculty member in the classroom and are supervised by a faculty mentor.

University Studies Requirements. Requirements that all students, regardless of major, must satisfy in order to qualify for a bachelor’s degree. For more information, see pages 42-49.

Upper-Division Courses. Courses numbered at the 3000-level or higher that are usually taken during a student’s junior and senior years.

Webmail. USU’s e-mail system that can be accessed through the Worldwide Web.

Common USU Acronyms

ARC  Academic Resource Center
ASUSU  Associated Students of Utah State University
ATS  Advising and Transfer Services, University
BAI  Breadth American Institutions
BCA  Breadth Creative Arts
BHU  Breadth Humanities
BLS  Breadth Life Sciences
BPS  Breadth Physical Sciences
BSS  Breadth Social Sciences
CI  Communications Intensive
CIL  Computer and Information Literacy
CL  Communications Literacy
DHA  Depth Humanities and Creative Arts
DRC  Disability Resource Center
DSC  Depth Life and Physical Sciences
DSS  Depth Social Sciences
EHRS  Earned Hours
HASS  College of Humanities, Arts and Social Sciences
HPER  Health, Physical Education and Recreation
QHRS  Quality Hours
QI  Quantitative Intensive
QL  Quantitative Literacy
QPTS  Quality Points
QUAD  Quick University Access to Data
          (Web registration system)
SI  Supplemental Instruction
SOAR  Student Orientation, Advising, and Registration
STAB  Student Activities Board
TSC  Taggart Student Center
All students attending classes must be registered. Students are officially registered when all tuition and fees have been paid in full. Failure to pay tuition and fees by the published fee payment deadline may result in courses being voided. Students are responsible for dropping courses for which they do not wish to receive a grade. Detailed registration instructions are printed in the University Schedule of Classes, which is published each semester.

Eligibility. Only eligible students may register for courses at the University. An eligible student is either continuing from the previous year or has been admitted or readmitted to the University.

Registration Procedures. The University Schedule of Classes lists each semester’s course offerings, dates, times, places, and procedures for registration and fee payment. It may be purchased at the University Bookstore or accessed at:
http://www.usu.edu/registrar/schedules/index.html

Late Registration. A $20 late registration fee is assessed beginning the first day of classes. Students must complete registration by the end of the third week of the semester.

Assignment of Advisor. When undergraduate students have been admitted to the University and have indicated their proposed field of study, they are assigned an advisor according to their major. Students are initially assigned to the default advisor or advising office for their individual major. In some cases, the default advisor is a temporary advisor who may assign students to a permanent advisor after their initial meetings with each student. In some colleges, students may be assigned to one advisor until they complete their lower-division coursework, and then be assigned to another advisor when they begin working on their upper-division coursework. Advising systems vary from college to college within the University. Students may access a listing of advisors by major by going to: http://www.usu.edu/ats/advisorlist

Full-time Status. The minimum registration load for a full-time undergraduate student is 12 credits. Students who desire to graduate in four years (eight semesters) must average a semester load of at least 15 credits per semester. To be eligible for student body offices, students are required to be registered for 12 or more credits. Students on scholarships must be registered for 15 or more credits, unless otherwise indicated. Veterans and students eligible for a veteran’s educational allowance are required to be matriculated and registered for 12 or more credits (for undergraduate students) or 9 or more credits (for graduate students) to qualify for full educational benefits. Students registered for less than 12 credits should contact the Veterans Services Office to determine if they are eligible for partial benefits.

Auditing Classes. Admitted students who wish to audit a class must register as auditors. Auditing is dependent on space, resource availability, and instructor approval. No credit or grade points will be granted. The regular tuition and course fees will be assessed. At no future time may students request or receive credit for the audited course by any other means than by officially registering for the course and doing the required work. Audit requests, approved by the instructor, must be submitted to the Office of the Registrar, and tuition and fees must be paid at the Cashiers Office, before class attendance is permitted. Students are not permitted to register as auditors during Priority Registration.

House Bill 60 permits Utah residents 62 years of age or older to audit regular university classes offered during the day or offered through the Extension Class Division. However, space in many university classes is limited. Classes which are full at the time of an audit request are unavailable. Credit seeking, full-tuition paying students shall have first priority in the registration process. A flat fee of $10 per semester is charged for House Bill 60 registration.

Pass (P), D+, D, F Option. Students may register for a Pass (P), D+, D, F option. The grade of Pass (P) indicates academic achievement of not less than C-. Credits for which the Pass (P) grade is received are not quality hours, and are therefore not used in the calculation of a student’s grade point average. At no future time may the student request a letter grade, once the P, D+, D, F option has been requested. (See page 36 for more information.)

Adding Courses. Courses may be added for credit or audit. An instructor’s signature is required beginning the second week of the semester (sixth day of classes). Classes may be added through the first 20 percent of the class meetings. (Check the Semester at a Glance in the current Schedule of Classes for the exact date.) Following the add deadline, the Provost’s Office must also approve any add request. All requests for audit registration must be approved by the instructor and must be submitted to the Office of the Registrar, Student Center 246.

Dropping Courses. Students who do not attend a class during the first week of the term or by the second class meeting, whichever comes first, may be dropped from the course by the instructor. (This does not remove responsibility from the student to drop courses which he or she does not plan to attend.)

Students may drop courses without notation on the permanent record through the first 20 percent of the class. If a student drops a course following the first 20 percent of the class, a W will be permanently affixed to the student’s record. After 60 percent of the class is completed, the student’s academic advisor must sign any drop request, and a W with a grade assigned by the instructor will be entered on the student’s permanent record. A student may not drop a course after 75 percent of the class is completed. (Check the Semester at a Glance in the current Schedule of Classes for exact dates.)

In the event that a student registers for a course which is later cancelled, it is the responsibility of the department to officially cancel the class with the Scheduling Office, and the student’s responsibility to drop the course for a full refund.

A student may not drop all of his or her classes without an official withdrawal from the University.
**Leave of Absence.** Students who wish to discontinue their studies for one or more semesters (other than summer semester) must file a *Leave of Absence* form with either the Financial Aid Office (SC 106) if the student has aid, a scholarship, or a tuition waiver, or with the Registrar’s Office (SC 246) for all other students. Leaves of Absence are generally granted and reviewed on a yearly basis for reasons relating to: illness or health, military service, employment, humanitarian or church service, family responsibilities, and financial obligations. The standard leave period is one year. Allowances will be made for military activation, church or humanitarian service, and for those having extenuating circumstances.

A student must apply for a leave of absence for a current semester *no later than* the last day of classes for that semester. USU’s dropping courses policy explains how a leave of absence will affect a student’s transcript.

A student who takes a leave of absence must officially notify the Registrar’s Office of his or her intention to return to USU from leave. This *must* occur prior to registration. In most cases, the student will not need to apply for readmission.

**Complete Withdrawal from the University.** Complete withdrawal is initiated at the Financial Aid Office (SC 106) for those having financial aid, at the Veterans Services Office (SC 204) for those receiving veterans benefits, at the International Students and Scholars Office (SC 313) for all international students, or at the Registrar’s Office (SC 246) for all other students. No one will be permitted to withdraw from the University once final examinations have begun. The date of the official withdrawal is the date the withdrawal form or letter is received. A student who withdraws must be accepted for readmission before he or she may enroll again.

**No-test Days.** A five-day period designated as No-test Days precedes the five days of final examinations which are normally scheduled at the close of each academic semester. During No-test Days, no major examinations, including final examinations, will be given in order that students may concentrate on classwork, the completion of special assignments, writing projects, and other preparation for duly scheduled final examinations.

**Proof of Identification.** In order to receive University services, photo identification must be presented. Each admitted student who completes the registration process for a regular semester will be issued a student identification card. This photo identification card is valid for the duration of the student’s enrollment at Utah State University. Photo IDs are issued throughout the semester by the Card Office, Student Center 212.

**Change of Address.** It is the responsibility of the student to keep the Office of the Registrar informed of address changes by completing a Change of Address form available at the Registrar’s Office (SC 246) or by using the Student QUAD program on the web:

http://www.usu.edu/registrar/quad/index.html
Records

Office of the Registrar: Student Center 246
Phone: (435) 797-1116
FAX: (435) 797-4077

The custodian of educational records at Utah State University is the Office of the Registrar.

Student Classification. At the beginning of each semester, students are classified for that semester as follows:

<table>
<thead>
<tr>
<th>Credit Hours Earned</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-29</td>
<td>Freshman</td>
</tr>
<tr>
<td>30-59</td>
<td>Sophomore</td>
</tr>
<tr>
<td>60-89</td>
<td>Junior</td>
</tr>
<tr>
<td>more than 89</td>
<td>Senior</td>
</tr>
</tbody>
</table>

Number of Credits Awarded for Courses

Traditional Courses. The standard for academic course credit, as identified by the Northwest Association of Schools and Colleges and followed by USU, is that one credit be awarded for three hours of student work per week during a 15-week semester. For traditional courses, this is interpreted as one 50-minute class period plus two hours of study per week for each credit. Note that one 50-minute period per week throughout a 15-week semester equals 12.5 contact hours per credit. This standard should be used in determining credits for courses which do not meet for 50-minute periods.

Nontraditional Courses. In addition to courses taught during regular academic terms, other educational experiences (such as workshops, institutes, short courses, and conferences) are offered at USU. Because of the short time period in which they are offered, these nontraditional courses may not require extensive out-of-class work by students. When little or no out-of-class work is required, the standard for credit for such courses is 20 contact hours per credit.

Privacy Rights

The Family Educational Rights and Privacy Act, a federal law commonly referred to as FERPA or the Buckley Amendment, (1) provides that students will have access to inspect and review their educational records upon written request with identity verification and (2) protects the rights of a student to privacy by limiting access to the educational record without express written consent.

Definitions. A student is defined as any individual who is attending or has attended Utah State University. (Note: Certain rights are extended to the parent(s) of a dependent student, where dependency is defined by Section 152 of the Internal Revenue Code of 1954.) An educational record is any record (1) directly related to a student, and (2) maintained by Utah State University or by an agent of the University.

Notices. With respect to a student’s educational records, FERPA affords a student the right: (1) to inspect and review the student’s educational records; (2) to request the amendment of the student’s educational records to ensure that they are not inaccurate, misleading, or otherwise in violation of the student’s privacy or other rights; (3) to consent to disclosures of personally identifiable information contained in the student’s educational records, except to the extent that FERPA authorizes disclosure without consent; (4) to file with the U.S. Department of Education a complaint concerning alleged failures by Utah State University to comply with the requirements of FERPA, if a complaint cannot be resolved within the University; and (5) to obtain a copy of the Student Records Policy and Procedures for Utah State University.

Categories of Records. There are two categories of educational records under FERPA. Directory information (or releasable information) is general information that may be released to anyone without the consent of the student, unless the student indicates otherwise. Personally identifiable information (or nonreleasable information) includes all information not defined as directory information and may not generally be released without consent of the student.

Utah State University has designated the following as directory information for a student:

- Releasable Information/Directory Information
  - Name
  - Local and permanent address
  - Electronic mail address
  - Telephone number
  - Date of birth
  - Residency status
  - Degrees and awards received
  - Most recent institution attended by the student
  - Academic level
  - Major field of study
  - Department or college
  - Participation in officially recognized activities/sports
  - Dates of attendance and graduation
  - Weight/height of members of athletic teams
  - Current semester schedule of classes
  - Photographs

- Nonreleasable Information
  - All Other Information

Release of Information. A Release of Information form is available at the Registrar’s Office. This form may be completed by students wishing to grant access to their educational record to a third party (e.g., parents or spouse). Students accessing educational records must provide identification. It is important to note that, for educational purposes, University officials have access to all student records.

Grading

For work in graded courses, A shall denote exceptional performance, B above average performance, C satisfactory performance, D poor performance, and F failing performance. Letter grades may be modified by plus (+) or minus (-) symbols (no A+ or D-).

Quality Hours and Quality Points. A quality hour is defined as a credit which is used in calculating a student’s grade point average (GPA). All graded credits, except for those in which the Pass (P) or Incomplete (I) grade is received, qualify as quality hours. Quality points are assigned to each letter grade earned, as noted below:
Grading

In some cases, a student may be unable to complete all of the courses for which they are registered by the end of the semester. In such cases, computations of grade point average will be made as if the missing work were zero. Documentation of the two grades will be given, an “I” and a letter grade for the course, at the end of the semester to finish the work. If the instructor agrees, the grade of Incomplete (I) should generally not require a complete repeat of the course. A student should not register for the course. All “I” grades must be changed to letter grades prior to graduation, regardless of whether or not the course is required for the degree.

Incomplete (I) Grade. Students are required to complete all courses for which they are registered by the end of the semester. In some cases, a student may be unable to complete all of the coursework because of extenuating circumstances, but not due to poor performance or to retain financial aid. The term “extenuating” circumstances includes: (1) incapacitating illness which prevents a student from attending classes for a minimum period of two weeks, (2) a death in the immediate family, (3) financial responsibilities requiring a student to alter course schedule to secure employment, (4) change in work schedule as required by employer, or (5) other emergencies deemed appropriate by the instructor. The student may petition the instructor for time beyond the end of the semester to finish the work. If the instructor agrees, two grades will be given, an “I” and a letter grade for the course computed as if the missing work were zero. Documentation of the circumstances cited to justify an incomplete grade is required.

The student is required to complete the work by the time agreed upon, or not longer than 12 months. If no change of grade is submitted by the instructor within the prescribed period, the “I” will be removed and the letter grade originally submitted with the “I” will remain as the permanent grade for the course. Arrangements to complete the missing coursework are to be made directly with the instructor awarding the “I” grade, and in accordance with departmental policy. In the absence of the original instructor, special circumstances must be handled by the department head. Documentation of required work to be completed in order to remove the “I” grade must be filed with the department office. The “I” grade should generally not require a complete repeat of the course.

Scholastic Marks, which do not qualify for quality hours, are as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Incomplete</td>
<td>Pass</td>
</tr>
<tr>
<td>W</td>
<td>Withdrawal</td>
<td>AU Audit</td>
</tr>
</tbody>
</table>

Grade Point Average. When a student is graded, the quality points for the grade are multiplied by the quality hours to derive the total quality points. The total quality points are then divided by the total quality hours to determine the GPA. GPAs are rounded to the nearest thousandth of a grade point.

Grading Options. Ordinarily a letter grade is given upon completion of a course, unless a grading option of “Audit” or “Pass/D+, D, F” is indicated at the time of registration or within prescribed deadlines.

Pass/D+, D, F Option. A student desiring a Pass, instead of a regular grade in a course, must request a pass/fail form from the Registrar’s Office, Student Center 246. This form must be signed by the student’s advisor and returned to the Registrar’s Office by the 60 percent point of the course. (Check the Semester at a Glance in the current Schedule of Classes for the exact date.)

A grade of P indicates academic achievement of not less than C-. All students, including freshmen, may take courses on a P/D+, D, F basis. A minimum of 72 of the 120 credits required for the baccalaureate degree must carry the A, A-, B+, B, B-, C+, C, C-, D+, D designation, unless the major department or college changes this limitation. All CLEP, AP, and other special examination credits are considered P and are included in the total P grades permitted. The P shall also be used to record on the student’s permanent academic record all special credit in which other grades are inappropriate. Many departments do not allow students to take required courses on a P/D+, D, F option, and many professional or graduate schools may not accept P grades. Therefore, an advisor’s signature is required, before students may take courses under this option.

Incomplete (I) Grade. Students are required to complete all courses for which they are registered by the end of the semester. In some cases, a student may be unable to complete all of the coursework because of extenuating circumstances, but not due to poor performance or to retain financial aid. The term “extenuating” circumstances includes: (1) incapacitating illness which prevents a student from attending classes for a minimum period of two weeks, (2) a death in the immediate family, (3) financial responsibilities requiring a student to alter course schedule to secure employment, (4) change in work schedule as required by employer, or (5) other emergencies deemed appropriate by the instructor. The student may petition the instructor for time beyond the end of the semester to finish the work. If the instructor agrees, two grades will be given, an “I” and a letter grade for the course computed as if the missing work were zero. Documentation of the circumstances cited to justify an incomplete grade is required.

The student is required to complete the work by the time agreed upon, or not longer than 12 months. If no change of grade is submitted by the instructor within the prescribed period, the “I” will be removed and the letter grade originally submitted with the “I” will remain as the permanent grade for the course. Arrangements to complete the missing coursework are to be made directly with the instructor awarding the “I” grade, and in accordance with departmental policy. In the absence of the original instructor, special circumstances must be handled by the department head. Documentation of required work to be completed in order to remove the “I” grade must be filed with the department office. The “I” grade should generally not require a complete repeat of the course. A student should not register for the course. All “I” grades must be changed to letter grades prior to graduation, regardless of whether or not the course is required for the degree.

Repeating Courses. Students may repeat any course at USU for which they have previously registered. They may also retake a course originally taken at an institution where USU has an articulation agreement, if the agreement identifies a specific USU course as being equivalent to the one the student desires to replace. All other decisions dealing with retaking courses, including courses taken under the quarter system, will be determined by the department in which the course is offered.

The number of times a student can take the same class is limited to a total of three times (once, plus two repeats). Beyond three attempts, the student’s dean must approve additional registration for the class.

The total number of repeats allowed is limited to ten. Students who exceed this limit will have an academic hold placed on their registration. Beyond ten repeats, the student’s academic dean must approve additional registration.

This policy does not apply to courses repeatable for credit. When a course listed in the General Catalog is identified with the Repeat Symbol (®), the course may be taken more than once for credit.

When a course not designated as repeatable for credit is repeated, the most recent grade and quality hours are used to recalculate the student’s grade point average. The previous grade and quality hours for the same course will remain on the student’s academic record, but will not be calculated in the grade point average or total quality hours completed. A course designated as repeatable (®) may be repeated to receive a higher grade, and the most recent grade and quality hours will be used in recalculating the student’s grade point average. The student is responsible to declare repeated courses to the Registrar’s Office by completing a Record Adjustment-Repeated Course form.

Change of Grades. The instructor of record of a course has the responsibility for any grade reported. Once a grade has been reported to the Office of the Registrar, it may be changed upon the signed authorization of the instructor of record who issued the original grade. In case the instructor is not available, the department head has authority to change the grade. This applies also to the grade of Incomplete (I). A change of grade after more than one year also requires the signature of the academic dean of the college in which the course is offered. (See USU Student Policy Handbook—Student Appeal Procedures.)

Final Grade Report. Final grades are available on the web at http://www.usu.edu/registrar/quad/index.html. Grades are also available on the TouchTone phone system, (435) 797-8888. Official transcripts may be obtained by submitting a signed request to the Academic Records Office, in person at SC 246; by mail to Utah State University, 1600 Old Main Hill, Logan UT 84322-1600; or via the Internet at:
http://www.usu.edu/registrar/quad/index.html
Records Hold. A “Records Hold” will be placed on a student’s record when an outstanding financial obligation or disciplinary action has been reported.

When a “hold” is placed on a record, the following results may occur: (1) An official and/or unofficial transcript may not be issued; (2) registration privileges may be suspended; (3) other student services may be revoked. The “hold” will remain effective until removed by the initiating office. It is the student’s responsibility to clear the conditions causing the “hold.”

Transfer Credit. The grades which may be transferred and recorded for transfer students shall include A, A-, B+, B, B-, C+, C, C-, D+, D, and F, as well as P (Pass). Only grades earned at USU will be used in calculating USU grade point averages. Decisions concerning academic standing, once the student is admitted to USU, will be based solely on USU grades.

Remedial Courses. Courses numbered 0010-0990 will not satisfy baccalaureate requirements, are not transferable, and are not calculated in a student’s grade point average.

Academic Standing. An undergraduate student is considered by the University to be in good standing when his or her USU cumulative GPA is 2.0 or higher. An undergraduate student whose USU cumulative GPA is less than 2.0 is placed on academic warning or academic probation, based on the student’s class rank and the USU cumulative GPA. A freshman with a USU cumulative GPA of less than 2.0 is placed on academic probation.

Academic Warning. A freshman student placed on academic warning shall be notified in writing of that action by the dean of his or her college. The notation placed on warning is placed on the student’s transcript. The student remains on warning status as long as his or her semester GPA is 2.0 or higher and until his or her USU cumulative GPA rises to or exceeds 2.0; the student will then be in good standing. A student on academic warning shall be placed on academic probation at the end of any semester in which his or her semester GPA is less than 2.0. When a student’s class standing changes to sophomore, and his or her USU cumulative GPA is less than 2.0, the student is placed on academic probation. Students on academic warning are encouraged to meet with their academic advisor.

Academic Probation. An undergraduate student placed on academic probation shall be notified in writing of that action by the dean of his or her college. The notation placed on probation is placed on the student’s transcript. The student is required to meet with his or her academic advisor before the end of the fifth week and to sign a statement acknowledging the terms of the probation. Signed statements shall be maintained in the academic dean’s office. The student remains on probation status as long as his or her semester GPA is 2.0 or higher until his or her USU cumulative GPA rises to or exceeds 2.0; the student will then be in good standing. A student on academic probation is placed on suspension at the end of any semester in which his or her semester GPA is less than 2.0.

Academic Suspension. An undergraduate student placed on academic suspension shall be notified in writing of that action by the Registrar. The notation academic suspension is placed on the student’s transcript. A student who is registered for classes in the semester immediately following the suspension will be dropped from those classes. Questions about the suspension should be directed to the student’s advisor.

Readmission Following Academic Suspension. Students who have been suspended once may apply for readmission after a one-semester layout. Students who have been suspended two times may apply for readmission to the University following a layout of one full calendar year.

Academic Dismissal. Students who become subject to suspension for a third time will receive notice of academic dismissal from the University. Students who have been dismissed may apply for readmission to the University following a layout of five or more calendar years.

Concurrent Enrollment Credit. For purposes of academic standing, students who have taken classes through concurrent enrollment, and who otherwise qualify for good standing at USU, shall not be denied such standing based on their concurrent enrollment credit.

Low-Scholarship Notification for Graduate Students. The dean of the School of Graduate Studies will notify students whose GPA is below 3.0 any semester. If the GPA falls below 3.0 for two consecutive semesters, the student may be placed on probationary status and his or her graduate program may be terminated. For further information, see Low-Scholarship Notification (pages 93-94).

Academic Renewal
Undergraduate students who have been admitted to Utah State University after an interruption in their collegiate education of five or more years may petition to have certain credits removed from the calculation of the GPA needed for credit. The renewal procedure allows the student’s academic records to be reviewed for the purpose of eliminating from grade point average computation all grades of D+ or below that were entered on the academic transcript five or more calendar years prior to admission, including transfer credit. Petition forms are available in the Office of the Registrar. A $25 processing fee will be assessed.

Guidelines:
1. Academic renewal does not apply to graduate students nor to students pursuing a second undergraduate degree.
2. Academic renewal may be applied only once and is irreversible.
3. An absence of five or more years must have elapsed between admission and the last enrollment at an institution of higher education. (Note: Students must be currently enrolled at USU to apply for academic renewal.)
4. After admission, but before application for renewal, the student must have completed at least one of the following at Utah State University: (a) 10 semester credits with at least a 3.00 GPA; (b) 20 semester credits with at least a 2.75 GPA; (c) 30 semester credits with at least a 2.50 GPA.
5. Academic renewal applies only to courses having grades of D+, D, or F and taken prior to readmission. All such courses will remain unaltered on the transcript with the appropriate notation added to the transcript to indicate academic renewal. Courses designated in the petition will not count for computation of GPA for earned credits, nor for satisfying any graduation requirements. Courses with a grade of C- (or P) or better will be carried forward.
6. Students may apply for this renewal after they have met the guidelines listed above. They are strongly encouraged to meet with their academic advisor prior to submitting their request.
7. Academic renewal will be effective as of the date of admission following the minimum five-year absence.
**Academic Record Adjustment**

Students requesting an academic record adjustment to a prior term must submit a *Petition for Academic Record Adjustment* to the Registrar’s Office. Adjustments will only be considered if extenuating circumstances exist. The term “extenuating circumstances” includes: (1) incapacitating illness which prevented a student from attending classes for a minimum period of two weeks and prevented the student from completing the desired adjustment during the term, (2) a death in the immediate family, or (3) other emergencies deemed appropriate. A maximum of two semesters may be adjusted per each degree. Petitions must be submitted within two years of the desired adjustment. The student must attach a typed appeal stating an explanation and justification for the desired adjustment. Supporting documentation confirming the extenuating circumstances must accompany the petition. The cost for the petition is $20, which is a nonrefundable processing fee and does not guarantee approval.

**Academic Honesty**

The University expects that students and faculty alike maintain the highest standards of academic honesty. For the benefit of students who may not be aware of specific standards of the University concerning academic honesty, the following information is quoted from *The Code of Policies and Procedures for Students at Utah State University* (revised April 2002), Article V, Section 3:

Section 3. University Standards

A. Academic Integrity—"The Honor System"

Each student has the right and duty to pursue his or her academic experience free of dishonesty. The Honor System is designed to establish the higher level of conduct expected and required of all Utah State University students.

**The Honor Pledge**—To enhance the learning environment at Utah State University and to develop student academic integrity, each student agrees to the following Honor Pledge:

"I pledge, on my honor, to conduct myself with the foremost level of academic integrity."

Acts of academic dishonesty include but are not limited to:

1. **Cheating:** (1) using or attempting to use or providing others with any unauthorized assistance in taking quizzes, tests, examinations, or in any other academic exercise or activity, including working in a group when the instructor has designated that the quiz, test, examination, or any other academic exercise or activity be done "individually"; (2) depending on the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments; (3) substituting for another student, or permitting another student to substitute for oneself, in taking an examination or preparing academic work; (4) acquiring tests or other academic material belonging to a faculty member, staff member, or another student without express permission; (5) continuing to write after time has been called on a quiz, test, examination, or any other academic exercise or activity; (6) submitting substantially the same work for credit in more than one class, except with prior approval of the instructor; or (7) engaging in any form of research fraud.

2. **Falsification:** altering or fabricating any information or citation in an academic exercise or activity.

3. **Plagiarism:** representing, by paraphrase or direct quotation, the published or unpublished work of another person as one’s own in any academic exercise or activity without full and clear acknowledgment. It also includes using materials prepared by another person or by an agency engaged in the sale of term papers or other academic materials.

Violations of the above policy will subject the offender to the University discipline procedures as outlined in Article VI, Section 1 (paragraphs A, E, F, G, and H) of the *Code*.
Special Fees
Tuition, Fees, and Refunds

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Tuition, Fees, and Refunds
Tuition and fees provide an essential revenue source to Utah
State University, although these comprise only 12 percent of the
total budget. State appropriations provide 34 percent of the University’s revenue sources. USU strives to keep the institution as
cost-effective as possible, and is noted for having low-cost resident and nonresident tuition amounts.
Tuition and fee amounts may be found at:
http://www.usu.edu/registrar/tuition.
Registration for a semester is not complete until all fees
have been paid in full. The University reserves the right to alter any tuition or fee charges without notice.
Visitor fee (audit) . . . . . . . . . . same as classes with credit
(except for persons 62 years of age or older who are permitted to
audit free of charge after a recording fee of $10 per semester has
been paid)
Tuition, Fees, and Refunds
Late registration fee . . . . . . . . . . . . . . . . . . . . . $20
(assessed beginning the first day of classes)
Continuing Graduate Advisement Courses (6990 and 7990).
There is no limit on the number of times a graduate student may
register for 6990 or 7990 credit. Resident tuition is charged for
6990 or 7990 credits, and out-of-state tuition is not charged.
Continuous Graduate Registration Fee . . . . . . . . . . . $15
Tuition Refund Policy. The following refund policy applies
to full-semester classes only. For information about refund
amounts for classes offered during less than a full semester, contact the Cashiers Office, Student Center 228, (435) 797-1069.
Refund Period

Percent of Tuition to be
Refunded

Before Semester Classes Begin . . . . . . . . . . . . . . . 100%
First 2 Days of the Semester. . . . . . . . . . . . . . . . . 100%
3rd thru 5th Day of Classes . . . . . . . . . . . . . . . . . . 90%
Thru the 10th Day of Classes . . . . . . . . . . . . . . . . . 70%
Thru the 15th Day of Classes . . . . . . . . . . . . . . . . . 50%
After the 15th Day of Classes . . . . . . . . . . . . . . . . . 0%
Fee Refunds. (1) Ten dollars of every registration fee and the
insurance fee are nonrefundable. (2) After the $10 fee is deducted
from the registration fee, a proportionate share of all fees paid
may be refunded to any student who withdraws from school before the 15th day of classes. (3) All refunds will be mailed to the
student. (4) The application and evaluation fee for an undergraduate or graduate applicant is not refundable. (5) Activity fees will
be pro-rated. (6) All refunds must be applied for at the Cashiers
Office. (7) Students with financial aid need approval from the Financial Aid Office in order to receive a refund. (8) Complete
withdrawal must be approved by the Financial Aid Office or by
University Advising and Transfer Services.

Delinquent Financial Accounts. Students with outstanding financial obligations may be refused all University services until
such obligations are paid. Services which may be denied include
the following: registration, transcripts, grades, transfer of credit,
and graduation.
ID Cards. An ID card will be prepared for new freshmen and
transfer students upon proof of fee payment. However, electronic
validation is required each semester before the ID card will be acceptable for admission to student activity attractions. Upon payment of tuition and fees, students will automatically have their
cards validated. A student who holds a validated card may purchase an additional validated card for his or her spouse for $36.50.
Lost ID cards may be replaced for $10.00.
Spreading Payments Over Time (SPOT) Tuition Payment
Program. The SPOT program allows students to make five
monthly payments per semester on their tuition. The first payment
for fall semester is due June 1. The first payment for spring semester is due November 1. This program is done by automatic
withdrawal from the student’s checking or savings account. A $50
nonrefundable annual fee (per school year) is required for participation in the program. Students requesting this option after June 1
must pay the past-due payments. To enroll in the SPOT program
and for further information, go to:
Deferred Fee Note. The Deferred Fee Note is not available
until after the fee payment deadline. This note is due 60 days into
the semester. The cost of the deferred fee note is $50. Deferred
Fee Notes must be applied for in the Cashiers Office (SC 228).
Miscellaneous Payments. If any payment made to the University is unauthorized, incomplete, or received after the due date,
registration fees will be considered as unpaid, and the student
will not be officially registered.
Personal Checks. Personal checks returned by the bank for
any reason will subject the student to a service charge and, at the
discretion of the Controllers Office, may result in the withholding
of registration credit or immediate cancellation of the student’s
classes. USU reserves the right to refuse personal checks for any
transaction. Check cashing privileges and use of other University
services using personal checks may be suspended for any individual who has a check returned to the University.
Sponsored Payments. Students whose tuition and fees are
paid by a sponsor may contact the Cashiers Office (SC 228) for
authorization to complete registration. International students with
a sponsor should also contact the Cashiers Office.
Computer and Information Literacy Examination. All students working toward a bachelor’s degree must pass this examination as part of the University Studies requirements. New students
will automatically be assessed a fee. For additional information
about this exam, see page 43.
Special Fees
Special Fees. Special fees, charged in addition to tuition and
registration fees, are assessed on the Registration/Billing Statement. Carefully review the University Schedule of Classes to determine which courses require special fees.


Parking Permits
Parking Permits for students living off campus ............... $20 per semester
$35 per year
Parking Permits for students living in dorms ........ $35 per year
Parking Permits for students living in the Student Living Center or Aggie Village ........ $35 per year
Gate Card .................. $10 deposit
Music. Fees are charged for piano practice and private instruction. For information on amounts, contact the Music Department.

Division of General Studies Fee ............... $45 per semester for the semester.

Health and Accident Insurance is available to all students for nominal costs at the time of registration. Additional insurance may be purchased for spouse and children. Students are encouraged to provide themselves with adequate protection in case of illness or serious injury. See University Schedule of Classes for premiums.

Insurance Information/International Students
Insurance coverage is mandatory for international students. All international students attending Utah State University are required to purchase one of the student health insurance plans offered at the University for themselves and accompanying dependents. Insurance coverage is required each semester.

International students are cautioned to purchase only temporary travel insurance to cover travel to the U.S.

Admission Application and Evaluation Fee (nonrefundable):
U.S. Residents (undergraduate) ....................... $35
International Students (undergraduate) ............... $50

Special Examination Fee: $10 per course plus $5 per credit hour up to a maximum of $50 including the $10 examination fee. Fees for some of the special examinations offered by the Languages, Philosophy, and Speech Communication Department are higher; call (435) 797-1209 for specific fees.

Late Graduation Application Fee for undergraduate candidates .................. To be determined

Graduation Fee:
One-year Certificate ........................................ $10
Two-year Diploma ........................................ $10
Associate of Applied Science Degree .............. $10
Bachelor's Degree ........................................ $10
Graduate, PhD Degree ................................. $15

Cap and Gown Sales:
Bachelor's Degrees ................................. $26.99
(includes cap, gown, and tassel)
Master's Degrees ................................. $31.99
(includes cap, gown, hood, and tassel)
Doctorate Degrees ................................. $41.99
(includes cap, gown, hood, and tassel)

To receive the “Early Bird Prices” listed above, order through the USU Bookstore no later than January 30. After January 30, an additional $10 will be added to each price.

Teacher Placement Registration ....................... $10

Transcript of Credits. For transcript requests processed by the USU Registrar’s Office, the following information is needed: (1) student’s full name (including any previous names), (2) student ID number, (3) date of birth, (4) last date of attendance, (5) where the transcript is to be sent, and (6) student’s signature. The transcript fee (per transcript) is $3 for the first transcript and $1 for each additional transcript on the same order. The fee is to be paid in the Office of the Registrar (Records Services), Taggart Student Center 246.

For a fee of $5 per location, transcripts may be faxed. Send a fax to (435) 797-4077, along with the required information listed above and credit card information (card name, number, and expiration date).

Unofficial transcripts are available on the internet at: http://www.usu.edu/compserv/stu_rec.html.

University Publications. To purchase a Utah State University General Catalog or Semester Schedule of Classes, phone Express-a-book at one of the following numbers: (800) 662-3950, (435) 797-3950, or FAX (435) 797-3793.

Information on Scholarships, Fellowships, and Assistantships can be found in the Financial Aid and Scholarship Information section of this catalog (pages 22-26).

Housing Fees. Write for a Housing Bulletin; send request to the Office of Housing and Food Services, Utah State University, 8600 Old Main Hill, Logan UT 84322-8600.

Estimated Cost of Undergraduate Education for Two Semesters for 2004-2005 Academic Year

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<thead>
<tr>
<th></th>
<th>Resident</th>
<th>Nonresident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition and Fees</td>
<td>See page 39</td>
<td>See page 39</td>
</tr>
<tr>
<td>Room and Board</td>
<td>$3,930</td>
<td>$3,930</td>
</tr>
<tr>
<td>Books and Supplies</td>
<td>870</td>
<td>870</td>
</tr>
<tr>
<td>Personal Expenses</td>
<td>1,600</td>
<td>1,600</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>$7,610</td>
<td>$7,610</td>
</tr>
<tr>
<td>plus</td>
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<tr>
<td>Resident</td>
<td></td>
<td>Nonres.</td>
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<tr>
<td>Tuition</td>
<td></td>
<td>Tuition</td>
</tr>
</tbody>
</table>

Note: Costs for room and board may vary, depending upon the housing and meal plan selected. Also, costs for books, supplies, and personal expenses may vary, depending upon a student’s chosen program of study and lifestyle. Students who choose to have a car will need to plan for transportation expenses. However, owning a car is not necessarily essential, since both USU and Logan have free bus systems.
Housing and Food Services

Learn and Live

Students who live on campus are at the heart of campus life. USU residence halls are located next to or near all University classrooms and libraries, with additional in-house tutoring, computer labs, study rooms, and classrooms provided to residents. USU’s residential communities are designed to promote academic success, with an atmosphere conducive to academic, social, cultural, and personal growth.

Residential Learning Communities

Each year, USU data have confirmed that students who live in residence halls do much better academically, which means earning higher GPAs. Students living in residence halls are also able to carry heavier class loads than are students who live off campus. Research also shows on-campus students tend to be more involved in academic and extracurricular activities, persist and graduate on time, and enjoy their overall collegiate experience more. All students living within housing learning communities have access to the following services to assist in their academic success: computer labs, high-speed Internet access, educational programming, peer tutors (math, writing), enhanced academic advising and career counseling, faculty mentoring, increased faculty interaction, and leadership and service opportunities. A well-trained team of professional and peer staff also provides numerous opportunities for social and educational activities, which build the community, as well as supplement and support formal classroom experiences.

By participating in specialized academic programs and floors, students can live with others enrolled in the same academic program or having similar interests. Students participating in these programs share a floor and/or building with students having common college interests. Increased faculty interaction through on-site mentoring, advising programs, and activities are just a few of the benefits.

Each community offers slightly different opportunities and is designed with the student in mind. High-quality facilities at reasonable rates, along with service and convenience, are provided. Prices include Internet access, local phone, cable TV, and free shuttle bus service. Single housing apartment prices include all utilities, full kitchens, and furniture. Family housing units have full kitchens and are rented unfurnished. Family residents are responsible to pay electric and gas utilities.

To check the current price listings, style options, and availability, visit the housing website at http://www.housing.usu.edu, call (435) 797-3113, call toll free 1-800-863-1085, or send e-mail to info@housing.usu.edu.

Single Student Learning Communities

Central Campus Learning Community. Since starting college can be challenging, the Central Campus Learning Community is designed to make life a little easier. This close-knit community is key to developing lasting friendships, fun, and student achievement. The focus is on increasing faculty and staff interactions, enhancing educational programming, and developing an overall community experience at Utah State University.

South Campus Living/Learning Community. The South Campus Living/Learning Community has main campus at its doorstep. This is the ideal location for students who want to be in the heart of the academic community. Located just steps from libraries, computer labs, and most classrooms, this community is an ideal choice for those who want to be at the heart of campus.

Student Living/Learning Center Community. This community is designed for both upper-class and freshman students with an excellent variety of apartment options. This is a great location for students who want an academic setting surrounded by abundant open green space. This community has an excellent computer lab, multi-media classroom, tutoring room, and piano rooms. Shuttle buses take students to the center of campus, which is just a few blocks away.

Aggie Village Singles Living/Learning Community. The Aggie Village Singles Living/Learning Community houses two upperclass academic neighborhoods for single students: Aggie Singles and Aggie Graduates. Located adjacent to the main campus, Aggie Village is the ideal getaway for students seeking privacy and quiet study time. Aggie Shuttle buses regularly deliver residents to main campus in a matter of minutes.

Family Living/Learning Communities

USU Family Living/Learning Communities are an ideal choice for student families seeking an easier, more productive learning and living environment. Families will appreciate the extra space both indoors and outdoors. For children, safe fenced play areas are provided, and parents will appreciate apartments with many amenities. Numerous classes and programs for family students are offered in the classroom located in the Community Area Office. Living options include spacious one-, two-, and three-bedroom apartments and a mobile home park.

Dining Options at The Junction

The Junction, centrally located between Mountain View and Valley View Towers and Richards Hall, offers an all-you-care-to-eat buffet for one great price. From home-cooked meals to casual dining to late-night snacks at The Depot, the Junction will satisfy student appetites anytime. Students may enjoy tempting entrees, a full salad bar, a Belgian waffle bar, a cold cereal bar, homemade soups, and a dessert bar. They can even make their own deli sandwiches, enjoy a pizza, or order from the grill. The Depot, located inside the Junction, is the central campus late-night hot spot. Students may enjoy a late-night snack hot off the grill, sip on a soda, or become a Karaoke star. Students may select a dining plan tailored to their individual dining needs.
USU University Studies Requirements
(General Education and Depth Education)

University Studies Objectives:
The Citizen Scholar

The mission of undergraduate education at Utah State University is to help students develop intellectually, personally, and culturally, so that they may serve the people of Utah, the nation, and the world. USU prepares citizen-scholars who participate and lead in local, regional, national, and global communities. University Studies is an integral part of every student’s experience—in both lower-division and upper-division courses. A solid University Studies foundation, combined with concentrated study in a major discipline and interdisciplinary studies, provides the breadth and depth of knowledge qualifying USU graduates as educated citizens.

The University Studies program is intended to help students learn how to learn—not just for the present, but also for the future. No individual can master all, or even a small portion, of society’s knowledge, but students can learn the basic patterns used to obtain and organize information, enabling them to discover or recover knowledge. University Studies involves a series of interrelated educational experiences which stimulate and assist students in becoming self-reliant scholars and individuals. The ultimate objective is for general and discipline-specific education to complement each other in helping students to:

1. understand processes of acquiring knowledge and information;
2. reason logically, critically, creatively, and independently, and be able to address problems in a broad context;
3. recognize different ways of thinking, creating, expressing, and communicating through a variety of media;
4. understand diversity in value systems and cultures in an interdependent world; and
5. develop a capacity for self-assessment and lifelong learning.

By introducing ideas and issues in human thought and experience, University Studies courses help students achieve the intellectual integration and awareness needed to meet the challenges they will face in their personal, social, and professional lives. University Studies courses emphasize how knowledge is achieved and applied in different domains. Collectively, they provide a foundation and perspective for:

1. understanding the nature, history, and methods of the arts and humanities, as well as the natural and physical sciences;
2. understanding the cultural, historical, and natural contexts shaping the human experience; and
3. interpreting the important cultural, socio-economic, scientific, and technological issues of the diverse global community in which we live.

A university education prepares students to work and live meaningfully in today’s rapidly changing global society. Together, general and discipline-specific education help students master the essential competencies making this goal possible. These competencies include:

1. reading, listening, and viewing for comprehension;
2. communicating effectively for various purposes and audiences;
3. understanding and applying mathematics and other quantitative reasoning techniques;
4. using various technologies competently; and
5. working effectively, both collaboratively and individually.

University Studies Requirements

The University Studies program, along with study in the major, is designed to assist students in achieving the Citizen Scholar Objectives. The program consists of two sets of requirements: General Education Requirements and Depth Education Requirements. Students who have received an AA or AS degree at any institution within the Utah System of Higher Education, or at another institution with which USU has an articulation agreement, will be considered to have fulfilled the General Education Requirements, but must still complete the Depth Education Requirements.

Students who transfer to Utah State University with less than an Associate Degree (and have not completed General Education requirements) or with an Associate of Applied Science Degree will have their General Education courses evaluated on a course-by-course basis and may be required to take any additional courses necessary to satisfy the General Education requirements at Utah State University. However, if these students have taken equivalent General Education courses at the sending institution, these courses will be accepted toward satisfying General Education requirements at Utah State University.

Courses approved as fulfilling General Education requirements at a Utah System of Higher Education (USHE) institution, Brigham Young University, Brigham Young University (Idaho), LDS Business College, and Westminster College will be acceptable to Utah State University as satisfying comparable General Education requirements.
General Education Requirements (27-31 credits)

USU’s General Education program consists of two sets of requirements: Competency and Breadth.

Competency Requirements (9-13 credits)

The Citizen Scholar Objectives propose that students should be able to communicate effectively, utilize quantitative methods, make appropriate use of technology, and function effectively in groups. The competency requirements are structured to develop these skills.

Communications Literacy (CL) (6 credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 1010</td>
<td>CL Introduction to Writing: Academic Prose</td>
<td>3</td>
</tr>
</tbody>
</table>

Or one of the following exams:

- AP English Language and Composition Test: Score of 3 or higher
- AP English Literature and Composition Test: Score of 3 or higher
- ACT English Test: Score of 29 or higher
- CLEP English Composition Test: Score of 50 or higher
- CLEP Freshman College Composition Test: Score of 53 or higher
- SAT Verbal Test: Score of 640 or higher

Quantitative Literacy (QL) (3-4 credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 1050</td>
<td>QL College Algebra</td>
<td>3</td>
</tr>
</tbody>
</table>

Or

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 1030</td>
<td>QL Quantitative Reasoning</td>
<td>3</td>
</tr>
</tbody>
</table>

Or

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT 1040</td>
<td>QL Introduction to Statistics</td>
<td>3</td>
</tr>
</tbody>
</table>

Or one of the following exams:

- AP Calculus AB Test: Score of 3 or higher
- AP Calculus BC Test: Score of 3 or higher
- CLEP Calculus Test: Score of 50 or higher
- CLEP College Algebra Test: Score of 50 or higher

Computer and Information Literacy (CIL) (0-3 credits)

No specific course is required, but students must pass a competency exam in computer and information literacy. Communications Literacy, Quantitative Literacy, and Breadth courses associated with University Studies are intended to further develop these skills.

The Computer and Information Literacy exam has six parts:

1. Information Law and Ethics
2. Information Resources
3. Document Processing
4. Operating Systems and Environments
5. Spreadsheets
6. Presentations

Breadth American Institutions (BAI) (3 credits minimum)

One of the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>USU 1300</td>
<td>BAI U.S. Institutions</td>
<td>3</td>
</tr>
<tr>
<td>ECON 1500</td>
<td>BAI Introduction to Economic Institutions, History, and Principles</td>
<td>3</td>
</tr>
<tr>
<td>HIST 1700</td>
<td>BAI American Civilization</td>
<td>3</td>
</tr>
<tr>
<td>HIST 2700</td>
<td>BAI United States to 1877</td>
<td>3</td>
</tr>
<tr>
<td>HIST 2710</td>
<td>BAI United States 1877-Present</td>
<td>3</td>
</tr>
<tr>
<td>HONR 1300H</td>
<td>BAI U.S. Institutions</td>
<td>3</td>
</tr>
<tr>
<td>POLS 1100</td>
<td>BAI United States Government and Politics</td>
<td>3</td>
</tr>
</tbody>
</table>

Or one of the following exams:

- AP Macroeconomics Test: Score of 3 or higher
- AP U.S. Government and Politics Test: Score of 3 or higher
- AP U.S. History Test: Score of 3 or higher
- CLEP American Government Test: Score of 60 or higher
- CLEP History of the U.S. I: Early to 1877 Test: Score of 50 or higher
- CLEP History of the U.S. II: 1865 to Present Test: Score of 50 or higher
- CLEP Principles of Macroeconomics Test: Score of 53 or higher

Breadth American Institutions (BAI) (3 credits minimum)

One of the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>USU 1300</td>
<td>BAI U.S. Institutions</td>
<td>3</td>
</tr>
<tr>
<td>ECON 1500</td>
<td>BAI Introduction to Economic Institutions, History, and Principles</td>
<td>3</td>
</tr>
<tr>
<td>HIST 1700</td>
<td>BAI American Civilization</td>
<td>3</td>
</tr>
<tr>
<td>HIST 2700</td>
<td>BAI United States to 1877</td>
<td>3</td>
</tr>
<tr>
<td>HIST 2710</td>
<td>BAI United States 1877-Present</td>
<td>3</td>
</tr>
<tr>
<td>HONR 1300H</td>
<td>BAI U.S. Institutions</td>
<td>3</td>
</tr>
<tr>
<td>POLS 1100</td>
<td>BAI United States Government and Politics</td>
<td>3</td>
</tr>
</tbody>
</table>

Or one of the following exams:

- AP Macroeconomics Test: Score of 3 or higher
- AP U.S. Government and Politics Test: Score of 3 or higher
- AP U.S. History Test: Score of 3 or higher
- CLEP American Government Test: Score of 60 or higher
- CLEP History of the U.S. I: Early to 1877 Test: Score of 50 or higher
- CLEP History of the U.S. II: 1865 to Present Test: Score of 50 or higher
- CLEP Principles of Macroeconomics Test: Score of 53 or higher
### Breadth Creative Arts (BCA) (3 credits minimum)

One of the following courses:

- **USU 1330 BCA** Civilization: Creative Arts. (3)
- **ART 1100 BCA** Exploring Art. (3)
- **HONR 1330H BCA** Civilization: Creative Arts. (3)
- **ID 1750 BCA** Design in Everyday Living. (3)
- **ID 1790 BCA** Interior Design Theory. (3)
- **LAEP 1050 BCA** Introduction to Landscape Architecture. (3)
- **MUSC 1010 BCA** Introduction to Music. (3)
- **MUSC 1020 BCA** Fundamentals of Music. (3)
- **THEA 1010 BCA** Understanding Theatre. (3)
- **THEA 1020 BCA** Introduction to Film. (3)

Or the following exam:

- AP Music Theory Test: Score of 3 or higher

### Breadth Humanities (BHU) (3 credits minimum)

One of the following courses:

- **USU 1320 BHU** Civilization: Humanities. (3)
- **ANTH/ENGL/ANTH 1710 BHU** Introduction to Folklore. (3)
- **ART 2710 BHU** Survey of Western Art: Prehistoric to Medieval. (3)
- **ART 2720 BHU** Survey of Western Art: Renaissance to Post-Modern. (3)
- **ENGL 1030 BHU** Understanding Literature. (3)
- **ENGL/HIST 1710 BHU** Introduction to Folklore. (3)
- **ENGL 2030 BHU** Introduction to Shakespeare. (3)
- **ENGL/HIST 2040 BHU** British and Commonwealth Cultures. (3)
- **HIST 1020 BHU** Cultural and Economic Exchange in the Pre-Nineteenth Century World. (3)
- **HIST 1030 BHU** The Modern World. (3)
- **HIST 1040 BHU** Foundations of Western Civilization: Ancient and Medieval. (3)
- **HIST 1050 BHU** Foundations of Western Civilization: Modern. (3)
- **HIST 1060 BHU** Introduction to Islamic Civilization. (3)
- **HIST/ENGL/ANTH 1710 BHU** Introduction to Folklore. (3)
- **HIST/ENGL 2040 BHU** British and Commonwealth Cultures. (3)
- **HONR 1320H BHU** Civilization: Humanities. (3)
- **PHIL 1010 BHU** Introduction to Philosophy. (3)
- **PHIL 1200 BHU** Practical Logic. (3)
- **PHIL 2400 BHU** Ethics. (3)
- **PHIL 1000 BHU** Social Ethics. (3)
- **THEA 1030 BHU** Exploring Performance Through Aesthetic Texts. (3)

Or one of the following exams:

- AP Art History Test: Score of 3 or higher
- AP English Literature and Composition Test: Score of 3 or higher
- AP European History Test: Score of 3 or higher
- AP World History Test: Score of 3 or higher
- CLEP Analyzing and Interpreting Literature Test: Score of 52 or higher
- CLEP Western Civilization I: Ancient to 1648 Test: Score of 50 or higher
- CLEP Western Civilization II: 1648 to Present Test: Score of 50 or higher

### Breadth Life Sciences (BLS) (3 credits minimum)

One of the following courses:

- **USU 1350 BLS** Integrated Life Science. (3)
- **ANTH 1020 BLS** Biological Anthropology. (3)
- **AWER 1200 BLS** Biodiversity: Its Conservation and Future. (3)
- **BIOL 1010 BLS** Biology and the Citizen. (3)
- **BIOL 1210 BLS** Biology I. (4)
- **BIOL 3300 BLS** General Microbiology (prereq.). (4)

(Both BIOL 1210 and 3300 must be taken. This option is available only to students majoring in Biological Engineering or Environmental Engineering.)

### Breadth Physical Sciences (BPS) (3 credits minimum)

One of the following courses:

- **USU 1360 BPS** Integrated Physical Science. (3)
- **BMET 2000 BPS** The Atmosphere and Weather. (3)
- **CHEM 1120 BPS** General Chemistry II (prereq.). (4)
- **CHEM 1220 BPS** Principles of Chemistry II (prereq.). (4)
- **CS 1010 BPS** Foundations of Computer Science. (3)
- **GEOG 1130 BPS** Physical Geography. (3)
- **GEOL 1100 BPS** Geology of National Parks. (3)
- **GEOL 1150 BPS** The Dynamic Earth: Physical Geology. (4)
- **GEOL 1200 BPS** Introduction to Environmental Geoscience. (3)
- **HONR 1360H BPS** Integrated Physical Science. (3)
- **PHYX 1000 BPS** Introductory Astronomy. (3)
- **PHYX 1020 BPS** Energy. (3)
- **PHYX 1030 BPS** Intelligent Life in the Universe. (3)
- **PHYX 1100 BPS** Great Ideas in Physics. (3)
- **PHYX 1200 BPS** Introduction to Physics by Hands-on Exploration. (4)
- **PHYX 1800 BPS** Physics of Technology (prereq.). (4)
- **PHYX 2120 BPS** The Physics of Living Systems II (prereq.). (4)
- **SOIL 2000 BPS** Soils, Waters, and the Environment. (3)

Or one of the following exams:

- AP Chemistry Test: Score of 3 or higher
- CLEP Chemistry Test: Score of 60 or higher

### Breadth Social Sciences (BSS) (3 credits minimum)

One of the following courses:

- **USU 1340 BSS** Social Systems and Issues. (3)
- **ANTH 1010 BSS** Cultural Anthropology. (3)
- **ANTH 1030 BSS/CI** World Archaeology. (3)
- **ANTH 2100 BSS** Peoples of the Contemporary World. (3)
- **ASTE 2900 BSS** Humanity in the Food Web. (3)
- **ECON 1550 BSS** Introduction to Environmental and Natural Resource Economics. (3)
- **ENVS 2340 BSS** Natural Resources and Society. (3)
- **FCHD 1500 BSS** Human Development Across the Lifespan. (3)
- **FCHD 2450 BSS** The Consumer and the Market. (3)
- **GEOG 1030 BSS** World Regional Geography. (3)
- **GEOG 2030 BSS** Human Geography. (3)
- **HONR 1340H BSS** Social Systems and Issues. (3)
- **JCOM 1000 BSS** Introduction to Mass Communication. (3)
- **JCOM 2000 BSS** Media Smarts: Making Sense of the Information Age. (3)
- **NRS 1010 BSS** Humans and the Changing Global Environment. (3)
- **POLS 2200 BSS** Comparative Politics. (3)
- **PSY 1010 BSS** General Psychology. (3)
- **SOCI 1010 BSS** Introductory Sociology. (3)
- **SPED 1010 BSS** Disability in the American Experience. (3)

Or one of the following exams:

- AP Government and Politics: Comparative Test: Score of 3 or higher
- AP Human Geography Test: Score of 3 or higher
- CLEP Introductory Psychology Test: Score of 55 or higher
- CLEP Introductory Sociology Test: Score of 55 or higher
**Depth Education Requirements**

Beyond the General Education requirements, all students who receive a bachelor’s degree must complete two Communications Intensive, one Quantitative Intensive, and two Depth courses.

### Communications Intensive (CI) (2 courses)

For most students, courses taken for the major will meet this requirement.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT 4510 CI</td>
<td>Auditing Principles and Techniques</td>
<td>(3)</td>
</tr>
<tr>
<td>ADVS 3300 CI</td>
<td>Animal Production and Public Policy</td>
<td>(2)</td>
</tr>
<tr>
<td>ADVS 4200 CI</td>
<td>Physiology of Reproduction and Lactation</td>
<td>(4)</td>
</tr>
<tr>
<td>ADVS 4920 CI</td>
<td>Undergraduate Seminar</td>
<td>(2)</td>
</tr>
<tr>
<td>ADVS 5700 CI</td>
<td>General Animal Pathobiology</td>
<td>(3)</td>
</tr>
<tr>
<td>ANTH 1030 CI</td>
<td>World Archaeology</td>
<td>(3)</td>
</tr>
<tr>
<td>ANTH 3120 CI</td>
<td>Peoples of the Pacific</td>
<td>(3)</td>
</tr>
<tr>
<td>ANTH 3130 CI</td>
<td>Peoples of Latin America</td>
<td>(3)</td>
</tr>
<tr>
<td>ANTH 3170 CI</td>
<td>Symbol Systems and the Origins of Writing and Literacy</td>
<td>(3)</td>
</tr>
<tr>
<td>ANTH 3180 CI</td>
<td>Ecology in Anthropology</td>
<td>(3)</td>
</tr>
<tr>
<td>ANTH 3200 CI</td>
<td>Perspectives on Race</td>
<td>(3)</td>
</tr>
<tr>
<td>ANTH 3310 CI</td>
<td>Introduction to Museum Studies</td>
<td>(3)</td>
</tr>
<tr>
<td>ANTH 4120 CI</td>
<td>Ethnography of Childhood</td>
<td>(3)</td>
</tr>
<tr>
<td>ART/HIST 3110 CI/DHA</td>
<td>Ancient Near East</td>
<td>(3)</td>
</tr>
<tr>
<td>ASTE 3050 CI</td>
<td>Technical and Professional Communication Principles in Agriculture</td>
<td>(3)</td>
</tr>
<tr>
<td>ASTE 3240 CI</td>
<td>Teaching in Laboratory Settings</td>
<td>(3)</td>
</tr>
<tr>
<td>ASTE 4150 CI</td>
<td>Methods of Teaching Agriculture</td>
<td>(3)</td>
</tr>
<tr>
<td>ASTE 5260 CI</td>
<td>Environmental Impacts of Agricultural Systems</td>
<td>(3)</td>
</tr>
<tr>
<td>AWER 3100 CI/DSC</td>
<td>Fish Diversity and Conservation</td>
<td>(3)</td>
</tr>
<tr>
<td>BA 4070 CI</td>
<td>Retail Management</td>
<td>(3)</td>
</tr>
<tr>
<td>BIE 4880 CI</td>
<td>Biological Engineering Design II</td>
<td>(3)</td>
</tr>
<tr>
<td>BIE 4890 CI</td>
<td>Biological Engineering Design III</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL 3010 CI/DSC</td>
<td>Evolution</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL 3100 CI</td>
<td>Bioethics</td>
<td>(3)</td>
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<tr>
<td>BIOL 4060 CI</td>
<td>Exploring Animal Behavior</td>
<td>(3)</td>
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<tr>
<td>BIOL 5250 CI</td>
<td>Evolutionary Biology</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL/FRWS 5420 CI</td>
<td>Forest Pathology</td>
<td>(2)</td>
</tr>
<tr>
<td>BIS 1550 CI</td>
<td>Business Correspondence</td>
<td>(3)</td>
</tr>
<tr>
<td>BIS 2550 CI</td>
<td>Business Communication</td>
<td>(3)</td>
</tr>
<tr>
<td>BIS 4550 CI</td>
<td>Principles of International Business Communications</td>
<td>(3)</td>
</tr>
<tr>
<td>CEE 4790 CI</td>
<td>Environmental Engineering Design II</td>
<td>(2)</td>
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<tr>
<td>CEE 4870 CI</td>
<td>Civil Engineering Design II</td>
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<tr>
<td>CEE 4880 CI</td>
<td>Civil Engineering Design III</td>
<td>(2)</td>
</tr>
<tr>
<td>CEE 4890 CI</td>
<td>Environmental Engineering Design III</td>
<td>(2)</td>
</tr>
<tr>
<td>CHEM 3080 CI</td>
<td>Physical Chemistry Laboratory I</td>
<td>(1)</td>
</tr>
<tr>
<td>CHEM 3090 CI</td>
<td>Physical Chemistry Laboratory II</td>
<td>(1)</td>
</tr>
<tr>
<td>CHEM 4800 CI</td>
<td>Research Problems</td>
<td>(1-3)</td>
</tr>
<tr>
<td>CHEM 4990 CI</td>
<td>Undergraduate Seminar</td>
<td>(1)</td>
</tr>
<tr>
<td>COMD 2910 CI</td>
<td>Sign Language I</td>
<td>(4)</td>
</tr>
<tr>
<td>COMD 4100 CI</td>
<td>Clinical Practicum in Speech-Language Pathology</td>
<td>(1-2)</td>
</tr>
<tr>
<td>COMD 4910 CI</td>
<td>Sign Language III</td>
<td>(4)</td>
</tr>
<tr>
<td>CS 2370 CI</td>
<td>Software Engineering</td>
<td>(3)</td>
</tr>
<tr>
<td>CS 3010 CI/Q/DSC</td>
<td>Information Acquisition, Analysis, and Presentation</td>
<td>(3)</td>
</tr>
<tr>
<td>CS 3410 CI/DSC</td>
<td>Algorithm Development: JAVA/Internet</td>
<td>(3)</td>
</tr>
<tr>
<td>ECE 4840 CI</td>
<td>Design II</td>
<td>(3)</td>
</tr>
<tr>
<td>ECE 4850 CI</td>
<td>Design III</td>
<td>(2)</td>
</tr>
<tr>
<td>ECON 4030 CI</td>
<td>Agribusiness Finance</td>
<td>(3)</td>
</tr>
<tr>
<td>ECON 5020 CI</td>
<td>Economics and Public Policy</td>
<td>(3)</td>
</tr>
<tr>
<td>ECON 5350 CI</td>
<td>Agribusiness, Cooperatives, and Management</td>
<td>(3)</td>
</tr>
<tr>
<td>ECON 5950 CI</td>
<td>Senior Project</td>
<td>(3)</td>
</tr>
<tr>
<td>ELED 3000 CI</td>
<td>Foundation Studies and Practicum in Teaching and Classroom Management Level II</td>
<td>(6-8)</td>
</tr>
<tr>
<td>ELED 4030 CI</td>
<td>Teaching Language Arts and Practicum Level III</td>
<td>(3)</td>
</tr>
<tr>
<td>ELED 4040 CI</td>
<td>Teaching Reading II and Practicum Level III</td>
<td>(3)</td>
</tr>
</tbody>
</table>

### Communications Intensive (CI) (2 courses)

ENGL 3400 CI | Professional Writing (for English majors only) | (3) |
ENGL/HIST 3700 CI | Regional Folklore | (3) |
ENGL/HIST 3710 CI | Folklore Colloquium | (3) |
ENGL 4400 CI | Professional Editing | (3) |
ENGL 4500 CI | Teaching Writing | (3) |
ENGL 4510 CI | Teaching Literature | (3) |
ENGL/HIST 4620 CI | Advanced Seminar in American Studies | (3) |
ENGL/HIST 4640 CI | Studies in the American West | (3) |
ENGL/HIST 4690 CI | American Studies Capstone Seminar | (3) |
ENGL 5300 CI | Literature and Gender | (3) |
ENGL 5320 CI | Literature and Cultural Difference | (3) |
ENGL 5340 CI | Studies in Literary and Cultural Theory | (3) |
ENGL 5350 CI | Literary Studies Capstone | (3) |
ENGL 5430 CI | Professional Writing Capstone | (3) |
ENGL 5910 CI | Senior Honors Thesis | (4-6) |
ENVS 4500 CI | Wildland Recreation Behavior | (3) |
FCHD 4900 CI | Pre-practicum Skills | (3) |
FCSE 3060 CI/DSS | Human Behavior Related to Dress | (3) |
FREN 3060 CI | French Conversation | (3) |
FREN 3090 CI | French Intermediate Written Communication | (3) |
FREN 3150 CI | Business French | (3) |
FREN 4060 CI | Advanced French Conversation | (3) |
FREN 4090 CI | Advanced Written Communication | (3) |
FRWS/HIST 5420 CI | Forest Pathology | (2) |
GEOG 4200 CI | Regional Geography | (3) |
GEOL 3550 CI | Sedimentation and Stratigraphy | (4) |
GEOL 4700 CI | Geologic Field Methods | (2) |
GEOL 5440 CI | Paleocology | (2) |
GEOL 5520 CI | Techniques of Groundwater Investigations | (3) |
GERM 3040 CI | Advanced German Grammar and Composition | (3) |
GERM 3050 CI | Advanced German Grammar and Composition | (3) |
GERM 3510 CI | Business German | (3) |
GERM 3540 CI | Techniques in Translating German Texts | (3) |
HEP 3600 CI | Introduction to Community Health | (3) |
HEP 5000 CI | Race, Class, and Gender Issues in Health | (3) |
HEP 5100 CI | Cultural and Complementary Medicine | (3) |
HIST/ART 3110 CI/DHA | Ancient Near East | (3) |
HIST/ART 3130 CI/DHA | Greek History | (3) |
HIST/ART 3150 CI/DHA | Roman History | (3) |
HIST/ART 3220 CI/DHA | Medieval European Civilization, 500-1500 | (3) |
HIST/ENGL 3700 CI | Regional Folklore | (3) |
HIST/ENGL 3710 CI | Folklore Colloquium | (3) |
HIST 3760 CI/DHA | The United States, 1900-1945 | (3) |
HIST 3850 CI/DHA | History of Utah | (3) |
HIST 3950 CI/DHA | Environmental History | (3) |
HIST 4230 CI/DHA | The History of Christianity in the West | (3) |
HIST 4550 CI/DHA | The History of Women and Family in America | (3) |
HIST 4600 CI/DHA | The History of the American West | (3) |
HIST/ENGL 4620 CI | Advanced Seminar in American Studies | (3) |
HIST/ENGL 4640 CI | Studies in the American West | (3) |
HIST/ENGL 4690 CI | American Studies Capstone Seminar | (3) |
HIST 4730 CI | History of Black America | (3) |
HIST 4990 CI | Special Topics in History | (3) |
ID 3750 CI/DHA | History of Interior Furnishings and Architecture II | (3) |
ID 4740 CI | Business and Professional Practices in Interior Design | (2) |
ITE 4610 CI | AeroTechnology Design II | (3) |
ITE 4620 CI | AeroTechnology Design III | (3) |
ITE 4660 CI | Flight Senior Project | (3) |
### Depth Life and Physical Sciences

**University Studies**

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### Depth Course Requirements (2 courses)

Students are required to take two upper-division courses outside of their major.

Approved 3000-level or above courses must be taken from two of the following three categories: Depth Humanities and Creative Arts (DHA), Depth Life and Physical Sciences (DSC), and Depth Social Sciences (DSS). Each student must select one course from each of the two categories which do not include his or her major (e.g., Sociology majors would select one 3000-level or above course from the Depth Humanities and Creative Arts and one 3000-level or above course from the Depth Life and Physical Sciences). Prerequisites are required for depth courses having titles followed by (prereq.). For details, see course listings in the Course Descriptions section of this catalog.

---

### Depth Humanities and Creative Arts (DHA)

One course is required for all students whose major is not categorized as Humanities (HU) or Creative Arts (CA).

**USU 3330** DHA Arts Symposium (prereq.) (1-2) (Two credits of USU 3330 are needed to fulfill DHA requirement.)

**ART/HIST**

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### Depth Life and Physical Sciences (DSC)

One course is required for all students whose major is not categorized as Life Sciences (LS) or Physical Sciences (PS).

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### Depth Social Sciences (DSS)

Each student must select one course from each of the two categories which do not include his or her major (e.g., Sociology majors would select one 3000-level or above course from the Depth Humanities and Creative Arts and one 3000-level or above course from the Depth Life and Physical Sciences). Prerequisites are required for depth courses having titles followed by (prereq.). For details, see course listings in the Course Descriptions section of this catalog.
## Depth Social Sciences (DSS)

One course is required for all students whose major is not categorized as Social Sciences (SS).

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## Categorization of Majors

The courses that must be taken to satisfy Depth Course requirements depend on the classification of the student’s major. For example, Music is classified in the Creative Arts. Thus, a music major would not need to take a depth course in the Humanities and Creative Arts.

Following is the categorization of majors used for University Studies. These abbreviations are used: CA—Creative Arts, HI—Humanities, LS—Life Sciences, PS—Physical Sciences, and SS—Social Sciences.

### College of Agriculture

**Agricultural Economics, SS**  
Family and Consumer Sciences Education, SS  
Environmental Soil/Water Science, PS

### College of Business

All majors, SS

### College of Education and Human Services

**Communicative Disorders and Deaf Education, SS**  
Elementary Education, (category same as area of emphasis)  
Family and Consumer Sciences, SS  
Family, Consumer, and Human Development, SS  
Health, Physical Education and Recreation  
Parks and Recreation, SS

All other majors, SS
Designation of Courses Required for General Education and Depth Education Requirements

All University Studies courses approved for the General Education and Depth Education Requirements are clearly designated in this catalog and in the current Schedule of Classes. The designations used for University Studies courses are as follows:

Competency Courses
Communications Literacy, CL
Quantitative Literacy, QL

Breadth Courses
American Institutions, BAI
Creative Arts, BCA
Humanities, BHU
Life Sciences, BLS
Physical Sciences, BPS
Social Sciences, BSS

Intensive Courses
Communications Intensive, CI
Quantitative Intensive, QI

Depth Courses
Humanities and Creative Arts, DHA
Life and Physical Sciences, DSC
Social Sciences, DSS

Course Descriptions
University Studies (USU), pages 493.
Undergraduate Graduation Requirements

At the undergraduate level, the University offers an Associate of Applied Science degree, the degrees of Bachelor of Arts, Bachelor of Fine Arts, Bachelor of Landscape Architecture, Bachelor of Music, and Bachelor of Science, and provides coursework which will satisfy requirements for all professional certificates issued by the State Board of Public Instruction. Certificates and diplomas are offered for one- and two-year programs in certain departments.

For information about graduate degrees and majors offered by USU, see page 88 of this catalog.

Certificates, Diplomas, and Associate of Applied Science Degrees

Certificates, diplomas, and Associate of Applied Science degrees are awarded for completion of less-than-baccalaureate programs at Utah State University. As defined by the Utah State Board of Regents, a certificate is awarded upon the successful completion of a program directly oriented toward job entry when the program is of a duration of 18 months or less (1-48 semester credit hours). The Regents define a diploma or Associate of Applied Science program as one directly oriented toward job entry when the program is of a duration of 19-36 months (49-96 semester credit hours).

The Colleges of Agriculture; Business; and Humanities, Arts and Social Sciences offer one- and two-year programs leading to certificates, diplomas, and Associate of Applied Science degrees. One-year certificate programs are available in dairy technology, agricultural machinery technology, and ornamental horticulture. Associate of Applied Science degrees include agricultural machinery technology, office systems support, and ornamental horticulture. The Music Department offers two-year diploma programs and certificates in the areas of piano, organ, church music, and guitar.

In most cases, the courses in the diploma and Associate of Applied Science programs are arranged so that, at a later date, the four-year baccalaureate program can be completed with a minimum loss of time.

Associate of Applied Science Degree

A minimum of 60 credit hours is required for an Associate of Applied Science degree. Requirements include coursework in the following areas: primary area of study, related area, general education, and electives. Candidates for an Associate of Applied Science degree must complete at least 15 USU credits at USU's Logan campus or designated centers, or through classes offered by distance education through USU. Ten of the required USU credits must be included within the last 20 credits presented for the degree.

See department offerings for specific requirements. Associate of Applied Science degrees are offered in the following areas: office systems support, ornamental horticulture, and agricultural machinery technology.

Bachelor’s Degrees

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

Graduates of the Colleges of Engineering and Natural Resources are eligible to receive the Bachelor of Science degree. The Bachelor of Arts degree is not offered in these colleges, with the exception of the Department of Environment and Society where Bachelor of Science and Bachelor of Arts degrees are offered in Geography.

Graduates of the Colleges of Agriculture, Business, Education and Human Services, and Science may be awarded the Bachelor of Science degree or the Bachelor of Arts degree as recommended by the student’s individual department and approved by the dean of the college.

Graduates of the College of Humanities, Arts and Social Sciences may be awarded the Bachelor of Science Degree, the Bachelor of Arts degree, the Bachelor of Fine Arts degree, the Bachelor of Landscape Architecture degree, or the Bachelor of Music degree as recommended by the student’s individual department and approved by the dean of the college.

All graduates, regardless of the type of degree, must satisfy University Studies general education and depth education requirements.

Bachelor of Arts Degree

All students who receive the Bachelor of Arts degree must have completed two years’ training or equivalent in a foreign language approved by the Languages, Philosophy, and Speech Communication Department. One year or equivalent in each of two foreign languages may also satisfy the foreign language requirement for the BA degree. Specifically, the BA language requirement may be completed in one of the following ways:

1. Completion of 16 credits in one foreign language.
2. Completion of 20 credits in two foreign languages.
3. In general, completion of course number 2020 in one of the foreign languages or an upper-division (3000-level or above) foreign language grammar or literature course. Conversation classes cannot be considered in satisfying this requirement.
4. Successful completion of the Intensive English Language Institute (IELI) program for international students.
5. TOEFL, Michigan, or IELI placement scores high enough to meet the University admission criteria.

Bachelor’s Degree Requirements

Academic Program Requirement. All graduates are required to complete an approved academic program in one of the seven resident colleges.

American Institutions. All graduates are required to have an understanding of the fundamentals of the history, principles, form of government, and economic system of the United States. Stu-
Students may meet this requirement in any one of the following ways: (a) receiving a passing grade on a special examination; (b) receiving a grade of three or better on the Advanced Placement Examination in American History; (c) satisfactory completion of: USU 1300 or Honors 1300H; Economics 1500; History 1700, 2700, or 2710; or Political Science 1100; or (d) satisfactory completion of a transfer course equivalent to one of the courses in (c).

**University Studies.** Completion of the University Studies general education and depth education requirements. (See pages 42-49.)

**Upper-Division Credits.** Completion of a minimum of 40 credits numbered 3000 or above.

**Total Credits.** A minimum of 120 credits of acceptable collegiate work and a minimum of 100 credits with a grade of C- or better.

**GPA.** In order to graduate, students must meet all GPA requirements for their major. These requirements can be found in the *Instructional Units and Programs* section of this catalog. USU credits *only* are used in computing the GPA. The University requires a minimum GPA of 2.0 to be considered for good standing and for graduation, although the majority of degree programs require a higher GPA.

**Major.** Each student must complete all requirements for an approved program of study. This program is comprised of up to 80 credits, which include the major, certification requirements, and all other required major coursework. The program of study for each major is described in the appropriate departmental section of this catalog and on the major requirement sheets, which can be obtained from the department, the college, or University Advising and Transfer Services.

Students should select a major subject upon entering the University or early the first year, but not later than entrance into the upper division. As soon as the major subject has been selected, the student should contact the department in which he or she has decided to major. A *Change of Matriculation* form must be filed with the University Registrar. The head of the department will assign an advisor. Registration in succeeding semesters should be carefully checked and approved by the advisor to assure proper selection of courses for satisfying institutional and departmental requirements. If more than one major is being pursued concurrently, departmental and college authorization must be obtained.

Students who have completed at least 60 credits (not including AP, CLEP, and concurrent enrollment) and one USU semester must be accepted into a department or be admitted to General Registration before they are allowed to register for additional work. To enforce this policy, a hold will be placed on the student’s registration.

The selection of a major(s), the fulfillment of requirements, and a choice of a career or vocation are the responsibility of the student. The University does not assume responsibility for these choices nor for successful employment upon completion of University programs. However, to aid in these choices, the University provides advising, counseling, and testing services for self-evaluation and information about careers and employment opportunities. Career Services assists students in all aspects of their career search.

Students are encouraged to meet regularly with their advisor to establish a plan of study and confirm a graduation date as early as possible.

**Changing a Matriculation.** When a change of major, minor, and/or emphasis is desired, a student must go to the department office in which he or she is presently enrolled to initiate the proper paperwork. If he or she is changing matriculation within the same department, the department office may complete the required form, have it signed, and have it received by the Registrar’s Office. When a student is changing departments, signatures of both department heads are required on the form. After the form is received by the Registrar’s Office, the matriculation is changed and the information becomes part of the student’s file.

**Minor.** USU does not require that all students complete a minor. However, some departments and/or programs do require completion of a minor, which is described in the catalog statement of the department or program.

**USU Courses.** Candidates for a bachelor’s degree must complete at least 30 credits at USU’s Logan campus or designated centers, or through classes offered by distance education through USU. Ten of the required USU credits must be included within the last 40 credits presented for the degree.

Candidates for an associate degree must complete at least 15 credits at USU’s Logan campus or designated centers, or through classes offered by distance education through USU. Ten of the required USU credits must be included within the last 20 credits presented for the degree.

**Credit by Examination.** Some noncollegiate experiences may permit credit through challenge and foreign language examinations. For further information, see pages 16-17.

**Remedial Courses.** Remedial courses (numbered below 1000), cannot be used to satisfy baccalaureate requirements.

**Honors.** To qualify for graduation honors, a student must have completed a minimum of 40 USU semester credits. USU designated honors at graduation are:

- **Summa Cum Laude** 3.950 to 4.000 GPA
- **Magna Cum Laude** 3.800 to 3.949 GPA
- **Cum Laude** 3.500 to 3.799 GPA

These grade point averages are USU cumulative GPAs. Transfer credits are not considered in determining eligibility for these honors.

**Honors Degrees.** In addition to graduation honors, USU offers honors degrees designed to fill a variety of student needs. Honors Program members may work toward one of three degree options: (1) Department Honors, (2) Department Honors with Honors in University Studies, or (3) University Honors. For further information, see page 226.

**General Information**

**Extension and Independent Study.** Applicants for degrees who have taken courses for credit through extension classwork or Independent Study courses are subject to regular University admission requirements and must file transcripts of all university credit with the Admissions Office.

**Financial Obligations.** Students are reminded that nonpayment of fees owed to the University may result in withholding of diplomas or certificates.
Independent Study. Grades for Independent Study courses must be completed and on file in the Records Office by the last day of the semester of intended graduation.

Incomplete Grades. Incomplete grades must be made up and on file in the Registrar’s Office no later than the last day of classes for which the candidate is applying for graduation.

Changes in Graduation Requirements. Students are expected to familiarize themselves with the rules and regulations of both the University and their specific major. Detailed information concerning graduation requirements is available in this catalog as part of the departmental descriptions. Responsibility for satisfying all graduation requirements rests upon the student. Utah State University reserves the right to change graduation requirements at any time.

Seven-Year Policy. Students who can complete a baccalaureate degree within seven years of enrollment at USU can qualify for graduation by meeting (1) the General Education or University Studies requirements in effect when they initially enrolled and (2) the major requirements in effect when they officially declared their major, even though there may have been changes in General Education, University Studies, and major requirements since that time. Students who have not completed the baccalaureate requirements within seven years of their initial enrollment at USU must have their General Education (or University Studies) and major requirements evaluated and approved by their department head and dean. Exceptions to this seven-year policy may be necessary for mandated changes in degree requirements.

Intent to Transfer Graduation Requirements. Students who did not initially enroll at USU, but have completed the Intent to Transfer process, will be obligated by the Seven-Year Policy for both the General Education (or University Studies) and major requirements in effect when their Intent to Transfer Education Plan was signed by representatives at both USU and the sending institution. Signatures from both institutions must be obtained during the same semester.

Applying for Graduation

Undergraduate candidates for graduation must have completed the application process by having an application on file and fees paid to the Registrar’s Office, Student Center 246. The application deadline is October 15 for spring semester graduates and February 15 for summer or fall semester graduates. Late applicants will be assessed a late fee.

The application process is as follows: (1) Request an application from the Registrar’s Office, (2) Return with picture ID to the Registrar’s Office on the specified date and pick up the application for candidacy for graduation packet, (3) Carefully review the graduation application instructions, (4) Submit the application to departmental advisor and college dean for review and signatures (double majors must have the appropriate signatures for each major), (5) Complete the graduating student survey, and (6) Submit the graduation packet to the Registrar’s Office (Student Center 246) and pay the application fee of $10. Approximately six weeks is needed to complete the application process.

Names of the candidates will appear on the graduation lists and diplomas as they appear on the student’s transcript.

To change the name appearing on the transcript, the student must fill out the appropriate form in the Registrar’s Office and provide an official document (i.e., driver license, marriage certificate, etc.) with the new name on it.

Commencement

Candidates who completed requirements and received their diplomas at the end of summer or fall semester are invited and encouraged to attend commencement exercises with the spring semester graduates.

Attendance at Commencement is expected of all candidates. All students must submit an Intent to Attend Commencement form to the Registrar’s Office. If unable to attend, the student must notify the Registrar’s Office and be officially excused in advance. Also, students who do not attend Commencement must notify the Registrar’s Office of the address to which the diploma is to be sent. Spring graduates will receive their diplomas at Commencement. Summer and fall graduates will receive their diplomas through the mail.

Second Bachelor’s Degree

Applicants for a second bachelor’s degree must file an application with the Admissions Office and obtain the recommendation of their academic dean prior to being admitted. A second bachelor’s degree is available only to those on whom a first bachelor’s degree has been conferred. Students must complete a minimum of 30 USU credits beyond those applied toward the first bachelor’s degree, 18 of which must be earned in department-approved upper-division courses related to the major. USU credits may be earned in courses completed at USU’s Logan campus or at designated centers, or through classes offered by distance education through USU.

Candidates for a second bachelor’s degree must have met the American Institutions requirement in the first bachelor’s degree, or complete the requirement before receiving the second bachelor’s degree.

Note: The first bachelor’s degree must have been awarded by an accredited college or university.

Split Form

A student who is within 30 credits of completing a baccalaureate degree may file a Split Form showing division of classes between two undergraduate degrees, or an undergraduate and graduate degree. These classes must be identified for each semester on a Split Form.

Students desiring a second bachelor’s degree must obtain a Split Form from the Registrar’s Office, Student Center 246. To be matriculated into a second bachelor’s program, students must submit an Application for Admission to the second bachelor’s degree program to the Admissions Office, Student Center 102. The Split Form must be filed prior to the posting of grades for the semester in which the request is submitted. The form must be signed by the student’s advisor and the college dean of both majors.

Students who want to divide courses between an undergraduate and a graduate degree must obtain a Split Form from the School of Graduate Studies, Main 164. For more information, see Split Form Policy (page 92) in the Graduate General Regulations section.
Credit by Examination

Advanced Placement (AP)

Advanced Placement examinations are offered at the high school level only. A number of examination areas are available; not all high schools offer all available AP examinations. Generally, the major areas chosen include English, American history, mathematics, chemistry, and physics.

Examinations are scored on a one-to-five scale. Students may receive 4 or 8 credits for a composite score of 3, 4, or 5 on any Advanced Placement examination. Earned credit may be applied toward the University Studies requirements. This information is summarized below.

### AP Score | USU Credits Granted
---|---
0, 1, or 2 | 0
3, 4, or 5 | 4 or 8

Other institutions have policies differing from those of USU regarding AP scores and credits granted for those scores. For transfer students with less than an associate degree, AP credit posted to another institution’s transcript is reevaluated based on USU’s standard.

Advanced Placement (AP) Credit Allocation

<table>
<thead>
<tr>
<th>AP Test</th>
<th>Score</th>
<th>Credits</th>
<th>USU Credit Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art History</td>
<td>3-5</td>
<td>8</td>
<td>ART 2710 (BHU) (3) + ART 2720 (BHU) (3) + 2 elective credits</td>
</tr>
<tr>
<td>Biology</td>
<td>3-5</td>
<td>8</td>
<td>BIOL 1010 (BLS) (3) + 5 elective credits</td>
</tr>
<tr>
<td>Calculus AB</td>
<td>3</td>
<td>8</td>
<td>3 (QL) credits + 5 elective credits</td>
</tr>
<tr>
<td></td>
<td>4-5</td>
<td>8</td>
<td>MATH 1210 (QL) (4) + 4 elective credits</td>
</tr>
<tr>
<td>Calculus BC</td>
<td>3-4</td>
<td>8</td>
<td>MATH 1210 (QL) (4) + 4 elective credits</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>8</td>
<td>MATH 1210 (QL) (4) + MATH 1220 (QL) (4)</td>
</tr>
<tr>
<td>Chemistry</td>
<td>3-4</td>
<td>8</td>
<td>CHEM 1210 (4) + 4 elective credits</td>
</tr>
<tr>
<td></td>
<td>3-4</td>
<td>8</td>
<td>CHEM 1010 (BPS) (3) + CHEM 1110 (4) + 1 elective credit or Placement*</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>8</td>
<td>CHEM 1210 (4) + CHEM 1220 (BPS) (4)</td>
</tr>
<tr>
<td>Computer Science A</td>
<td>3-5</td>
<td>4</td>
<td>4 elective credits</td>
</tr>
<tr>
<td>Computer Science AB</td>
<td>3-5</td>
<td>8</td>
<td>8 elective credits</td>
</tr>
<tr>
<td>Economics: Macro</td>
<td>3-5</td>
<td>4</td>
<td>ECON 1500 (BAI) (3) + 1 elective credit</td>
</tr>
<tr>
<td>Economics: Micro</td>
<td>3-5</td>
<td>4</td>
<td>ECON 2010 (3) + 1 elective credit</td>
</tr>
<tr>
<td>English Language &amp; Composition</td>
<td>3-5</td>
<td>8</td>
<td>ENGL 1010 (CL) (3) + 5 elective credits</td>
</tr>
<tr>
<td>English Literature &amp; Composition</td>
<td>3-5</td>
<td>8</td>
<td>ENGL 1010 (CL) (3) + 3 (BHU) credits + 2 elective credits</td>
</tr>
<tr>
<td>Environmental Science</td>
<td>3-5</td>
<td>4</td>
<td>3 (BLS) credits + 1 elective credit</td>
</tr>
<tr>
<td>European History</td>
<td>3-5</td>
<td>8</td>
<td>HIST 1050 (BHU) (3) + 5 elective credits</td>
</tr>
<tr>
<td>French Language</td>
<td>3-5</td>
<td>8</td>
<td>FREN 1010 (4) + FREN 1020 (4)</td>
</tr>
<tr>
<td>French Literature</td>
<td>3-5</td>
<td>8</td>
<td>8 elective credits</td>
</tr>
<tr>
<td>German Language</td>
<td>3-5</td>
<td>8</td>
<td>GERM 1010 (4) + GERM 1020 (4)</td>
</tr>
<tr>
<td>Government &amp; Politics: Comparative</td>
<td>3-5</td>
<td>4</td>
<td>POLS 2200 (BSS) (3) + 1 elective credit</td>
</tr>
<tr>
<td>Government &amp; Politics: United States</td>
<td>3-5</td>
<td>4</td>
<td>POLS 1100 (BAI) (3) + 1 elective credit</td>
</tr>
<tr>
<td>Human Geography</td>
<td>3-5</td>
<td>4</td>
<td>GEOG 2020 (BSS) (3) + 1 elective credit</td>
</tr>
<tr>
<td>AP Test</td>
<td>Score</td>
<td>Credits</td>
<td>USU Credit Awarded</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------</td>
<td>---------</td>
<td>--------------------------------------------------------</td>
</tr>
<tr>
<td>Latin Literature</td>
<td>3-4</td>
<td>8</td>
<td>LATN 1010 (5) + 3 elective credits</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>8</td>
<td>LATN 1020 (5) + 3 elective credits</td>
</tr>
<tr>
<td>Latin: Virgil</td>
<td>3-4</td>
<td>8</td>
<td>LATN 1010 (5) + 3 elective credits</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>8</td>
<td>LATN 1020 (5) + 3 elective credits</td>
</tr>
<tr>
<td>Music Theory</td>
<td>3-5</td>
<td>8</td>
<td>MUSC 1010 (BCA) (3) + 5 elective credits</td>
</tr>
<tr>
<td>Physics B</td>
<td>3</td>
<td>8</td>
<td>PHYX 2110 (4) or PHYX 2210 (QI) (4)** + 4 elective credits</td>
</tr>
<tr>
<td></td>
<td>4-5</td>
<td>8</td>
<td>PHYS 2110 (QI) (4)</td>
</tr>
<tr>
<td>Physics C: Electricity &amp; Magnetism</td>
<td>3</td>
<td>4</td>
<td>4 elective credits</td>
</tr>
<tr>
<td></td>
<td>4-5</td>
<td>4</td>
<td>PHYX 2220 (QI) (4)</td>
</tr>
<tr>
<td>Physics C: Mechanics</td>
<td>3-5</td>
<td>4</td>
<td>PHYX 2210 (QI) (4)</td>
</tr>
<tr>
<td>Psychology</td>
<td>3-5</td>
<td>4</td>
<td>PSY 1010 (BSS) (3) + 1 elective credit</td>
</tr>
<tr>
<td>Spanish Language</td>
<td>3-5</td>
<td>8</td>
<td>SPAN 1010 (4) + SPAN 1020 (4)</td>
</tr>
<tr>
<td>Spanish Literature</td>
<td>3-5</td>
<td>8</td>
<td>8 elective credits</td>
</tr>
<tr>
<td>Statistics</td>
<td>3-5</td>
<td>4</td>
<td>STAT 2000 (QI) (3) + 1 elective credit</td>
</tr>
<tr>
<td>Studio Art: Drawing</td>
<td>3-4</td>
<td>8</td>
<td>ART 1110 (3) + 5 elective credits</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>8</td>
<td>ART 1110 (3) + ART 1120 (3) + 2 elective credits</td>
</tr>
<tr>
<td>Studio Art: 2-D Design</td>
<td>3-5</td>
<td>8</td>
<td>8 elective credits</td>
</tr>
<tr>
<td>Studio Art: 3-D Design</td>
<td>3-5</td>
<td>8</td>
<td>8 elective credits</td>
</tr>
<tr>
<td>United States History</td>
<td>3-5</td>
<td>8</td>
<td>HIST 1700 (BAI) (3) + 5 elective credits</td>
</tr>
<tr>
<td>World History</td>
<td>3-5</td>
<td>8</td>
<td>HIST 1030 (BHU) (3) + 5 elective credits</td>
</tr>
</tbody>
</table>

*The student/advisor may choose the CHEM 1010 or CHEM 1210 track according to what best suits the student’s major.

**The student/advisor may choose the PHYX 2110 or PHYX 2210 track according to what best suits the student’s major.
College-Level Examination Program (CLEP)

The CLEP examinations were designed for students who wish to utilize previous knowledge and experience in lieu of required coursework. CLEP is a national program of credit-by-examination, allowing students to obtain recognition for college-level achievement. 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 at the University.

Credits may be acquired through the CLEP examinations. These credits may be used to fill General Education Requirements and may also be accepted as equivalent to specific courses.

Individual departments and/or colleges may specify the exact courses required to fill their requirements and may require more than the minimum General Education requirements. Some departments and colleges require specific coursework for General Education, which the CLEP exams may not satisfy.

If, prior to taking a CLEP examination, a student has received credit (including AP credit) for any coursework equivalent to the subject matter of a CLEP examination, the credits earned from the course will be deducted from the earned CLEP credits.

USU will accept a maximum of 30 total credits from CLEP, DANTES Standardized Subject Tests (DSST), and cooperative education/internship credit combined.

Other institutions have policies differing from those of USU regarding CLEP scores and credits granted for those scores. For transfer students with less than an associate degree, CLEP credit posted to another institution’s transcript is reevaluated based on USU’s standard.

CLEP Tests Taken Prior to Fall 2001

In Fall 2001, CLEP began using computer-based testing. The results of the computer-based tests are somewhat different for most of the exams. For historical data on how credits were accepted prior to Fall 2001, contact University Advising and Transfer Services at (435) 797-9303.

College-Level Examination Program (CLEP) Credit Allocation

<table>
<thead>
<tr>
<th>CLEP Test</th>
<th>Min. Score</th>
<th>Credits</th>
<th>USU Credit Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Government</td>
<td>60</td>
<td>3</td>
<td>3 (BAI) credits</td>
</tr>
<tr>
<td>American Literature</td>
<td>50</td>
<td>3</td>
<td>ENGL 2160 (3)</td>
</tr>
<tr>
<td>Analyzing and Interpreting Literature</td>
<td>52</td>
<td>3</td>
<td>ENGL 1030 (BHU) (3)</td>
</tr>
<tr>
<td>Biology</td>
<td>50</td>
<td>3</td>
<td>BIOL 1010 (BLS) (3)</td>
</tr>
<tr>
<td>Calculus</td>
<td>50</td>
<td>3</td>
<td>3 (QL) credits</td>
</tr>
<tr>
<td>Chemistry</td>
<td>60</td>
<td>3</td>
<td>CHEM 1010 (BPS) (3)</td>
</tr>
<tr>
<td>College Algebra</td>
<td>50</td>
<td>3</td>
<td>3 (QL) credits</td>
</tr>
<tr>
<td>College Algebra—Trigonometry</td>
<td>–</td>
<td>–</td>
<td>no credit awarded</td>
</tr>
<tr>
<td>College Mathematics</td>
<td>–</td>
<td>–</td>
<td>no credit awarded</td>
</tr>
<tr>
<td>English Composition</td>
<td>50</td>
<td>3</td>
<td>ENGL 1010 (CL) (3)</td>
</tr>
<tr>
<td>French Language</td>
<td>–</td>
<td>–</td>
<td>no credit awarded</td>
</tr>
<tr>
<td>Freshman College Composition</td>
<td>53*</td>
<td>3</td>
<td>ENGL 1010 (CL) (3)</td>
</tr>
<tr>
<td>German Language</td>
<td>–</td>
<td>–</td>
<td>no credit awarded</td>
</tr>
<tr>
<td>History of the U.S. I: Early to 1877</td>
<td>50</td>
<td>3</td>
<td>HIST 2700 (BAI) (3)</td>
</tr>
<tr>
<td>History of the U.S. II: 1865 to Present</td>
<td>50</td>
<td>3</td>
<td>HIST 2710 (BAI) (3)</td>
</tr>
<tr>
<td>Human Growth and Development</td>
<td>53</td>
<td>3</td>
<td>PSY 1100 (3)</td>
</tr>
<tr>
<td>Humanities</td>
<td>50</td>
<td>3</td>
<td>3 elective credits</td>
</tr>
<tr>
<td>Information Sys. &amp; Computer Appl.</td>
<td>–</td>
<td>–</td>
<td>no credit awarded</td>
</tr>
</tbody>
</table>
### College-Level Examination Program (CLEP) Credit Allocation (continued)

<table>
<thead>
<tr>
<th>CLEP Test</th>
<th>Min. Score</th>
<th>Credits</th>
<th>USU Credit Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to Educational Psychology</td>
<td>53*</td>
<td>2</td>
<td>PSY 3660 (2)**</td>
</tr>
<tr>
<td>Introductory Business Law</td>
<td>62</td>
<td>3</td>
<td>MHR 2990 (3)</td>
</tr>
<tr>
<td>Introductory Psychology</td>
<td>55</td>
<td>3</td>
<td>PSY 1010 (BSS) (3)</td>
</tr>
<tr>
<td>Introductory Sociology</td>
<td>55*</td>
<td>3</td>
<td>SOC 1010 (BSS) (3)</td>
</tr>
<tr>
<td>Natural Sciences</td>
<td>50</td>
<td>3</td>
<td>3 elective credits</td>
</tr>
<tr>
<td>Principles of Accounting</td>
<td>–</td>
<td>–</td>
<td>no credit awarded</td>
</tr>
<tr>
<td>Principles of Macroeconomics</td>
<td>53</td>
<td>3</td>
<td>ECON 1500 (BAI) (3)</td>
</tr>
<tr>
<td>Principles of Management</td>
<td>–</td>
<td>–</td>
<td>no credit awarded</td>
</tr>
<tr>
<td>Principles of Marketing</td>
<td>55*</td>
<td>3</td>
<td>BA 3500 (3)</td>
</tr>
<tr>
<td>Principles of Microeconomics</td>
<td>54</td>
<td>3</td>
<td>ECON 2010 (3)</td>
</tr>
<tr>
<td>Social Sciences and History</td>
<td>50</td>
<td>3</td>
<td>3 elective credits</td>
</tr>
<tr>
<td>Spanish Language</td>
<td>–</td>
<td>–</td>
<td>no credit awarded</td>
</tr>
<tr>
<td>Trigonometry</td>
<td>–</td>
<td>–</td>
<td>no credit awarded</td>
</tr>
<tr>
<td>West. Civ. I: Ancient Near East to 1648</td>
<td>50</td>
<td>3</td>
<td>HIST 1040 (BHU) (3)</td>
</tr>
<tr>
<td>West. Civ. II: 1648 to the Present</td>
<td>50</td>
<td>3</td>
<td>HIST 1050 (BHU) (3)</td>
</tr>
</tbody>
</table>

*The minimum score requirement for this exam is subject to change.

**Students who plan to use PSY 3660 for teacher licensure should contact the Teacher Education, Graduation, and Educator Licensing Office in Education 103, phone (435) 797-1443, prior to making arrangements for the examination.
International Baccalaureate Organization (IBO)

The IBO is a nonprofit educational foundation based in Geneva, Switzerland.

It grew out of international schools’ efforts to establish a common curriculum and university entry credential. The schools were also motivated by an idealistic vision. They hoped that critical thinking and exposure to a variety of points of view would encourage intercultural understanding by young people.

They concentrated on the last two years of school before university studies in order to build a curriculum that would lead to what they called a “baccalaureate,” administered in any country and recognized by universities everywhere.

USU recognizes the International Baccalaureate program. Students who present an International Baccalaureate diploma will be awarded a maximum of 30 credits. These credits will waive the Breadth requirements, but students will still be required to complete the Communications Literacy, Quantitative Literacy, and Computer and Information Literacy requirements.

Students who have not completed the International Baccalaureate diploma may receive up to 8 credits for scores of 5, 6, or 7 achieved on higher-level exams, up to a maximum of 30 credits. No credits are awarded for subsidiary-level exams.

Individual departments and/or colleges may specify the exact courses required to fill their requirements and may require more than the minimum General Education requirements. Some departments and colleges require specific coursework for General Education, which the IBO exams may not satisfy.

If, prior to taking an IBO examination, a student has received credit (including AP credit) for any coursework equivalent to the subject matter of an IBO examination, the credits earned from the course will be deducted from the earned IBO credits.

Other institutions have policies differing from those of USU regarding IBO scores and credits granted for those scores. For transfer students with less than an associate degree, IBO credit posted to another institution’s transcript is reevaluated based on USU’s standard.

International Baccalaureate Organization (IBO) Credit Allocation

<table>
<thead>
<tr>
<th>IBO Test</th>
<th>Min. Score</th>
<th>Credits</th>
<th>USU Credit Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Chemistry</td>
<td>5</td>
<td>8</td>
<td>3 (BPS) credits + 5 elective credits</td>
</tr>
<tr>
<td>Art/Design</td>
<td>5</td>
<td>8</td>
<td>8 elective credits</td>
</tr>
<tr>
<td>Art History</td>
<td>5</td>
<td>8</td>
<td>8 elective credits</td>
</tr>
<tr>
<td>Biology</td>
<td>5</td>
<td>8</td>
<td>3 (BLS) credits + 5 elective credits</td>
</tr>
<tr>
<td>Economics</td>
<td>5</td>
<td>8</td>
<td>3 (BSS) credits + 5 elective credits</td>
</tr>
<tr>
<td>English A1</td>
<td>5</td>
<td>8</td>
<td>ENGL 1010 (CL) (3) + ENGL 2010 (CL) (3) + 2 elective credits</td>
</tr>
<tr>
<td>General Chemistry</td>
<td>5</td>
<td>8</td>
<td>3 (BPS) credits + 5 elective credits</td>
</tr>
<tr>
<td>Geography</td>
<td>5</td>
<td>8</td>
<td>GEOG 1130 (BPS) (3) + GEOG 2030 (BSS) (3) + 2 elective credits</td>
</tr>
<tr>
<td>History—European</td>
<td>5</td>
<td>8</td>
<td>3 (BHU) credits + 5 elective credits</td>
</tr>
<tr>
<td>History—United States</td>
<td>5</td>
<td>8</td>
<td>3 (BAI) credits + 5 elective credits</td>
</tr>
<tr>
<td>History of the Americas</td>
<td>5</td>
<td>8</td>
<td>3 (BHU) credits + 5 elective credits</td>
</tr>
<tr>
<td>History of the Islamic World</td>
<td>5</td>
<td>8</td>
<td>3 (BHU) credits + 5 elective credits</td>
</tr>
<tr>
<td>Mathematics</td>
<td>5</td>
<td>8</td>
<td>3 (QL) credits + 5 elective credits</td>
</tr>
<tr>
<td>Philosophy</td>
<td>5</td>
<td>8</td>
<td>3 (BHU) credits + 5 elective credits</td>
</tr>
<tr>
<td>Physics</td>
<td>5</td>
<td>8</td>
<td>PHYX 2110 (4) + PHYX 2120 (BPS) (4)</td>
</tr>
<tr>
<td>Psychology</td>
<td>5</td>
<td>8</td>
<td>3 (BSS) credits + 5 elective credits</td>
</tr>
<tr>
<td>Social Anthropology</td>
<td>5</td>
<td>8</td>
<td>ANTH 1010 (BSS) (3) + 5 elective credits</td>
</tr>
<tr>
<td>Theatre Arts</td>
<td>5</td>
<td>9</td>
<td>THEA 1010 (BCA) (3) + THEA 1210 (3) + THEA 1400 (3)</td>
</tr>
</tbody>
</table>

Credit will only be awarded for higher-level exams.


Placement Tests

Following is a list of areas offering placement tests.

**English.** ACT test scores may be used as a placement tool for recommending the level of courses to be taken.

An ACT English score of 29 or higher, or an SAT Verbal score of 640 or higher, will waive English 1010 and qualify a student for placement in English 2010 after the student has earned 30 credits. Students with an English ACT score of 16 or lower will be required to take English 0010.

**Mathematics.** The results of the ACT or SAT mathematics section, along with other pertinent information (high school coursework, etc.), are used as a basis for placing incoming freshmen students in the proper mathematics course as follows:

<table>
<thead>
<tr>
<th>Placement in Mathematics and Statistics Courses</th>
<th>Course</th>
<th>Math ACT Score</th>
<th>Math SAT Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 1010</td>
<td>18 or higher</td>
<td>440 or higher</td>
<td></td>
</tr>
<tr>
<td>STAT 1040</td>
<td>19 or higher</td>
<td>460 or higher</td>
<td></td>
</tr>
<tr>
<td>MATH 1030</td>
<td>23 or higher</td>
<td>540 or higher</td>
<td></td>
</tr>
<tr>
<td>MATH 1050</td>
<td>23 or higher</td>
<td>540 or higher</td>
<td></td>
</tr>
<tr>
<td>MATH 1060</td>
<td>23 or higher</td>
<td>540 or higher</td>
<td></td>
</tr>
<tr>
<td>MATH 1100</td>
<td>25 or higher</td>
<td>580 or higher</td>
<td></td>
</tr>
<tr>
<td>MATH 2020</td>
<td>25 or higher</td>
<td>580 or higher</td>
<td></td>
</tr>
<tr>
<td>MATH 1210</td>
<td>27 or higher</td>
<td>620 or higher</td>
<td></td>
</tr>
</tbody>
</table>

Regardless of previous record, a student may take any of the math placement tests up to twice per semester. Students should schedule an appointment in advance at the Testing Center, located in University Inn 115. A $5 fee will be required for each test, and results will be known within a few minutes. There are three different tests for placement into the following:

1. MATH 1010
2. MATH 1030, 1050, 1060, or STAT 1040
3. MATH 1100, 1210, 2020, or STAT 2300

Generally, students who receive an ACT score of 17 or lower are advised to take the MATH 1010 Placement Test to determine which entry-level course is needed. Based on the results of the test, MATH 1010 or 0900 will be recommended. MATH 0900 is a refresher course and has an additional fee. In addition, MATH 0900 does not count for college credit.

**TOEFL.** The Test of English as a Foreign Language (TOEFL) is required for international students (from countries in which English is not the official language) for admission to the University. It is not used for granting credit nor for waiver of the communications literacy requirement. International undergraduate students are required to complete the Intensive English course unless they receive a score of 500/173 (computer) or higher on the TOEFL examination, or a Michigan score of 80.

**Languages.** Where basic skills in a language have been acquired by means other than college courses, up to 16 lower-division credits may be earned by special examination.

Students with skills in a language other than those offered by the department may earn up to 12 pass/fail credits by successfully performing on a special Languages, Philosophy, and Speech Communication Department examination. However, these examinations are no longer offered at USU. Interested students must make arrangements to take one of these exams at Brigham Young University.

Students with skills in a language that is offered by the Languages, Philosophy, and Speech Communication Department may earn credit by successfully performing on an examination or by successfully completing an upper-division (3000-level or above) language course with a grade of B or better. Students should contact the Languages, Philosophy, and Speech Communication Department in Main 204, 797-1209.
Transfer Articulation Agreements

Students who transfer to Utah State University from one of the institutions listed below will have their coursework evaluated as follows:

1. Those who transfer to Utah State University and have an Associate of Arts or an Associate of Science degree (or have completed the General Education requirements of the sending institution) will be deemed as having met the General Education portion of the University Studies requirements at Utah State University. A student who transfers without an Associate of Arts or Associate of Science degree will need a registrar’s certification stating that he or she has completed the General Education requirements at the sending institution.

2. Students who transfer to Utah State University with less than an Associate Degree (and have not completed General Education requirements) or with an Associate of Applied Science Degree will have their General Education courses evaluated on a course-by-course basis and may be required to take any additional courses necessary to satisfy the General Education requirements at Utah State University. However, if these students have taken equivalent General Education courses at the sending institution, these courses will be accepted toward satisfying General Education requirements at Utah State University.

Courses approved as fulfilling General Education requirements at a Utah System of Higher Education (USHE) institution, Brigham Young University, Brigham Young University (Idaho), LDS Business College, and Westminster College will be acceptable to Utah State University as satisfying comparable General Education requirements. Coursework acceptability at other institutions will be determined by the student’s major department at Utah State University.

3. Coursework taken to fulfill requirements other than General Education will be reviewed by the appropriate department within Utah State University. Coursework acceptability will be determined by the student’s major department at Utah State University.

4. Utah State University will require students to satisfy the Breadth American Institutions requirement if an equivalent course has not been completed. USU will require students who receive an Associate of Arts degree from Brigham Young University (Idaho) to satisfy any deficiencies in the Breadth Life Sciences and Breadth Physical Sciences requirements if equivalent courses have not been completed. USU will require students who receive an Associate degree from Brigham Young University (Hawaii) to satisfy any deficiency in the Quantitative Literacy requirement if an equivalent course has not been completed.

Approved Institutions

Utah
Brigham Young University
College of Eastern Utah
Dixie State College of Utah
LDS Business College

Salt Lake Community College
Snow College
Southern Utah University
University of Utah
Utah Valley State College
Weber State University
Westminster College

Arizona
Arizona State University
Arizona Western College
Central Arizona College
Cochise College
Coconino Community College
Dine College
Eastern Arizona College
Maricopa Community College District
Chandler-Gilbert Community College
Estrella Mountain Community College
Gateway Community College
Glendale Community College
Mesa Community College
Paradise Valley Community College
Phoenix College
Rio Salado College
Scottsdale Community College
South Mountain Community College
Mohave Community College
Northern Arizona University
Northland Pioneer College
Pima Community College
University of Arizona
Yavapai College

California
Allan Hancock College
American River College
Antelope Valley College
Bakersfield College
Barstow College
Butte College
Cabrillo College
Canada College
Cerritos College
Cerro Coso Community College
Chabot College
Chaffey College
Chapman University
Citrus College
City College of San Francisco
Coastline College
College of Alameda
College of Marin
College of San Mateo
College of the Canyons
College of the Desert
College of the Redwoods
College of the Sequoias
College of the Siskiyous
Columbia College
Compton College
Contra Costa Community College
Copper Mountain College
Cosumnes River College
Craford Hills College
Cuesta College
Cuyamaca College
Cypress College
D-Q University
De Anza College
Diablo Valley College
East Los Angeles College
El Camino College
Evergreen Valley College
Feather River College
Foothill College
Fresno City College
Fullerton College
Gavilian College
Glendale College
Golden West College
Grossmont College
Hartnell College
Imperial Valley College
Irvine Valley College
Kings River College
Lake Tahoe Community College
Laney College
Las Positas Community College
Lassen College
Long Beach City College
Los Angeles City College
Los Angeles Harbor College
Los Angeles Mission College
Los Angeles Pierce College
Los Angeles Southwest College
Los Angeles Trade Technical College
Los Angeles Valley College
Los Medanos College
Marymount College
Mendocino College
Merced College
Merritt College
MiraCosta College
Mission College
Modesto Junior College
Monterey Peninsula College
Moorpark College
Mount San Antonio College
Mount San Jacinto College
Napa Valley College
Ohiolone College
Orange Coast College
Oxnard College
Palo Verde College
Palomar College
Pasadena City College
Porterville College
Rancho Santiago College
Reedley College
Rio Hondo College
Riverside Community College
Sacramento City College
Saddleback College
San Bernadino Valley College
San Diego City College
San Diego Mesa College
San Diego Miramar College
San Joaquin Delta College
San Jose City College
Santa Ana College
Santa Barbara City College
Santa Monica College
Santa Rosa Junior College
Santiago Canyon College
Shasta College
Sierra College
Skyline College
Solano Community College
Southwestern College
Taft College
Ventura College
Victor Valley Community College
Vista College
West Hills College
West Los Angeles College
West Valley College
Yuba College

Colorado
University of Colorado (Denver)

Hawaii
Brigham Young University (Hawaii)*

Idaho
Boise State University
Brigham Young University (Idaho)**
College of Southern Idaho
Idaho State University

Nevada
Great Basin College
University of Nevada (Las Vegas)
University of Nevada (Reno)

New Mexico
College of the Southwest
San Juan College

Oregon
Mt. Hood Community College
Portland Community College
Treasure Valley Community College

Texas
Houston Community College System
Tarrant County College

Washington
Spokane Community College
Spokane Falls Community College

Wyoming
University of Wyoming
Western Wyoming Community College
Students who transfer from an institution that is not listed above will have their General Education coursework evaluated by the student’s major department at Utah State University.

For an institution to be considered for inclusion in the above articulation agreements, the institution’s General Education requirements must be reviewed and approved by both the USU General Education Subcommittee and the Educational Policies Committee. Institution representatives should submit their requests, along with a copy of their institution’s catalog, to: John Mortensen, Director of University Advising and Transfer Services, Utah State University, 0114 Old Main Hill, Logan UT 84322-0114.

Utah State University maintains annual course-by-course articulation agreements with the following institutions:

Boise State University
Brigham Young University
Brigham Young University (Hawaii)
Brigham Young University (Idaho)
College of Eastern Utah
College of Southern Idaho
Dixie State College
LDS Business College
Idaho State University
Salt Lake Community College
Snow College
Southern Utah University

University of Utah
Utah Valley State College
Weber State University
Westminster College
Western Wyoming Community College

These course-by-course agreements show how courses taken at these institutions will be accepted and applied at Utah State University.

In addition to the course-by-course articulations, Utah State maintains general education articulation agreements with institutions within the state of Utah, as well as Brigham Young University (Idaho). These agreements show how individual courses taken at these institutions will meet Utah State’s General Education and Depth Education requirements within the University Studies Program.

These articulation agreements, as well as additional information about transferring to Utah State University, can be found at the Transfer Student Services website: http://www.usu.edu/transfer

*USU will require students who receive an Associate degree from Brigham Young University (Hawaii) to satisfy any deficiency in the Quantitative Literacy requirement if an equivalent course has not been completed.

**USU will require students who receive an Associate of Arts degree from Brigham Young University (Idaho) to satisfy any deficiencies in the Breadth Life Sciences and Breadth Physical Sciences requirements if equivalent courses have not been completed.
Student Resources

Academic Resource Center
Student Center 305, (435) 797-1128
http://www.usu.edu/arc

The Academic Resource Center (ARC) provides services and programs for undergraduate students to improve their learning strategies and academic success. The classes USU 1010, PSY 1730, PSY 1750, and MHR 2160 involve students in improving academic skills. A study skills assessment is offered, and individual consultation with learning problems is available. “Drop-In” tutoring and extra academic support are available with the Supplemental Instruction (SI) program. Suggestions for academic improvement are available in computer-based and print formats.

Admissions
Student Center 102, (435) 797-1129, or (800) 488-8108
http://www.usu.edu/admissions

The Admissions Office acts as a liaison between the University and high schools and community colleges. It functions as the first point of contact between the University and the public schools and is involved in personal visits to schools and institutions. Personnel in this office are glad to answer questions about the University, conduct tours, assist with arrangements, and help students make application for scholarships and admissions.

Advising and Transfer Services, University
Student Center 304, (435) 797-3373
http://www.usu.edu/ats

University Advising and Transfer Services provides advising referrals and information regarding University requirements, academic policies and procedures, academic program planning, University Studies requirements, transfer articulation agreements, services, and resources of the University. University Advising and Transfer Services also facilitates the new Student Orientation, Advising, and Registration (SOAR) program; the Peer Advising program; Graduation Guarantee program; Intent to Transfer program; and transfer articulation agreements.

Bookstore
Student Center 123, (435) 797-1666
http://www.bookstore.usu.edu

The USU Bookstore’s primary objective is to support students. The Bookstore’s focus centers on providing students with easy and timely access to textbooks, reference books, trade books, and other educational materials. In addition, there is a Gifts and Clothing Department which carries Aggie-related items, and a Supplies and Electronics Department.

Special services include: Express-A-Book (mail order), custom publishing (copyright clearance and production of course readers), accounts for scholarship and rehabilitation students, special orders on merchandise, textbook buyback, and scholarships.

Textbooks and merchandise can also be purchased at the Bookstore’s secure website.

Campus Recreation
Health, Physical Education and Recreation 126, (435) 797-1503
http://www.usu.edu/camprec

Students interested in intramural, club sports, or leisure sports activities can fulfill their interests through the Campus Recreation Office, located in the HPER facility, room 126. Campus Recreation has access to two fine facilities: the HPER Building and the Nelson Recreation Center. Recreation activities include racquetball, basketball, indoor track, weights, tennis, softball, swimming, and soccer, just to name a few. Club sports include ballroom dance, baseball, cycling, hockey, lacrosse, racquetball, rodeo, rugby, soccer, ultimate frisbee, volleyball, and waterpolo.

Career Exploration Resource Center
University Inn 101, (435) 797-1138
http://www.usu.edu/explore

Students who are undecided about their major or who need additional information about career options should contact this office. The center also offers a Career and Life Planning course, Psychology 1220, 3 credits.

Career Services
University Inn 102, (435) 797-7777
http://www.usu.edu/career

Career Services provides advisement, interview opportunities, job announcements, referrals to employers, internship and cooperative education information, and many other resources to assist students in obtaining employment upon graduation.

Children’s House
862 East 900 North, (435) 797-3657
http://www.childrenshouse.usu.edu

Student parents attending the University may enroll their children at the Children’s House, an accredited quality early care and education program for preschool age (3-5 years) and half-day kindergarten children. Professional staff provide a healthy, safe, and nurturing learning environment for children by promoting their physical, social, emotional, and intellectual development. There are several flexible enrollment options from which parents can choose as space is available.
Computer and Information Literacy (CIL)

Eccles Science Learning Center 131, (435) 797-2405

http://cil.usu.edu

As part of the University Studies Requirements, all students receiving a bachelor’s degree from USU must score 70 percent or higher on each of the following six computer and information literacy examinations: (1) Information Law and Ethics, (2) Information Resources, (3) Document Processing, (4) Operating Systems and Environments, (5) Spreadsheets, and (6) Presentations.

There is a $30 fee associated with this exam. Students having less than 60 semester credits when they register for their first semester at USU will automatically be assessed a $30 Computer and Information Literacy (CIL) fee. (If a student can show proof that the CIL requirement has been met at another Utah institution, the $30 fee will be credited to the student’s account.)

Once the fee is paid, there is no limit to the number of times a student can take each test. Once a test is passed, a student may not retake that test. After all tests are passed, students must go to the CIL web page, select Recording on Transcript, and then complete and submit the form. The CIL information will then be posted to their transcripts.

Counseling Center

Student Center 306, (435) 797-1012

http://www.usu.edu/counsel

The Counseling Center assists students with personal growth and adjustment, relationship issues, problem-solving, career/academic adjustment, and psychosocial assessment. Services include individual, relationship, and group therapy; outreach programs; and problem-solving consultations.

Customer Service Center

USU ID Cards, Debit and Dining Accounts, Information, and Ticket Sales

Student Center 212, (435) 797-3852

http://www.usu.edu/usucard

The Customer Service Center is the location where students receive their USU ID Card. The USU ID Card allows students access to many campus resources and events. In addition, it can be used for debit and dining accounts.

The Customer Service Center staff can answer general questions about the University and provide student information. The center offers assistance, information, maps, and problem-solving assistance for students, staff, and visitors. The center also handles Lost and Found items for the Taggart Student Center.

There is an outlet for the USU Ticket Office at the center. Tickets are available for performing arts, theatre productions, STAB events, and all athletic events.

Disability Resource Center

University Inn 101, (435) 797-2444 or (800) 259-2966 Voice or (435) 797-0740 TTY

http://www.usu.edu/drc

The Disability Resource Center offers support, facilities, and services needed to ensure that students with disabilities can obtain an education at the University. A student needing an interpreter, reader, note-taker, or other services should contact this office. Assistance is also provided in counseling, registering, equipment acquisition, assistive technology lab, and referral information.

Financial Aid

Student Center 106, (435) 797-0173

http://www.usu.edu/finaid

The Financial Aid Office provides direction and counseling in the areas of scholarships, grants, loans (emergency and long-term), federal work aid (work-study), and general on-campus and off-campus temporary employment assistance. Help is available in preparing and submitting applications and supporting materials, and counseling students about school financing and available aid, budgeting, deadlines, and loan indebtedness.

Graduate Studies, School of

Main 164, (435) 797-1189

http://www.usu.edu/gradsch

This office handles admission to all USU graduate programs and monitors all graduate students at USU, including final degree approval.

Graduation Office (Undergraduate)

(Office of the Registrar)

Student Center 246, (435) 797-1117

http://www.usu.edu/registrar/graduation

This office provides and processes applications for graduation, publishes graduation lists, and orders diplomas.

Honors Program

Merrill Library 374, (435) 797-2715

http://www.usu.edu/honors

The Honors Program allows motivated undergraduates to pursue enhanced coursework in their University Studies requirements, as well as in their area of major research study. Members of the program may earn their bachelor’s degrees with University Honors in an academic major. A limited number of entering freshmen are invited to join the Honors Program each year. Others may join on a “space available” basis. Transfer students and those who have completed their University Studies requirements can enter the Honors Program through acceptance into a Department Honors Plan. Students in the program must maintain a 3.30 GPA.

Housing and Food Services

1295 East 1000 North, (435) 797-3113 or (800) 863-1085

http://www.housing.usu.edu

USU Housing’s commitment is to provide students with high-quality facilities, reasonable prices, excellent customer service, and the ultimate in campus convenience. A well-trained staff in each residential area provides numerous opportunities for social interactions and community building within the halls and apartments. The staff also offers educational workshops which supplement formal classroom experiences and learning. Residence Life
staff members serve as knowledgeable advisors, resources, and mediators.

Living in USU residence halls gives students the opportunity to make the most of their collegiate experience. Studies show that those students who live on campus perform better academically, stay in school longer, and are more satisfied with their overall college experience. A well-rounded living/learning environment can have a significant influence on student education, and USU Housing wants to help students succeed. Students may choose from traditional-style, apartment-style, and family-style living accommodations.

**Independent and Distance Education**

Merrill Library 208, (435) 797-2137  
http://extension.usu.edu/continued

The Independent and Distance Education Office offers University and Independent Study credits that are transferrable to many other institutions and are accepted in degree programs at Utah State University and throughout the world.

**International Students and Scholars**

Student Center 313, (435) 797-1124  
http://www.usu.edu/iss

The Office of International Students and Scholars (ISS) is committed to providing the necessary tools for students to succeed, both academically and personally. It provides the support to enhance the academic, social, and personal interactions of international students and scholars while at USU and in the Logan community. It serves as the primary link between the students and the local and government agencies. The ISS staff is eager to assist with advising on immigration and other matters, such as academic, personal, and social adjustments. A main goal is to create a warm and inclusive environment in which all students can learn and interact in a cross-cultural environment. Throughout the year, ISS and the International Student Council (ISC) offer cultural and educational programs to enhance intercultural competencies and communication skills.

**Multicultural Student Services**

Student Center 309, (435) 797-1733  
http://multiculture.usu.edu

Multicultural Student Services contributes to the mission of the University and Student Services by advancing and encouraging the intellectual, personal, cultural, and professional development of Native American, African-American, Asian-American, Oceanic, and Latino student populations. Student development is promoted by integrating experiences into the student’s total learning environment in the classroom and community that foster, in each individual, respect and responsibility for self and other members of the world around them.

Multicultural Student Services provides direction and leadership for Utah State University’s commitment to cultural diversity. This mission is carried out through programs of instruction, advisement, community service-learning, internships, experiential education, special events, administration, and student support services.

**Network and Computing Services**

Science Engineering Research 301, (435) 797-2391  
http://www.usu.edu/compserv

Network and Computing Services (NCS) provides computing and networking facilities and services for instructional, research, and administrative functions. A current description of these facilities and the access procedures for students and staff may be found on the NCS website.

The Help Desk/TRAC is managed by NCS. This service is available from 7 a.m. to 8 p.m. by phone at (435) 797-4358 or by e-mail at helpdesk@cc.usu.edu, and from 8 a.m. to 5 p.m. for walk-in at Science Engineering Research 108 by students and staff. Online services and FAQs may be found on the web at: http://helpdesk.usu.edu

NCS coordinates Student Open Access labs and manages six of them. More than 800 computers are available for use by USU students upon presentation of their USU ID card. Lab locations, hours of operation, and lists of software and equipment available at each lab are described on the web at: http://www.sls.usu.edu

**Parking and Transportation Services**

840 East 1250 North, (435) 797-3414  
http://www.usu.edu/parking

Students who are unfamiliar with the campus should contact this office for directions and parking instructions. Also available are faculty, staff, student, and visitor parking permits. This office also provides shuttle services from key perimeter parking areas to key central campus locations.

**Records Office (Office of the Registrar)**

Student Center 246, (435) 797-1116  
http://www.usu.edu/registrar/records

This office processes and maintains student academic records. Students or advisors needing transcripts of academic records or needing to make changes on academic records should contact this office.

**Reentry Student Center**

Student Center 310, (435) 797-1728  
http://www.usu.edu/stuserv/womencen

The Reentry Student Center provides information, assistance, and referrals concerning the opportunities and resources available on campus and in the community to nontraditional students, who are identified as women and men returning to school after a gap in their education. The center serves as an informal place for reentry students and facilitates their transition to university life.

**Registration Office**

Student Center 246, (435) 797-1094  
http://www.usu.edu/registrar/registration

This office prepares all registration materials and conducts registration.
**Residency Office**

(Admissions Office)
Student Center 102, (435) 797-8144
http://www.usu.edu/admissions/ua/residency.html

Nonresident students who feel they have met the requirements for instate resident student status must file an official residency application with the Residency Office no later than 10 calendar days from the first class day and not more than 30 days before the beginning of the semester for which residency is sought. Those missing the application deadline will have residency considered for the next semester, provided that the next appropriate deadline is met with adequate updated documentation.

If an application is denied by the Residency Officer, the student may appeal to the Residency Appeals Committee no later than the 14th calendar day of the semester. Appeals cannot be considered after this deadline.

Information on residency requirements can be obtained from this office.

**Student Employment**

(Financial Aid Office)
Student Center 106, (435) 797-0184
http://www.usu.edu/studemp

The Student Employment Office develops and posts on-campus part-time and off-campus full-time and part-time openings daily on the Job Board in the hallway outside the Financial Aid Office in the Taggart Student Center. Summer openings representing camps, resorts, ranches, government, and private industry across the United States are featured from January through May on display boards at the entrance to the Financial Aid Office. Additional information and assistance may be obtained at the Student Employment counter in the Financial Aid Office.

**Student Health and Wellness Center**

850 East 1200 North, (435) 797-1660
http://www.usu.edu/shshome

The Student Health and Wellness Center provides students with care for illness and minor injuries, as well as health and wellness information for a variety of concerns. Help and information on topics such as depression, nutrition, time and stress management, healthy relationships, and prevention of sexual assault and date rape, as well as assessment, education, and referral for substance abuse, are available from a variety of specialists on the staff.

The services of physicians, nurses, and pharmacists, as well as laboratory, physical therapy, psychology, prevention, and dietitian services, are available on-site. General medical care and specialty care in sports medicine, emergencies, dermatology, gynecology, and psychiatry are provided through the center. Special services include physical exams for pilots, teachers, or missionaries, and x-ray and laboratory services are available. Peer educators, as well as office staff, are available to answer questions and provide support or information on health-related topics. Students gain leadership skills while involved in peer educator teams offering prevention activities and promoting healthy lifestyles. Prevention programs, research surveys, and educational classes are also available through this office. Educational presentations on health-related topics, which are excellent supplements to academic course material, can be scheduled by faculty members for inclusion in their classes.

Most of the costs for services of the Student Health and Wellness Center are covered by the Student Health Fee, paid at the time the student registers, but some procedures and classes may require a nominal fee. Although the Student Health and Wellness Center provides administrative oversight of the Student Health Insurance Plan, health insurance is not required to use the Student Health and Wellness Center.

**Student Involvement and Leadership Center**

Student Center 326, (435) 797-1716
http://a-station.usu.edu

The role of the ASUSU Executive Council is to enhance the quality of student life through: academics, activities, student concerns, public relations, service, athletics, clubs, organizations, and cultural events, along with direct college, extension, graduate, and student representation. There are three bodies of the ASUSU Executive Council that make the whole: legislators, senators, and programmers.

Students interested in getting involved should visit the website or Student Center 326. The experiences students have outside of the classroom will allow them to develop the leadership abilities and life skills necessary for success after graduation.

**Student Support Services**

Student Center 225A, (435) 797-3372
http://www.usu.edu/sss

Students meeting the low-income criteria established by the U.S. Commission of Higher Education and/or first-generation college students or disabled students may receive special assistance through the Student Support Services Office.

This office seeks to prepare and support students for the challenges of higher education by offering assistance in academic advising and guidance, tutoring on an individual basis, course selection, faculty mentoring, reading and study skills enrichment, math instruction, financial aid planning, and priority registration.

**Testing Services**

University Inn 115, (435) 797-1004
http://www.usu.edu/career/testing.html

Information and test times are available for academic admission tests, including the GED (a high school equivalency exam), the ACT for undergraduate admission, the GRE and MAT for graduate admission, the GMAT for business school, the LSAT for law school, the MCAT for medical school, and the TOEFL (Test of English as a Foreign Language, for international students entering at both graduate and undergraduate levels). Math placement tests are available for immediate placement into math classes. CLEP exams, which give students the chance to earn semester credits toward their University Studies requirements by exam, are offered. Test information and booklets are also available.

**The Utah Statesman**

Student Center 315, (435) 797-6397
http://www.utahstatesman.com

The Utah Statesman, USU’s student newspaper, is published three times each week. A large number of students are involved in producing this award-winning publication.
Val R. Christensen Service Center
Student Center 332B, (435) 797-7378
http://studentlife.tsc.usu.edu/servicecenter

The Val R. Christensen Service Center is a student-run volunteer organization. It has been in existence since 1970 and is now one of the largest formal groups on campus. There are more than 20 volunteer programs in the Service Center, giving students a wide range of volunteer opportunities to choose from. These opportunities fall under mentoring, tutoring, environmental, and leadership programs. Time commitments range from one hour per month to three hours per week. The mission of the Service Center is to build future leaders, create volunteer opportunities for students, and serve the people of the campus and community. A Certificate in Service Learning is available through the collaborative efforts of Student Services and Academic Affairs.

Veterans Services
(Office of the Registrar)
Student Center 204, (435) 797-1102

The Office of Veterans Services assists eligible veterans, qualified dependents of disabled veterans, and National Guard and Reservists in pursuing their educational, professional, or vocational objectives and receiving their appropriate educational benefits.

Women’s Center for Lifelong Learning
Student Center 310, (435) 797-1728
http://www.usu.edu/stuserv/womencen

The Women’s Center provides information, assistance, and referrals concerning the opportunities and resources available on campus and in the community. The center serves as an advocate for women, educating campus and community constituencies on the changing status of women and gender-based issues. The center provides support for women students, faculty, and staff, and facilitates the exchange of information for their personal and professional development.

Writing Center
Ray B. West 104, (435) 797-2712
http://writingcenter.usu.edu

The Writing Center provides help for any stage of the writing process and is open and free to most students. All appointments must be made online by going to the website listed above. Consultants are available for one-on-one counseling in the center or for online sessions.
Academic Support Programs and Services

Academic Resource Center

The Academic Resource Center provides services and programs for undergraduate students to improve their learning strategies and academic success. The center provides individual instruction, classes, tutoring, supplemental instruction, workshops, and instructional materials.

Courses

**USU 1010, University Connections (1-3 credits)**, introduces students to the expectations and challenges of university life, as well as to the academic, geographic, social/communal, and procedural maps of the University. Connections also focuses on some of the learning strategies students will need to successfully achieve their goals at the University. The course explores issues which students commonly encounter during their transition from high school to university life, in an atmosphere encouraging the development of enduring connections with University faculty, staff, and students. The curriculum requires students to participate in a common literature experience. Before the semester begins, students receive information about the literature experience.

To meet their individual needs, students may choose from several course format options. They may take the course during the week before the semester begins, enroll during the first eight weeks of the semester, or take a section offering a career exploration component.

**PSY 1730, Strategies for Academic Success (1-3 credits)**, involves application of important learning strategies. Topics include test preparation, note-taking, textbook reading, and test-taking.

**PSY 1750, Comprehension Strategies for College Reading (1 credit)**, is designed for students who want to improve their college reading skills in the areas of comprehension, vocabulary, and retention of information. Students practice the reading strategies using textbooks from their other classes.

**MHR 2160, Student Applied Leadership Training (1-3 credits)**, is designed to develop the skills of students working as tutors. This class meets the standards of the National Tutoring Certification Program.

Individual Assistance

Staff members provide individual consultation for students needing help with specific learning needs in one or more of their courses.

Workshops

Workshops are offered on a variety of learning topics for student groups and classes. To arrange for a workshop, call (435) 797-1128.

Supplemental Instruction

A program of Supplemental Instruction (SI) for General Education courses is sponsored by the center. A student who has successfully completed a General Education course is hired by the center to attend all class sessions and conduct review sessions. This student models effective study strategies for academic achievement in that class. SI classes and schedules are published each semester on the web: [http://www.usu.edu/arc](http://www.usu.edu/arc)

Tutoring Programs

**Drop-In Math and Statistics Tutoring.** Free tutoring is provided by trained tutors at the center and other campus sites. Schedules can be picked up in Student Center 305 each semester or can be found on the Web-based Tutor Directory.

**Tutor Advertiser.** Students can hire a qualified tutor through the web-based Tutor Advertiser. These tutors are screened by the center and must be paid by the student receiving the tutoring.

**Tutor Directory.** The center publishes a directory of all on-campus free tutoring. The directory is available in Student Center 305 and through the center’s web page: [http://www.usu.edu/arc](http://www.usu.edu/arc)

Idea Sheets

Free Idea Sheets on a variety of learning strategies are available in the center and through the center’s web page: [http://www.usu.edu/arc](http://www.usu.edu/arc)

USU America Reads

The center coordinates a literacy tutoring program, through which students with federal work-study financial aid are hired and placed in elementary schools to work as reading/writing tutors with children who are struggling readers.

Video Viewing Library

The center has a collection of videos, which students may view in the center, relating to effective learning strategies.

Referral Resources

The center provides students with referral information for a variety of on-campus and off-campus services and agencies.

For more information, contact the Academic Resource Center, Student Center 305, (435) 797-1128.
Cooperative Education Internship Program

The Cooperative Education Internship Program offers both undergraduate and graduate students a unique opportunity to integrate career, social, and personal development into the educational process. The program is designed to allow students to alternate classroom study with a series of paid preprofessional work experiences related to their field of study. These experiences increase in complexity as the student’s background in a given field increases.

The program offers several specific benefits to students. It provides those students who have decided on an academic major an opportunity to obtain pregraduation work experience in their chosen career. The program provides those students who are unsure of their academic major an opportunity to explore several career possibilities. It provides them a chance to earn money for their education and credit toward their degree. Finally, it substantially improves the students’ opportunities for employment after graduation.

The Cooperative Education Internship Program option is available in all departments on the Utah State University campus. Generally speaking, students begin their work experiences in their sophomore or junior year, although seniors can take advantage of program benefits. Students can undertake either part- or full-time work experiences. Work experiences are available both during the academic year and during the summer. These work experiences may be with a single employer or with different employers; increasing complexity is the critical principle. Salaries vary with the field of work and the complexity of the job.

The amount of academic credit awarded for a given work experience varies, and depends upon the amount of work completed and upon the career-related nature of the experience. The decision regarding credit and the amount to be granted rests with the academic department, and specifically the faculty co-op coordinators. Students must make the credit arrangement with their faculty co-op coordinators prior to their work experience.

Students interested in entering or learning more about the program should contact their academic department; or visit Career Services, located in University Inn 102, tel. (435) 797-7777.

Cultural Exchange Program

More than 1,100 students and scholars from 83 countries are currently enrolled at Utah State University. Many of these students are in great demand by the community to visit various school, church, and civic functions. Students often bring from their countries videos, slides, photographs, artifacts, maps, music, and costumes which they share with the community. Other students are requested by various organizations to display their talents in song, dance, cooking, fashion shows, martial arts, and many other crafts and skills.

These outreach programs benefit the community, enhance the University, and also provide excellent opportunities for USU international students to learn how the community operates. It also gives internationals the occasion to develop friendships with Americans. The sometimes long-lasting and far-reaching friendships are valuable to developing peace and friendship across the globe. Also, these students further develop their talents and skills in communication and become familiar and comfortable with the American culture.

Those needing help in arranging programs with international students may call the Office of International Students and Scholars at (435) 797-1124.

Disability Resource Center

The mission of the Disability Resource Center is to provide supportive services to qualified individuals with disabilities, so they may participate equally in academic, employment, social, and cultural opportunities available at Utah State University.

Services offered by the Disability Resource Center include:
1. Campus orientation, architectural access, and modification.
2. Registration assistance, including interpreters, advisors, and escorts.
3. Equipment loan and Assistive Technology Laboratory, including FM amplification systems, tape recorders, aids for students with vision impairments, and adapted computer hardware and software.
4. Referral information regarding campus and community services, including a referral registry for nonacademic interpreters, readers, personal care attendants, and escorts.
5. Alternate-format textbooks and class materials for qualifying students.
6. Counseling for academic and personal needs.
7. Support service coordination with the Division of Vocational Rehabilitation.

The Disability Resource Center is located in University Inn 101 and can be reached by telephone by calling (435) 797-2444 or (800) 259-2966 (voice) or (435) 797-0740 (TTY).

General Studies Program

General Studies is the administrative-academic unit maintained at USU for the enrollment of students who do not meet the admissions requirements of the seven academic colleges. By state policy, admission of students to this category is limited.

The primary function of the program is to assist and encourage students in the improvement of their academic status, so they may transfer to the major of their choice. To accomplish this purpose, participants are urged to limit their course loads each semester, satisfy remedial requirements when indicated, and meet frequently with an advisor. Students in General Studies are encouraged to take General Education and exploratory classes. Resources in the Academic Resource Center, the University Counseling Center, the Testing Center, and Career Services are available to assist such students with career, aptitude, life skills, and study skills counseling.

The Low Scholarship and Probation Policies of the University apply to students enrolled in General Studies. When a student has satisfied remedial course requirements and has demonstrated ability to maintain a 2.0 GPA, that student may apply for admission to an academic college and department or to the Undeclared Program. Regular college admissions evaluations procedures will then be followed, and if there are no admissions restrictions, the student will be enrolled in the department of his or her choice.

Students who were enrolled in General Registration prior to Fall Semester 2004 should continue to receive advisement from the Science/HASS Advising Center.

For more information, contact University Advising and Transfer Services, Student Center 304, (435) 797-3373.
**National Student Exchange**

National Student Exchange (NSE) is a group of more than 180 colleges and universities in the United States. NSE is designed to: (1) provide students with options for educational travel and study at minimal cost, (2) provide educational opportunities in academic studies not available at USU, and (3) create an appreciation of diverse ideas and value systems.

Students normally participate in NSE during their sophomore or junior year. For further information, contact the Academic Resource Center, Student Center 305, (435) 797-1132.

**Study Abroad Program**

**Overview**

The USU Study Abroad Office provides information on a wide range of programs offering study opportunities throughout the world. Through exchange partner institutions or consortiums, students can study at more than 100 universities in more than 40 countries worldwide during a semester, academic year, or summer program. Exchange program costs are based on tuition and fees at USU. Students can earn credit toward their degree at USU while studying abroad. In many countries, even when the native language is not English, students can study in English, or have the opportunity to build language skills. Full immersion options are also available at selected sites, based on student language ability.

**Exchange Programs**

Students can study in Spanish or the Spanish language at all levels at ITESM University in Mexico. Regular semester coursework is also offered in Spanish at the University of Costa Rica. Another Spanish study opportunity is located at the University de la Rioja, in beautiful Logroño in northern Spain, and the newest opportunity is at Pontificia Universidad Católica de Valparaíso, in Valparaíso, Chile. Pontificia Universidad Católica in Rio de Janeiro, Brazil offers students the opportunity to study regular coursework in Portuguese or study the language. London Metropolitan University offers a wide variety of subjects, with students housed near historic Hyde Park. In addition, students can study at Leicester University in Leicester, England, as well as at University College Northampton in Northampton, England, both located just over an hour north of London. Other study abroad programs in English include: study in landscape architecture at University of Ljubljana, Slovenia; American studies at Innsbruck University in Austria; and study in ceramics at Southern Cross University, Australia. At Kansai Gaidai, Kobe, Gifu, and Yokohama National universities in Japan, all levels of Japanese are taught. Students may also earn credits in subjects taught in English at Kansai Gaidai or Yokohama. Keimyung University in Korea, as well as USU’s two new prestigious partners, Korea and Sungkyunkwan Universities in Seoul, provide classes taught in English and intensive Korean. Students may study the Thai language, as well as economics, business, and Thai studies courses taught in English, at Thammasat University in Bangkok, Thailand. College of Business students may participate in programs in Australia, Italy, the Netherlands, Sweden, and the United Kingdom. For graduate-level study in economics, exchanges are available in the United Kingdom, Spain, Portugal, Greece, France, or Germany.

The International Student Exchange Program (ISEP) is one of the most varied study abroad exchange consortium opportunities at USU. Through ISEP, students may study in Africa, Asia, Australia, Canada, Europe, Latin America, or Oceania. ISEP offers traditional European study abroad opportunities at some of the leading institutions in Austria, France, Germany, Hungary, Sweden, Finland, the Netherlands, and the United Kingdom. Other opportunities for study include such countries as Bulgaria, the Czech Republic, Latvia, Fiji, Iceland, Ghana, and South Africa. There are more than 100 universities to choose from in all. At many of these sites, coursework taught in English is available for semester, academic year, and summer placements. As ISEP participants, students matriculate directly into a host institution abroad. Direct matriculation means students register as regular students at their host institution, take the same courses, have the same assignments, and participate in the same activities as all other students at that institution.

**Summer Programs**

Students can participate in summer programs at Cambridge University and University College Northampton in England, and through ISEP in Korea, Thailand, the Netherlands, France, and other countries. These programs vary in length from two to six weeks.

**USU Faculty-Led Study Abroad**

Faculty at USU take study abroad students to such destinations as Belize for rain forest ecology, Peru for an anthropology field school, and Switzerland for graphic design.

Language faculty-led programs include a four-week beginning-level Spanish language and family home-stay program during May through June of each year at the University of Costa Rica in the cosmopolitan capital of San Jose, Costa Rica. A similar program at Pontificia Universidad Católica de Valparaíso, in Valparaiso, Chile, provides intermediate to advanced students the opportunity to earn Spanish credit. Other summer language programs are also available in France and Germany. For information about USU study abroad programs in French, German, and Spanish, contact the Languages, Philosophy, and Speech Communication Department, Main 204, (435) 797-1209.

For additional information about these and other programs, contact the Study Abroad Office, Student Center 313B, by phone at (435) 797-0601 or (435) 797-1253; or by e-mail at: stdyabrd@hass.usu.edu. Detailed information is available on the following website: [http://www.usu.edu/stdyabrd](http://www.usu.edu/stdyabrd)

**Student Support Services**

Student Support Services is a special program financed through a federal grant and Utah State University with the purpose of providing additional support to students who meet particular qualifications. The Student Support Services Program seeks to prepare and support students for the challenges of higher education by offering assistance in:

1. academic advising and guidance,
2. tutoring on an individual basis,
3. course selection,
4. faculty mentoring,
5. reading and study skills enrichment (PSY 1750, 1730),
6. math instruction (MATH 0900, 1010, 1050),
7. financial aid planning, and
8. priority registration.

To qualify for these services, a student must be an American citizen or permanent resident of the United States, must be registered at Utah State University, must demonstrate academic need for services as defined by the institution, and must meet one of the following U.S. Department of Education criteria:

1. low income, as established by the U.S. Commission of Higher Education;
2. disabled, including physical disabilities and learning disabilities; or
3. first-generation college student, meaning that neither of the student’s parents have graduated from a four-year institution of higher education.
National Honor Societies with Chapters at USU

Alpha Lambda Delta

Alpha Lambda Delta is a national society honoring academic excellence during a student’s first year in college. Founded in 1924 at the University of Illinois, Alpha Lambda Delta has more than 240 chapters across the United States and has initiated more than 750,000 students. The mission of Alpha Lambda Delta is to encourage superior academic achievement, to promote intelligent living and a high standard of learning, and to assist students in recognizing and developing meaningful goals in society.

Alpha Lambda Delta membership is open to all freshmen who meet the academic qualifications. Students must be registered for a full course of study leading to a bachelor’s degree and must rank in the top 20 percent of their freshman class. The minimum scholastic average required for membership is a 3.5 GPA. Eligibility is based on grades for the first full semester. Once initiated, the student becomes a lifetime member of Alpha Lambda Delta. Members may remain active in the chapter throughout college. Offices are held by members while they are sophomores.

Chapter Advisors: Joyce A. Kinkhead, Vice Provost for Undergraduate Studies and Research, Main 114, (435) 797-1706; and Laura Marks, Administrator’s Assistant to the Vice Provost, Main 114, (435) 797-1166.

Beta Gamma Sigma

Beta Gamma Sigma international honor society was founded in 1913 to recognize superior scholarship in business. It is the highest international recognition a business student anywhere in the world can receive. The USU chapter was established in 1975.

Membership is by invitation only and is limited to the top 20 percent of business graduate students, the top 10 percent of seniors with business majors, and the top 7 percent of juniors with business majors. Candidates must have completed one year of study at Utah State University.

Chapter Advisor: Janet P. Lyons, Sr. Lecturer/Academic Advisor, Business 818, (435) 797-3722.

Golden Key International

Founded at Georgia State University in 1977, this academic honors organization recognizes and encourages scholastic achievement among students from all academic fields. The society unites talented undergraduate students with prominent faculty members and administrators who are active in Golden Key at the chapter and national levels. Two scholarships are awarded annually by each chapter to outstanding junior and senior initiates.

Membership, by invitation only, is limited to no more than the top 15 percent of juniors and seniors enrolled at USU. Part-time and full-time students qualify, as do traditional and nontraditional students.

Chapter Advisor: Karen Curtis, Student Center 220, (435) 797-1712.

Mortar Board

The Order of the Acorn chapter of Mortar Board has existed at USU since 1970. It was founded in 1918 as the first national organization honoring senior college women. Mortar Board opened its membership to men in 1975.

Mortar Board recognizes college seniors for distinguished abilities in scholarship, leadership, and service. Members continue to magnify these traits throughout membership by developing and carrying out activities, events, and service projects. New members are chosen during spring semester and must be in the top 35 percent of their class.

Chapter Advisor: Nellene Howard, Assistant Director for Service and Leadership, Student Involvement and Leadership Center, Student Center 326, (435) 797-7482

National Society of Collegiate Scholars

The National Society of Collegiate Scholars is an honors organization founded on the principles of scholarship, leadership, and service. Each plays an important role in one’s personal development. Society members are encouraged to pursue each of these ideals with a sense of passion and dedication. The society’s mission is to:

1. Recognize and celebrate high achievement among first- and second-year college and university students across all academic disciplines.
2. Encourage and promote high standards throughout the collegiate experience.
3. Provide opportunities for personal growth and leadership development.
4. Organize and encourage community service.
5. Foster an overall appreciation for the value of higher education.

Chapter Advisor: D. Kim Openshaw, associate professor of Family, Consumer, and Human Development, Family, Consumer, and Human Development West 120, (435) 797-7434, d.k.openshaw@usu.edu

Phi Kappa Phi

Phi Kappa Phi is a national honor society, founded in 1897 to recognize and encourage superior scholarship in all academic disciplines. Membership is based upon academic achievement and is proffered to undergraduate and graduate students who obtain a grade point average in the highest 10 percent of those graduating from each college at USU. The national organization awards 50 graduate school fellowships each year to students from throughout the country and sponsors undergraduates for internships and study abroad programs. Each year, the USU chapter also awards two to three scholarships to outstanding juniors and recognizes faculty members for their achievements.
Phi Sigma Iota

Phi Sigma Iota is an international foreign language honor society for juniors, seniors, and graduate students who excel in a foreign language and have a cumulative GPA of 3.0 or higher. Copies of transcript must be verified by the chapter advisor.

Founded at Allegheny College in Pennsylvania, Phi Sigma Iota recognizes outstanding ability and high standards in the fields of foreign language, English as a second language, literature, and culture.

As the highest academic honor in the field of foreign languages, Phi Sigma Iota promotes international communication and understanding, as well as a sentiment of unity among nations. The society also helps students learn about themselves and their cultural heritage as they increase their understanding of other people.

Phi Sigma Iota stands for freedom of mind and democracy of learning. The society stimulates and supports scholarly programs nationwide, and also offers scholarships and graduation honors nationwide. To help members to further their training in foreign languages, the society promotes trips abroad.

Chapter Advisor: Sarah Gordon, assistant professor of French, Main 204, (435) 797-8213, sgordon@cc.usu.edu.

Pinnacle

Pinnacle was founded at Murray State University in Kentucky in 1989 for the purpose of recognizing the achievements of adult and nontraditional students. The USU chapter was established that year, and the first members were inducted in 1990. Membership is open to no more than 15 percent of the junior and senior student population. Initiates must be 26 years of age or older, must have earned an overall USU GPA of 3.0 or higher, and must have been involved in campus and/or community activities. Applications are available at the Reentry Student Center.

Chapter Advisor: Janet L. Osborne, director, Women's Center/Reentry Student Center, Student Center 310, (435) 797-1728.

Tau Sigma

Tau Sigma, founded at Auburn University in 1986, recognizes the academic achievement of students transferring to an institution of higher learning from another academic institution. This society encourages and promotes students’ involvement in the institution to which they are transferring. Membership is offered to undergraduate students who transfer to USU with the equivalent of at least one full year of academic credits (24 semester credits) from an institution of higher learning and who have at least a 3.5 cumulative grade point average upon entrance.

Chapter Advisor: Rachel D. Lewis, Articulation and Transfer Services Coordinator, Student Center 304, (435) 797-8066, rachel.lewis@usu.edu.
The basketball team has become a fixture in the NCAA Tournament and has won either a Big West Conference regular season title, conference tournament title, or both every year during the 2000s. The Aggies have won at least 20 games during 8 of the last 10 years.

The football team has finished first or second in league play 12 times during its last 24 years of conference play. Three of the top five home attendance seasons have come in the last five years.

USU’s cross-country and track teams have been among the Big West’s best for a number of years, as the cross-country team has won four league titles and finished second six times during the last 12 years. The track team has claimed seven Big West team championships during the last 10 years.

On the women’s side, USU has had success in a number of its sports. The gymnastics program has competed in the NCAA regionals during 24 of the last 26 years and has won four conference championships during the last 12 years.

The Aggie soccer team has made great strides every year since it started the program in 1996 and produced its best season in 2003.

The track teams continue to have success, as the women’s cross-country team was the Big West runner-up in 2003, while the track team won seven consecutive league titles beginning in 1993.

USU’s volleyball team advanced to consecutive NCAA tournaments in 2000 and 2001.

USU reinstated its women’s basketball program ahead of the 2003-04 season.

Academically, Utah State is the leader of the Big West Conference, having finished first in number of academic all-conference selections during four of the last five years.

USU has a strong history of athletic success. Among these successful athletes is Merlin Olsen, who won the Outland Trophy awarded to the nation’s top lineman in 1961. Olsen, who was selected into the NFL Hall of Fame, was also an academic All-American. Merlin’s brother, Phil, was also an athletic All-American at Utah State and had great success in the NFL.

USU has produced five Olympians and 27 All-Americans in track and field, including former world record holders L. Jay Silvester and Mark Enyart. Jay Don Blake became USU’s first NCAA national champion in golf, winning the national title in 1980 and finishing second the following year.

Aggie basketball boasts the legacy of Wayne Estes, an All-American in the early 1960s before his untimely death prior to the conclusion of his senior season.

Three Aggie gymnasts have earned All-American honors and two others have represented their countries in the Olympics and World Championships. Seven different student-athletes have earned All-American honors in volleyball 12 times, and Elaine Roque and Karolyn Kirby have gone on to successful careers on the pro beach volleyball tour.

The softball team has produced four All-Americans, including three-time All-American Kelly Smith.
Participation. Utah State’s athletic teams compete as members of the Big West Conference in basketball, golf, tennis, cross-country, outdoor track and field, soccer, softball, and volleyball, while the football team plays in the Sun Belt Conference, the indoor track and field teams in the Mountain Pacific Sports Federation, and the gymnastics team in the Western Gymnastics Conference.

Beginning with the 2004-05 season, all of USU’s sports will compete in the Western Athletic Conference.

Facilities. Excellent training and competition facilities are provided in all sports. E. L. “Dick” Romney Stadium, home of the Aggie football team for more than 30 years, seats 30,257. A state-of-the-art lighting system was installed prior to the 1993 season, and chair-back seating was added ahead of the 1997 season. The 1999 season saw expanded seating, two new scoreboards, and an improved sound system. A new synthetic turf was installed prior to the 2004 season, and a new press box with sky boxes is scheduled for the 2005 season. Future plans for Romney Stadium include construction of multi-storied complexes at both the north and south ends of the stadium to consolidate academic support to the student-athletes. New coaches’ offices, strength and weight rooms, ticket sales, and locker and team rooms, as well as a hall of fame, are also planned.

Basketball, gymnastics, and volleyball are played in the beautiful 10,270-seat Dee Glen Smith Spectrum. A $1.2 million scoreboard was installed prior to the 2002-03 academic year, and a new playing floor will be installed during 2004. Basketball and volleyball practices are held in the Spectrum, while the HPER Building is the practice home for the gymnastics team. The recently renovated gymnastics practice gym has been labeled as one of the nation’s finest, complete with vaulting pits and foam-spring exercise floor.

The $4.4 million Stan Laub Indoor Training Facility is one of the finest facilities in the nation. The building features a 95-yard football field that is regulation width and a vaulted ceiling that reaches 78 feet high. The building is perfect for off-season conditioning for all of Utah State’s sports.

The Nelson Fieldhouse is the home of the Aggie indoor track and field teams. The teams practice on a 200-meter tartan track. For the outdoor season, a recently resurfaced and renovated Ralph Maughan Stadium is the home for the men’s and women’s track teams.

The women’s softball team plays its home games at LaRee and LeGrand Johnson Field, an on-campus facility, for which a large scoreboard, new grass, and a new fence were added ahead of the 2004 season. The women’s soccer team also has a new facility, Aggie Field, which was built in 2003 and features a two-story press box.

The tennis teams play at the Sports Academy and Racquet Club, one of the finest indoor facilities in the West. The men’s golf team practices and plays at the Birch Creek Golf Course and at the Logan Golf and Country Club.

Scholarships. Utah State offers partial and full scholarships in each of its 16 sponsored sports. A student or prospective student desiring consideration for one of these awards may contact one of the coaches for further information about scholarship applications.

Registration and Eligibility. Registration for athletic participation in Aggie athletics may be accomplished by contacting any of the coaches or the athletics office. Eligibility for participation is governed by the rules and regulations established by the NCAA, by the Big West Conference, and by Utah State University.

Supervision. Supervision and direction for men and women is vested in the Director of Athletics and the Athletic Council, consisting of the President of the University, and members of the faculty, the alumni, and student organizations.
Information Technology Services

Administration

Vice President for Information Technology Services/
   Chief Information Officer: Barbara A. White
Location: Main 148
Phone: (435) 797-1134
FAX: (435) 797-2646
E-mail: barb.white@usu.edu
WWW: http://www.usu.edu/cio

Banner Project Manager: Rory J. Weaver, Merrill Library 301,
   (435) 797-1962, rory.weaver@usu.edu

Administrative Assistant: Peggy P. Nixon, Main 150,
   (435) 797-1134, peggy.nixon@usu.edu

Licensing and Network Training: Michelle M. Smith,
   Science Engineering Research 326,
   (435) 797-7313, michelle.m.smith@usu.edu

Webmaster: Merry Lu Zeller, Main 114, (435) 797-7199,
   merrylu.zeller@usu.edu

The impact of information technology and “information appliances” yet to come is changing the basic structure and business operations of educational institutions. Major responsibilities of the Office of the Vice President for Information Technology Services are to anticipate, plan for, and manage new information requirements and applications; develop information systems that support such requirements and applications; acquire and manage existing and new data and information; and provide and maintain a University-wide information network and management system to deliver voice, data, and video services. The responsibility of the Chief Information Officer includes the design, development, implementation, and management of an integrated University-wide information management system, ensuring integration of technology. In addition, Licensing and Network Training staff provides leadership for the coordination of campus licensing initiatives, including campus-wide licensing purchases.

The purpose of the SCT Banner product at Utah State University is to provide an integrated data management system that meets the needs of the entire campus and supports USU’s mission of delivering a quality educational experience to students. The SCT Banner project is a migration from the old SCT Plus system to a system that is fully-integrated and provides access to data 24 hours per day, 7 days per week. SCT Banner consists of the following four modules:

1. A Finance Record System (Banner Finance)
2. A Student Information System (Banner Student)
3. Financial Aid (Banner Financial Aid)
4. A Human Resources System (Banner HR/Payroll)

All four modules are fully integrated, which means data, such as a student name, need only be entered one time and is accessible by all modules. USU students can expect increased capacity and more responsive interaction with their data and with the administration.

Network and Computing Services

Director: Kim A. Marshall, Science Engineering Research 301,
   (435) 797-2413, kim.marshall@usu.edu

Associate Director: Robert (Bob) Bayn, Jr.,
   Science Engineering Research 301, (435) 797-2396,
   bob.bayn@usu.edu

Staff Assistant: Peggy Baugh,
   Science Engineering Research 301, (435) 797-2402,
   peggy.baugh@usu.edu

Operations Supervisor: Adrian Lundgren,
   Science Engineering Research 301, (435) 797-2414,
   adrian.lundgren@usu.edu

Manager, Student Computer Labs: Gary D. Egbert,
   Science Engineering Research 324, (435) 797-1476,
   gary.egbert@usu.edu

Supervisor, Help Desk: Stephen Funk,
   Science Engineering Research 108, (435) 797-8181,
   stephen.funk@usu.edu

Network and Computing Services (NCS) manages the central computing facilities and services used by the campus to meet administrative, educational, and research needs, as well as the campus-wide data network that provides access to those services and provides connectivity for distributed services from other departments.

Administrative Data Services (ADS) maintains and customizes the business computing applications of the University, including the student information system (registration and records), the financial aid system (scholarships), the financial records system (accounting), the human resource system (personnel), the card reader system (ID and debit accounts), and the data warehouse (read-only access and reporting).

The Academic User Services (AUS) group provides end-user support for the facilities maintained by the Network, Systems Programming, and Operations (NSPO) group. AUS manages six Open Access Computer Labs for all students on campus, as well as walk-up kiosks around campus for e-mail and web access. The Helpdesk provides walk-in, phone, e-mail, and office-call support to students and staff for hardware and software problems, including network connectivity in offices, as well as in on-campus and off-campus housing.

NSPO manages the central computing equipment, including an IBM ES9000 for administrative computing applications; a cluster of five VMS Alphas for e-mail services, web page hosting, data analysis, and programming; network connections to the Internet and Internet-2; proxy servers; super computer access; and utility servers for webmail, virus filtering, spam tagging, etc. An intra-campus fiber-optic network connects nearly all desktop computers, servers, printers, and card readers on campus. A modem pool of 276 modems provides dial-in access to the campus backbone and the Internet.
Telecommunications and Telephone Services

Director: Scott N. Bradley, Science Engineering Research 101A, (435) 797-0022, scott.bradley@usu.edu

Associate Director: Scott D. Wells, Science Engineering Research 102, (435) 797-3336, scott.wells@usu.edu

Assistant Director: Delia L. Weeder, Science Engineering Research 101C, (435) 797-0071, dee.weeder@usu.edu

USU’s Telecommunications and Telephone Services is a “cost recovery” organization, tasked with the provision of all telephone and network-related services needed for the University to fulfill its mission. As telecommunication services are required by University entities, this office evaluates, procures, provides, and bills to the end-user organization the suitable technology solutions. Services provided include long-distance calling services, voice mail, teleconferencing, off-campus video networking, service/price negotiation with providers, accounts payable and receivable, operator services, calling cards, cellular telephone services, pagers, maintenance and support, help desk and training, etc. Individuals who reside on campus in USU Housing receive their telephone service from USU Telecommunications and Telephone Services and may elect to obtain long-distance calling access from this office. These services are provided to Utah State University by 16 staff members and 8 part-time student telephone operators. University long-distance services are provided through AT&T.

Technical Support Services

Director: Jonathan B. Kadis, Merrill Library Basement, (435) 797-3134, jon.kadis@usu.edu

Office Coordinator: Dave Clark, Merrill Library Basement, (435) 797-2655, dave.clark@usu.edu

Supervisor, Classroom Technical Services: Michael L. Brazfield, Merrill Library Basement, (435) 797-7380, mike.brazfield@usu.edu

Chief Engineer, Technical Operations: Rick D. Hughes, Multimedia and Distance Learning Services 111, (435) 797-2706, rick.hughes@usu.edu

Supervisor, Media Production: D. Shane Thomas, Merrill Library 399, (435) 797-0525, shane.thomas@usu.edu

Technical Support Services (TSS) is a support division in the Office of Information Technology Services. TSS supports Utah State University through three major enterprises: Classroom Technical Services, University Media Production, and Systems Engineering.

Classroom Technical Services (CTS) provides leadership and oversight for the design, development, integration, and ongoing maintenance of the University’s classrooms. This also includes the procurement and lending of audiovisual resources to faculty and staff.

University Media Production (UMP) and its award-winning professional staff use cutting-edge technology to support academic and nonacademic multimedia productions. UMP assists in taking media projects from conception to completion. UMP is a full-service postproduction house with nonlinear editing, DVD authoring, and video web streaming capabilities.

Systems Engineering provides technical and operational support for all USU-based delivery technologies, including EDNET (terrestrial, two-way audio/video); analog and digital satellite uplinks and downlinks; dedicated T1 networks; video conferencing; the USU/UEN Digital Satellite System; and operational support for the Distance Learning Network and the Public Education Video Network.
Libraries and Instructional Support

Vice Provost for Libraries and Instructional Support:
Linda L. Wolcott
Location: Merrill Library 115
Phone: (435) 797-2687
FAX: (435) 797-2880
E-mail: administration@libraries.usu.edu
WWW: http://library.usu.edu

Director of Development: Kent Clark, (435) 797-2645

Staff Assistants:
Trina Shelton, (435) 797-2631
Becky Olson, (435) 797-2639

The office of the Vice Provost for Libraries and Instructional Support oversees library services to the campus community and supports University faculty in their teaching. Libraries and Instructional Support consists of two distinct units: The Utah State University Library and the Faculty Assistance Center for Teaching (FACT). As a division of the Provost’s Office, Libraries and Instructional Support serves the teaching, research, and service missions of the University by:

1. Developing collections to support campus information needs
2. Assisting faculty and students with research
3. Providing and promoting access to a wide range of resources
4. Assisting faculty in creating instructional materials
5. Providing training in the use and integration of technology for teaching and learning

University Libraries

Associate Director for Public Services: John Elsweiler, (435) 797-2636
Associate Director for Technical Services: Betty Rozum, (435) 797-2632
Special Collections and Archives: Bradford R. Cole, (435) 797-0894
Reference Services: Flora G. Shrode, (435) 797-8033
Patron Services: Vicki Read, (435) 797-2914
Government Documents: John S. Walters, (435) 797-2683
Cataloging: Cheryl Walters, (435) 797-2667
Materials Acquisitions: Kevin K. Brewer, (435) 797-3961
Library Systems: R. Todd Hugie, (435) 797-2638

The University Libraries are comprised of the Milton R. Merrill Library and the Stanford Cazier Science and Technology Library. A new, state-of-the-art University Library will open during the 2005-2006 academic year, bringing all library resources and services under one roof. As a single comprehensive library facility, Utah State University’s library will be the intellectual center of campus. The new library will feature an environment rich in resources and technology, with a broad spectrum of study spaces that support the ways library users interact with information and with one another.

The University Library maintains an extensive collection of research materials, including more than 1.4 million books and periodicals. As a designated regional repository of federal documents, the Library has one of the outstanding government documents collections in the Intermountain West, including more than 1.2 million federal documents and 76,600 topographical maps. Among the many strengths in the Library’s print collection is a nationally-known collection of Beat Generation literary and artistic works.

In addition to maintaining print materials, the Library is a portal to a vast collection of electronic resources. The Library purchases and provides access to more than 13,000 electronic journals, indexes, and abstracts. These resources are crucial to research and the educational experience, and are available to all University students, faculty, and researchers.

The Library’s faculty and staff members are perhaps its greatest resources for students and faculty. With the rapid increase in available information today, it is more important than ever to have experts in the field to help find the best information available. Specialists in research are available to assist patrons searching for knowledge. To ensure that the Library’s collection excels in areas of the University’s specialization, Library faculty members are assigned to each of the academic colleges on campus.

The Library’s physical facilities are designed to enhance the experiences of students and faculty alike. Both buildings feature plenty of public-access terminals to search the Library’s catalog and access electronic resources. Laptop computers are available for checkout, and can access the special library wireless network. The Merrill Library features the Quadside Café, a place for a quick study break.

The Library’s Special Collections and Archives division is a particularly valuable resource for research. The collections contain a significant body of primary source materials, including manuscripts and rare books for area studies and the historical archives of the University. Collections of particular note include one of the nation’s most comprehensive groups of Jack London’s writing, a photograph collection containing more than one million images featuring the Intermountain West, and the Fife Folklore Archives.

Faculty Assistance Center for Teaching (FACT)

Manager: Kevin L. Reeve
Location: Merrill Library 378 and 380
Phone: (435) 797-9506 (main office) or (435) 797-0783
FAX: (435) 797-0793
E-mail: kevin.reeve@usu.edu
WWW: http://www.fact.usu.edu

The Faculty Assistance Center for Teaching (FACT) supports the faculty in the development of computer-based and web-based instructional materials, and in the use of technologies for teaching and learning. FACT maintains a design and development laboratory, where faculty can develop and test instructional support materials. The center also maintains PC and Mac workstations in a networked environment, supporting a broad range of software for authoring, presentation, and graphics. Working hand-in-hand with clients, instructional designers provide consultation and technical assistance in the design and development of online courses and other mediated forms of instructional materials. The center also provides faculty training and development workshops, utilizing state-of-the-art technologies.
University Extension

Vice President and Dean for University Extension:
Jack M. Payne
Location: Agricultural Science 209
Phone: (435) 797-2200
FAX: (435) 797-3268
E-mail: jack.payne@usu.edu
WWW: http://extension.usu.edu

University Extension includes the Cooperative Extension Service and Continuing Education Programs, the latter encompassing Conference Services, Degree and Credit Programs, Online Education, Independent Study, and various Continuing Education Centers across Utah.

Cooperative Extension Service
Associate Vice President and Associate Director for Cooperative Extension: Charles W. Gay,
Agricultural Science 209, (435) 797-2200, chuck.gay@usu.edu

The Cooperative 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 leadership, resourcefulness, and initiative; to supply factual information for discovering and solving problems; and to help people become more efficient, increase their income, improve their home and community environment, and raise their standard of living. University Extension takes the findings of research to the people of the state and brings unsolved problems back to research workers at the University.

Extension programs are planned with the people. The demonstration method of teaching and mass media are used extensively. Group meetings, short courses, and publications are used to supply educational information.

Administrative and some supervisory personnel and subject matter program leaders are located on the USU campus. In addition, a field staff consisting of regional directors, area specialists, county faculty, and program aides serve the people throughout the state.

The Extension program includes work with both adults and youth.

Major program areas are centered on (1) agriculture, (2) 4-H and youth programs, (3) family and consumer sciences, (4) community resource development, (5) natural resources and environmental management, and (6) EFNEP (nutrition education for low-income families).

Central in the function of University Extension is problem solving at the community level. Through research provided by the departments of the University, the community becomes a laboratory in the teaching-learning process. Community problems are extremely varied and complex. Consequently, University Extension educational programs designed to benefit the community require creativity and innovation of the colleges and departments according to their areas of competency.

To carry out this function, Extension programs at Utah State University focus on the knowledge competencies from the appropriate disciplines on four broad areas of concern to people of Utah: physical environment, social environment, economic and industrial development, and education instructional services.

Continuing Education Programs
Associate Vice President and Associate Dean of Continuing Education: Weldon S. Sleight,
Eccles Conference Center 103, (435) 797-3104, weldon.sleight@usu.edu

During the past two decades, University faculty and administration have strengthened service to residents through development and delivery of Continuing Education academic programs in partnership with University departments. Continuing Education is a rapidly growing concept in higher education, facilitated in great part by technology developments allowing students to access courses in multiple formats. Continuing Education recognizes that we live in a constantly changing society in which learning is necessary throughout the entire lifespan. Continuing Education provides opportunities for professional and vocational learning, in addition to providing lifelong enrichment through social and cultural programs. Persons in all situations and of all ages can access learning opportunities that increase their knowledge and skills without disrupting their employment or lifestyles.

Kellogg Life Span Learning Complex
The W. K. Kellogg foundation and other private funding sources have made it possible to build two structures, centrally located on the campus, for Continuing Education Programs. The five-story University Inn is located in an area between the Taggart Student Center and the Agricultural Science Building. The 53,079 square foot, five-story facility contains 74 modern hotel rooms, two of which are suites, to house those who visit campus for a variety of programs.

The 39,143 square foot, three-story Conference Center is located between the Agricultural Science Building and the Merrill Library. The spacious conference meeting rooms overlook the beautiful quad area near the intersection of the two major malls serving the campus. The facilities feature satellite uplink and downlink capabilities, wireless Internet access in all meeting rooms, and state-of-the-art audiovisual presentation equipment. The conference facilities include 12 meeting rooms ranging from a 400-seat auditorium to small seminar rooms for 10 to 30 people. Administrative offices and classrooms for Continuing Education Programs are also located in the Conference Center. Individuals and groups of all ages are encouraged to investigate this expanded resource of Utah State University as a means of pursuing their unique educational goals.
Conference Services

Assistant Dean of Recruitment

and Conference Services: Daniel G. Peterson,
Eccles Conference Center 103,
(435) 797-0423, danp@ext.usu.edu

The responsibility for conferences, short courses, symposiums, seminars, and events is vested in the Conference Services Office. The role of this office is to promote, coordinate, and administer conference programs in cooperation with faculty members of the various campus organizations and with individuals and groups outside the University.

There are no limitations in terms of age or educational background on the clientele to be served through Conference Services. All that is required is a desire to learn. The scope of the program will be as broad as available knowledge resources will permit.

Continuing learners may participate in educational activities for a variety of justifiable reasons, all of which relate to recognized needs for self-improvement, an appetite for intellectual stimulation through social interaction, or simply a desire to learn.

Degree and Credit Programs

Assistant Dean of Credit Programs: Ronda R. Menlove,
Eccles Conference Center 103, (435) 797-3104,
ronda.menlove@usu.edu

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 Logan to attend courses on campus. For this group, courses are made available to approximately 50 different communities of the state through on-site faculty, through visiting faculty, and via an interactive telecommunications system using a variety of technologies. In addition, some courses are available on the Internet, and others will be added. Additional courses are offered by the respective academic departments. Off-campus credit courses, which are equivalent in content hours of class instruction and preparation, otherwise meet the same prerequisites as comparable classes offered on the University campus.

Programs and classes may meet the requirements for a bachelor’s degree, as determined by the individual departments and colleges. They also may meet the requirements for a master’s degree with approval of the School of Graduate Studies.

All instructors in credit courses are either members of the regular University teaching faculty officially assigned to the teaching project concerned or nonresident members approved by the head of the department and by the college administration.

The registration fees charged for classes conform to regulations of the Board of Regents. Fees may not be less than the on-campus tuition and may be more if warranted by the additional expense of conducting the class off campus.

Online Education and Independent Study

Director of Time Enhanced Learning: Vincent J. Lafferty,
Merrill Library 208, (435) 797-2137 or
(800) 233-2137 (toll free), vincel@ext.usu.edu

Time Enhanced Learning advances the University’s land-grant mission by taking academics and discovery to a diverse and underserved student population through electronic program and course delivery. Time Enhanced Learning online education allows students to accelerate their academic progress through high-quality interactive online courses that fit their busy schedules. Students earn the same college credits working from their home computers as they would if they attended classes on campus. Most online courses are offered on a semester schedule and must be completed during regular USU semesters. For more information and to register for online courses, visit: http://extension.usu.edu/continuinged.

Independent Study courses allow students to reduce scheduling problems and earn college credit without attending campus classes. Independent Study courses are offered on an open-enrollment schedule. Students may register anytime and may take up to one year to complete the courses. To request a catalog and registration forms, call (800) 233-2137.

USU Continuing Education Centers

Blanding: 639 W 100 S, Suite 1A, Blanding UT 84511,
(435) 678-2072

Brigham City: Brigham City Campus, 265 W 1100 S,
Brigham City UT 84302, (435) 734-2277

Delta: 305 E 200 N, Delta UT 84624, (435) 864-5708

Dixie College: Dixie College Student Services Center, Room 201, 225 S 700 E, St. George UT 84770, (435) 652-7892

Dugway: Army Education Center, Building 5124, Room 234, Dugway UT 84022; (435) 831-3340

Emery: PO Box 1058, Castle Dale UT 84513, (435) 381-2233

Heber: 55 S 500 E, Heber UT 84032, (435) 657-3233

Moab: 125 W 200 S, Moab UT 84532, (435) 259-7432

Ogden: Ogden Center for Graduate Studies,
3104 University Circle, Ogden UT 84408-3104,
(801) 626-8141

Price: 155 E 500 N, PO Box 874, Price UT 84501-0874,
(435) 613-5610

Richfield: 200 S 800 W, Suite B, Richfield UT 84701,
(435) 893-2247

Roosevelt: USU Education Center, 987 E Lagoon Street (124-9), Roosevelt UT 84066, (435) 722-2294

Salt Lake City: 5250 S Commerce Drive, Suite 300,
Murray UT 84107, (801) 269-9422

Snow College: 325 W 100 N, Ephraim UT 84627,
(435) 283-7590

Tooele: Tooele Branch Campus, 1021 W Vine, Tooele UT 84074,
(435) 882-6611

Utah Valley State College: USU Provo/Orem,
UVSC Mail Stop 149, 800 W University Parkway,
Orem UT 84058

Vernal: USU Education Center, 1680 W Highway 40,
Vernal UT 84078, (435) 789-6100

Wendover: Wendover High School, 110 S 4th Street,
PO Box 610, Wendover UT 84083, (435) 665-2343
University Research

Vice President for Research: Brent C. Miller
Location: Main 159
Phone: (435) 797-1180
FAX: (435) 797-1367
E-mail: vp.research@usu.edu
WWW: http://www.usu.edu/vpr

Associate Vice Presidents for Research:
M. Kay Jeppesen, Main 159, (435) 797-1227, mkjeppsen@usu.edu
H. Paul Rasmussen, Agricultural Science 225, (435) 797-2282, paul@agx.usu.edu
Joyce A. Kinkead, Main 114, (435) 797-1706, joyce.kinkead@usu.edu

The policy of the University is to encourage and support research and all forms of creative, scholarly activities by faculty and staff members. Much of the research is supported by funds directly assigned to various administrative units of the University. Unrestricted funds for general support of research are administered through the Research Office. The Research Office serves as a coordinating center for all research associated with the University. General policies and procedures pertaining to research and the promotion of a coordinated research program are the responsibility of the University Research Council.

Research Support Units

Environmental Health and Safety: Steven C. Bilbao, (435) 797-2892
Laboratory Animal Research Center: Stanley D. Allen, (435) 797-1886
Institutional Review Board: True M. Rubal, (435) 797-1821
Research Integrity and Compliance: Russell Price, (435) 797-8305
Sponsored Programs: Dennis J. Paffrath, (435) 797-1226

Major Research Committees

Biohazards Committee: Robert W. Sidwell, (435) 797-1902
Chemical Hygiene Committee: Joan E. McLean, (435) 797-3199
Human Subjects: Mark W. Brunson, (435) 797-2458
Institutional Animal Care and Use Committee:
Mary E. Leavitt, (435) 797-3883
Institutional Biosafety (RDNA) Committee: Stanley D. Allen, (435) 797-1866
Radiological Safety Committee: William F. Campbell, (435) 797-2246
Research Council: Brent C. Miller, (435) 797-1180
University Safety Committee: Howard M. Deer, (435) 797-1602

Research Centers, Institutes, and Laboratories

College of Agriculture

Agricultural Experiment Station: H. Paul Rasmussen
Center for Epidemiologic Studies: Ronald G. Munger
Center for Integrated BioSystems: Bart C. Weimer
Center for Profitable Use of Agriculture Byproducts: Conly L. Hansen
Center for Rural Economic Development: Christopher Fawson
Center for Water Efficient Landscaping: Roger K. Kjelgren
Institute for Antiviral Research: Robert W. Sidwell
Rocky Mountain Dairy Herd Improvement Affiliate:
Brent R. Clark
Utah Botanical Center: William A. Varga
Utah Climate Center: Esmaiel Malek
Western Dairy Center: Marie K. Walsh
Western SARE (Sustainable Agricultural Research Program):
V. Philip Rasmussen

College of Business

Management Institute: Glenn M. McEvoy
Shingo Prize for Manufacturing Excellence: Ross E. Robson
Utah Center for Productivity and Quality of Working Life:
Richard L. Ratliff

College of Education and Human Services

Center for Online Learning Education: Byron R. Burnham
Center for Persons with Disabilities (CPD): Sarah Rule
Early Intervention Research Institute: Richard N. Roberts
Mountain Plains Regional Resource Center:
John D. Copenhaver
Center for the School of the Future (CSF): Richard P. West
Emma Eccles Jones Center for Early Childhood Education:
D. Ray Reutzel
HOPE Institute: Donald G. Barringer
National Center for Hearing Assessment and Management (NCHAM):
Karl R. White
SKI*HI Institute: Susan Watkins and Elizabeth C. Dennison

College of Engineering

Andersen Center for Wireless Teaching and Research:
Electrical and Computer Engineering Department Faculty
Buried Structures Laboratory: Alma P. Moser
Center for Self-Organizing and Intelligent Systems:
Kevin L. Moore
Center for Space Engineering Research: Todd J. Mosher
Engineering Design Center: Stephen S. Reed
Engineering Experiment Station: Christine E. Hailey
Undergraduate Research Program

**State Centers of Excellence**

- **Center for Advanced Imaging Lidar**: Robert T. Pack
- **Center for High-Speed Information Processing**: Tamal Bose
- **Center for Profitable Uses of Agricultural By-Products**: Conly L. Hansen
- **Center for Rapid Microbe Detection and Physiology**: Bart C. Weimer

**USDA/BLM**

- **Bee Biology and Systematics Laboratory**: William P. Kemp
- **Center for Research on Disturbance Ecology**: Jesse A. Logan
- **Forage and Range Research Lab**: N. Jerry Chatterton
- **National Aquatic Monitoring Center**: Mark R. Vinson
- **Poisonous Plant Lab**: Lynn F. James
- **Predation Ecology Project**: John A. Shivik

**State Labs**

- **Utah Veterinary Diagnostic Lab**: Thomas J. Baldwin
- **USU Analytical Laboratory (Soil Testing)**: Janice Kotuby-Amacher

**Undergraduate Research Program**

Undergraduate research, scholarship, and creative activity offer Utah State University students unparalleled educational opportunities for hands-on learning, a hallmark of the institution. Students may begin a research track as early as their freshman year, preparing them to compete for prestigious scholarships, such as the Goldwater, Udall, and Rhodes, and getting them ready for graduate studies. Undergraduate Research and Creative Opportunity (URCO) Grant competitions are held twice annually, in February and October. The Research Office also supports the annual “Research on the Hill” event at the State Capitol, as well as “Student Showcase,” the spring celebration of undergraduate research. In addition, students selected to present at the National Conference on Undergraduate Research (NCUR) or the Council on Undergraduate Research (CUR) “Posters on the Hill” competition are also supported. For support of other travel to professional conferences and meetings, the Associated Students of Utah State University (ASUSU) allocates money to eligible undergraduates through the Academic Opportunity Fund.
International Affairs

Vice Provost for Academic and International Affairs:
Christopher Fawson
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Phone: (435) 797-1840
FAX: (435) 797-3769
E-mail: chris.fawson@usu.edu
WWW: http://www.usu.edu/aia/international

Director, International Irrigation Center:
L. Humberto Yap-Salinas, Engineering 405E, (435) 797-2801, hyaps@cc.usu.edu

Director, Center for International Studies:
R. Edward Glatfelter, Main 333, (435) 797-1196, edwardg@hass.usu.edu

Coordinator, College of Business:
Vijay R. Kannan, Business 810, (435) 797-7212, v.kannan@usu.edu

Coordinators, College of Engineering:
Loren R. Anderson, Engineering Laboratory 211, (435) 797-2938, loren@cc.usu.edu
Wynn R. Walker, Engineering 413B, (435) 797-2788, wynwalker@cc.usu.edu

Coordinator, College of Natural Resources:
Charles W. Gay, Agricultural Science 217, (435) 797-8103, chuck.gay@usu.edu

Utah State University is one of the institutions of the federal system of land-grant and space-grant colleges in the United States. Much of its experience and development has made it a leader in the areas associated with arid and irrigated agriculture, forestry, range, plant, and animal science.

The University is recognized for its expertise, both nationally and internationally. In addition to its functions of teaching, research, and dissemination of information, staff members have been and are presently involved as consultants to private industry, land development corporations, fertilizer companies, private consulting firms, government agencies, and research groups, both at home and abroad.

Utah State University has a history of involvement in international programs dating to the early 1930s. University personnel have worked in development programs in many of the developing nations of the world. In recent years, Utah State University has worked in Armenia, Bangladesh, Bolivia, Brazil, Cameroon, Cape Verde, Colombia, Ecuador, Egypt, El Salvador, Gambia, Honduras, India, Iran, Kenya, Morocco, Pakistan, Panama, Peru, Senegal, Somalia, Sudan, Tanzania, Upper Volta, and Venezuela. Current involvement includes: China, the Dominican Republic, Ethiopia, Kenya, Mexico, Palestine, Russia, Senegal, Singapore, Taiwan, and Thailand.

USAID/FAO/USU Foreign Participant Training

USU cooperates with FAO and USAID, as well as with other sponsoring agencies, to develop special academic and practical programs for foreign students nominated by these agencies.

For those foreign students who come to Utah State University under the auspices of a sponsoring agency requiring Utah State University to provide administrative arrangements not provided to other students, an administrative fee is charged (currently $250 per semester).

BMDO/USU-SDL Russian-American Observational Satellite

The Russian-American Observational Satellite (RAMOS) experiment is a joint Russian-American space research program using an innovative measurement technique and simultaneous stereo-optical imaging. It addresses the twin concerns of surveillance and environment. RAMOS is comprised of the development of different measurement techniques that may culminate in the operation of two satellites, the American Observational Satellite (AOS) and the Russian Observational Satellite (ROS), and associated ground site equipment.

USU International Irrigation Center

Director: L. Humberto Yap-Salinas

The Biological and Irrigation Engineering Department is engaged in an extensive program of international irrigation technology transfer and is contributing significantly to the alleviation of the world hunger problem through multi-lingual training and research in irrigation and drainage. The International Irrigation Center has been organized to provide an appropriate entity within which to sponsor these ongoing training activities.

Center for International Studies

Director: R. Edward Glatfelter

The Center for International Studies promotes and coordinates international academic exchanges between Utah State University and institutions of higher education abroad. The major objectives of the center are: (1) to develop bilateral university linkage programs, (2) to facilitate faculty and student exchange programs, and (3) to promote collaborative research programs, joint seminars, workshops, and conferences. The center also serves as the university academic center for international studies curriculum offerings and the Certificate Program for International Development.

IDB/Government of the Dominican Republic/USU/ PROMASIR Studies

Coordinator: Christopher Neale

In November 1999, the Department of Biological and Irrigation Engineering and the International Irrigation Center were awarded a project to lead four special studies as part of the PROMASIR (Program for the Management of Irrigation Systems...
by Water Users) Project in the Dominican Republic. The four studies are: Aerial Photographs, Water Users’ Cadastres, Data Systems, and Monitoring of Soils.

**IDB/Government of the Dominican Republic/USU Organization and Training of Water Users’ Associations (PROMASIR)**

Coordination: Gary P. Merkley

This project supports the transfer of the operation and maintenance of 34 irrigation systems in the Dominican Republic to existing respective water user associations (WUA) through comprehensive and customized training programs for the farmers and WUA officials in the areas of water management, drainage of agricultural lands, canal operation and maintenance, basic financial accounting, conflict resolution, parliamentary procedures, and others. In addition to the above, the project implements training programs and field demonstration plots in the three irrigation systems as part of an agricultural development effort, designed to support the overall transfer program.


Coordination: Gary P. Merkley

This project also supports the transfer of the operation and maintenance of three irrigation systems in the Dominican Republic to existing respective water user associations (WUA). This is to be accomplished through comprehensive and customized training programs for the farmers and WUA officials in the areas of water management, drainage of agricultural lands, canal operation and maintenance, basic financial accounting, conflict resolution, parliamentary procedures, and others. Each WUA will have a new computerized accounting system installed in their respective offices, and key personnel will be given practical training in its application. In addition to the above, the project will implement training programs and field demonstration plots in the three irrigation systems as part of an agricultural development effort, designed to support the overall transfer program.

**USAID/USU Global Livestock Collaborative Research Support Program (GL-CRSP)**

Coordination: D. Layne Coppock

The Global Livestock CRSP is a program of applied research and outreach, with the goal of improving pastoral risk management using asset and income diversification, enhancement of information flow and use, and improving access to external resources. The project focus is on intact ecological and livestock marketing regions in northern Kenya and southern Ethiopia. Research will identify context-sensitive interventions at various socio-economic levels. Intervention concepts are organized with respect to four cross-cutting systems, including livestock marketing, rural finance, natural resource tenure, and public service delivery. Outreach focuses on how to help development agents and policy makers deliver comprehensive packages of risk management interventions to beneficiaries.

**USAID/USU World Irrigation Information Network (IrriNet)**

Coordination: Wynn R. Walker

The World Irrigation Information Network, or IrriNet, project is a $1.7 million effort at USU to provide on-line training, technical assistance, and applied research support in irrigation engineering and water resources management. The IrriNet concept, which was funded by USAID for three years, beginning on July 1, 2001, will include one prototype satellite-based Internet site in a developing country. IrriNet will eventually include academic courseware, as well as the full training program of USU’s International Irrigation Center.
University Advancement

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Director of Annual Giving: Jeannie Simmonds, Main 101F,
(435) 797-3166, simmonds@cc.usu.edu

Director of Communications and Utah State magazine Editor:
Jane G. Koerner, Main 102, (435) 797-1353, janek@cc.usu.edu

Director of Corporation and Foundation Giving:
Lisa Scoffield, Main 101C (435) 797-7611, lisasco@cc.usu.edu

Manager, Gift and Bio Records: April Barker, Main 112F,
(435) 797-3583, april@cc.usu.edu

Director of Planned Giving: Angelina Wilkinson, Main 101D,
(435) 797-3885, angelinaw@cc.usu.edu

University Advancement is responsible for raising private funds for Utah State University. This responsibility includes every aspect of relationship building, from publications that keep donors connected and informed to groundbreaking ceremonies that thank donors for their gifts.

Private gifts to the University compensate for declining state support and enrich the whole campus with up-to-date facilities, cutting-edge academic programs, and exciting guest speakers and performers. These gifts also provide scholarships for deserving students unable to afford the cost of a higher education.

Contributions to Utah State University are recognized through membership in various donor clubs and activities, including the Old Main Society, the Big Blue Athletic Club, and the Alumni Association.

University Advancement provides professional assistance to the publics of Utah State University in the transmission of charitable gifts. For further information on how to transmit cash, securities, or in-kind property to the University through a number of tax-advantaged strategies, contact Joyce V. Albrecht at:

University Advancement, Main 101, 1440 Old Main Hill,
Logan UT 84322-1440, (435) 797-1324 or toll-free
888-OLD-MAIN (653-6246).

University Advancement also publishes Utah State magazine, the official publication of the University, full of news and articles about the University.

Development Officers

Development Director, College of Agriculture:
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vics@cc.usu.edu

Development Directors, College of Business:
Alta Markeson, Business 212, (435) 797-3720,
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Development Director, College of Education and Human Services: Franklin C. Stewart, Education 116, (435) 797-1611, frank.stewart@usu.edu

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hubert@engineering.usu.edu

Development Director, College of Humanities, Arts and Social Sciences: Julie Pitcher, Main 331, (435) 797-3662, juliep@hass.usu.edu

Development Director, College of Natural Resources:
F. E. “Fee” Busby (Dean), Natural Resources 108, (435) 797-2452, feebusby@cnr.usu.edu

Development Director, College of Science:
Joel Kincart, Eccles Science Learning Center 245, (435) 797-3510,
joel.kincart@usu.edu

Development Director, Athletics: Kenneth L. Beazer, Spectrum 301, (435) 797-1325, beazerk@cc.usu.edu

Development Director, Utah Public Radio-KUSU:
Bryan K. Earl, Multimedia and Distance Learning Services 118E, (435) 797-3107, bryear@upr.usu.edu

Development Director, Utah Botanical Center:
Samuel R. Daines II, Agricultural Science 116, (435) 797-8060, samdaines@cc.usu.edu

University Alumni Association

President: Randy Watts
Director of Alumni Relations: G. Carlos Smith
Location: David B. Haight Alumni Center
Phone: (435) 797-2055 or 800-291-2586
WWW: http://www.usu.edu/alumni

The Utah State University Alumni Association numbers more than 180,000 members. This membership includes all who have attended USU for one semester (or one quarter) or more, or who have served on the staff or faculty of the University.
**Purpose:** The mission of the Alumni Association is to promote the interests and welfare of Utah State University, as well as that of USU alumni, students, faculty, staff, and friends.

**Government:** The governance of the association is vested in the Executive Board. The board is comprised of the president and vice president of the association, the vice president of University Advancement, the president of the Associated Students of USU, the president of the Emeriti, the president of the Young Alumni, the president of the Student Alumni Association, a College Alumni/Development representative, a University faculty representative, the University Athletic Director, the director of Alumni Relations, the immediate past president of the association, and representatives of regional alumni chapters selected by the Council of Chapter Presidents with the approval of the Executive Board.

**Function:** The Alumni Association is the medium through which former students maintain contact with the University and are served after leaving the campus. Efforts are made to maintain a complete record of every former student throughout life, and his or her accomplishments and progress are recorded. The association maintains alumni volunteers and chapter organizations throughout Utah and in major areas where former students are located. Through the association, former students 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 Alumni Association takes the leadership in sponsoring such campus events as Homecoming, Founders Day, Distinguished Service Awards, Aggie Family Day, and reunions. The association also provides opportunities for travel through the alumni travel program, and aids in athletic and other school activities.

**Alumni and Development Information Services**

Manager, Gift/Biographical Records: April Barker  
Location: Main 112E  
Phone: (435) 797-3583  
E-mail: april@cc.usu.edu

The Alumni and Development Information Services Office maintains and updates biographical and gift information about University alumni and friends, in accordance with the general needs and expectations of the University community.

The Alumni and Development Information Services Office supports the ongoing activity of Utah State University by providing assistance for programs, communications, and events, which bring together alumni, donors, and friends of the University.
Affirmative Action/Equal Opportunity Office

Assistant Executive Vice President for Affirmative Action and Diversity: Sue Guenter-Schlesinger  
Location: Main 161  
Phone: (435) 797-1266  
FAX: (435) 797-0291  
E-mail: carolynw@champ.usu.edu  
WWW: http://www.usu.edu/aaeo

The vision statement of the Affirmative Action/Equal Opportunity (AA/EO) Office reads as follows:

“USU sees an environment in which every individual has an opportunity to learn, work, and contribute, and where full inclusion and respect for all people encourages creativity and productivity. The result will be students, faculty, and staff working together, serving and strengthening our local, national, and global communities.”

In support of this vision, it is the policy of Utah State University to ensure equal educational and employment opportunity regardless of race, color, religion, sex (including sexual harassment), national origin, age, disability, or veteran status. In addition, discrimination based on sexual orientation is prohibited in evaluating employee or student performance.

The AA/EO Office implements federal, state, and University anti-discrimination laws, statues, and policies, and strives to provide an atmosphere in which students, staff, and faculty can work, study, and live without fear of discrimination or sexual harassment. It also works to increase access to education and employment for groups that have traditionally faced barriers to opportunities in these areas.

The AA/EO Office focuses on a variety of areas. The major responsibilities of the office include:

1. Developing affirmative action policies, plans, and programs at USU aimed at increasing participation of underrepresented groups of women, minorities, persons with disabilities, and veterans.
2. Monitoring the representation and status of underrepresented groups (women and minorities) at USU who are prospective or current faculty or staff.
3. Investigating, processing, and resolving discrimination and sexual harassment complaints.
4. Providing training on affirmative action/equal opportunity laws, policies, prevention of sexual harassment, and valuing diversity.
5. Enhancing awareness of and sensitivity toward diversity and “differences.”

Utah State University is dedicated to providing equal opportunity in education and employment to all students, faculty, and staff. University members who feel their rights have been violated, want information, or just need some guidance relating to their course of action should contact the Affirmative Action/Equal Opportunity Office, located in Main 161, or call (435) 797-1266. Copies of the complete Affirmative Action Plan, Affirmative Action/Equal Opportunity Policy, Sexual Harassment Policy, and Discrimination Complaint Policy, as well as information pertaining to other AA/EO-related laws and policies at the local (USU), state, and federal levels, are available in the AA/EO Office, on the USU Website, and at the Merrill Library.
Graduate General Information

School of Graduate Studies

Dean of Schol of Graduate Studies: Thomas L. Kent
Location: Main 164
Phone: (435) 797-1189
FAX: (435) 797-1192
E-mail: gradsch@cc.usu.edu
WWW: http://www.usu.edu/gradsch

Graduate programs at USU are supervised by the dean of the School of Graduate Studies, assisted by the Graduate Council. The council consists of the dean, a faculty representative from each of the seven colleges of the University, a representative from the Faculty Senate, the Vice President for Information Technology, and two graduate students. Policies and regulations for graduate work are established by the Graduate Council with the approval of the Faculty Senate.

USU has awarded Master of Science degrees since 1914 and doctoral degrees since 1950. The School of Graduate Studies was formally organized in 1945. Forty-one of the University’s 43 departments participate in graduate degree programs, including several interdepartmental programs. Included are 90 master’s programs, 34 doctoral programs, 3 educational specialist programs, 2 engineer degrees, and 3 interdisciplinary certificates. Nationally and internationally known scholars and research units participate in and support graduate studies at USU.

The School of Graduate Studies holds memberships in the Council of Graduate Schools in the United States and the Western Association of Graduate Schools.
Graduate Degrees, Majors, and Certificates

Utah State University offers the following graduate degrees:

- Master of Accounting (MAcc)
- Master of Arts (MA)
- Master of Business Administration (MBA)
- Master of Computer Science (MCS)
- Master of Dietetics Administration (MDA)
- Master of Education (MEd)
- Master of Engineering (ME)
- Master of Family and Human Development (MFHD)
- Master of Fine Arts (MFA)
- Master of Food Microbiology and Safety (MFMS)
- Master of Landscape Architecture (MLA)
- Master of Mathematics (MMath)
- Master of Family and Human Development (MFHD)
- Master of Fine Arts (MFA)
- Master of Food Microbiology and Safety (MFMS)
- Master of Landscape Architecture (MLA)
- Master of Mathematics (MMath)
- Master of Family and Human Development (MFHD)
- Master of Fine Arts (MFA)
- Master of Food Microbiology and Safety (MFMS)
- Master of Landscape Architecture (MLA)
- Master of Mathematics (MMath)
- Doctorate of Audiology (AuD)

Following is a list of the academic areas, or majors, within which degrees are offered and the degree(s) for each:

Accounting .............................................. MAcc
Agricultural Systems Technology ............. MS
American Studies ..................................... MA, MS
Animal Science ...................................... MS, PhD
Applied Economics ................................. MS
Art ...................................................... MA, MFA
Audiology ............................................. AuD
Biochemistry ......................................... MS, PhD
Biological Engineering ............................ MS, PhD
Biology .............................................. MS, PhD
Biometeorology ..................................... MS, PhD
Bioregional Planning .............................. MS
Bioregional Planning .............................. MS, PhD
Bioregional Planning .............................. MS, PhD
Business Administration ........................ MS, PhD
Business Information Systems .................. MS
Chemistry ............................................. MS, PhD
Civil and Environmental Engineering .......... ME, MS, CE, PhD
Communication .................................... MA, MS
Communicative Disorders and Deaf Education .... MEd, MA, MS, EdS
Computer Science .................................. MS, MCS, PhD
Dairy Science ........................................ MS
Dietetics Administration .......................... MDA
Disability Disciplines ............................. PhD
Ecology .............................................. MS, PhD
Economics .......................................... MA, MS, PhD
Education .......................................... EdD, PhD
Electrical Engineering ............................ ME, MS, EE, PhD
Elementary Education ............................ MEd, MA, MS
English .............................................. MA, MS
Family and Human Development .............. MFHD
Family, Consumer, and Human Development .... MS, PhD
Fisheries Biology ................................. MS, PhD
Food Microbiology and Safety ................... MFMS
Forestry ............................................. MS, PhD
Geography .......................................... MA, MS
Geology ............................................. MS
Health, Physical Education and Recreation ...... MEd, MS
History .............................................. MA, MS
Horticulture, Professional Studies in .......... MPSH
Human Dimensions of Ecosystem ............. MS, PhD
Science and Management ....................... MS, PhD
Human Resources .................................. MS
Industrial Mathematics .......................... MS
Industrial Technology ............................ MS
Instructional Technology ........................ MEd, MS, EdS, PhD
Irrigation Engineering ............................ MS, PhD
Landscape Architecture ........................... MFA, PhD
Mathematical Sciences ........................... MS, PhD
Mathematics ........................................ MS, MMath
Mechanical Engineering ........................ MS, PhD
Mechanical Engineering ........................ MS, PhD
Mechanical Engineering ........................ MS, PhD
Mechanical Engineering ........................ MS, PhD
Mechanical Engineering ........................ MS, PhD
Mechanical Engineering ........................ MS, PhD
Recreation Resource Management ............. MS, PhD
Rehabilitation Counseling ........................ MRC
Second Language Teaching ....................... MSLT
Secondary Education ............................. MEd, MA, MS
Social Sciences ..................................... MSS
Sociology .......................................... MA, MS, PhD
Soil Science ........................................ MS, PhD
Special Education ................................. MEd, MS, EdS
Statistics .......................................... MS
Theatre Arts ........................................ MA, MFA
Toxicology .......................................... MS, PhD
Watershed Science ................................ MS, PhD
Wildlife Biology ................................... MS, PhD

Certificates:

- National Environmental Policy Act (NEPA)
- Natural Resource and Environmental Policy
- Natural Resources and Environmental Education (NREE)

1Interdisciplinary degree program.
2Interdisciplinary certificate program.
3The MS and PhD in Ecology are offered within each of the following departments: Aquatic, Watershed, and Earth Resources; Biology; Forest, Range, and Wildlife Sciences; and Plants, Soils, and Biometeorology.
Graduate Financial Assistance

Applications for assistantships, fellowships, and other financial aid should be made through departmental offices.

Along with most graduate schools in the United States, USU is a party to a resolution of the Council of Graduate Schools that establishes April 15 as the deadline for acceptance of offers of financial assistance. If a student accepts an offer before April 15 and then wishes to withdraw, a resignation of the appointment may be submitted in writing at any time through April 15. However, after April 15 a student is not to accept another offer without first obtaining a written release from the institution to which a commitment has been made.

Graduate Assistantships

Teaching, research, and other graduate assistantships are available in most of the departments of the University. A full-time assistantship is 20 hours per week. In the interest of timely degree completion, graduate students are generally employed by the University for no more than 20 hours per week. Employment for more than 20 hours per week must be approved by the student’s advisor and degree-program department head. Graduate assistants must be full-time, matriculated students. For students employed as graduate assistants, full-time status is based on the full-time equivalent or FTE. A 0.25 to 0.374 FTE requires a student to enroll for 9 graduate-level credits; a 0.375 to 0.50 FTE requires a student to enroll for 6 graduate-level credits (see also Student Classifications section, pages 91-92). Graduate assistants must maintain a cumulative grade point average (GPA) of 3.0 or higher for those courses included on their Program of Study. However, if a Program of Study has not been submitted to the School of Graduate Studies, a cumulative GPA is computed using all of the student’s coursework at USU since the prior degree. The GPA is checked by the School of Graduate Studies at the end of each semester. The cumulative GPA on the last 60 semester credits will be used to determine eligibility as a graduate assistant if the student has not yet started the graduate program. Graduate assistants may register for a maximum of 12 credits per semester. However, a research assistant whose assistantship involves his or her thesis or dissertation research may register for additional credits, as explained below.

Teaching Assistantships/Graduate Instructors. Graduate students may be teaching assistants or graduate instructors in departments. Teaching loads vary up to a maximum of 20 hours per week, and stipends vary depending on the department and the teaching load.

International students may be considered for teaching assistantships if they demonstrate adequate proficiency in English communication, as determined by Utah State University’s Intensive English Language Institute, and have participated in the required workshop.

All teaching assistants and graduate instructors are required to participate in a training workshop sponsored by the School of Graduate Studies prior to beginning their assistantships. The workshops help students gain the techniques and skills to be effective instructors in the university environment. The workshop for international students also aids students in understanding the American university culture and in improving communication. When a teaching assistant workshop has been successfully completed, 1 credit will be added to the student’s transcript. However, this credit cannot be applied toward a graduate degree program.

Research Assistantships. Stipends and workloads for research assistants vary, with a maximum workload of 20 hours per week. Students conducting research that will be used for their thesis or dissertation may register for 4 research or thesis credits above the 12-credit limit.

Federal College Work-Study Assistantships. Graduate students may apply for work-study support by completing an online application at http://www.fafsa.ed.gov.

Waiver of the Nonresident Portion of the Tuition Fee. A nonresident student who holds a graduate assistantship and is receiving at least $250 per month may be awarded a waiver of the nonresident portion of tuition for courses in the student’s degree program. Out-of-state, noninternational graduate students who receive nonresident tuition waivers must apply for Utah residency after completing 60 semester credits. Waivers cannot be used to audit classes. Waivers cannot be used for coursework below the 5000 level, unless the course is on the student’s Program of Study or required by the student’s supervisory committee, as indicated by a letter from the committee chair.

Resident Tuition Remission for Doctoral Students. A student who is matriculated in a doctoral degree program and is a graduate assistant or graduate fellow receiving at least $600 per month may be awarded a resident (instate) tuition remission. The student must be registered for at least 9 graduate-level credits. If credits other than those required for the doctoral degree are needed to meet the 9-credit requirement, registration must be for Dept. 7990 (Continuing Graduate Advisement). A doctoral in-state tuition remission cannot be used to audit classes or for coursework below the 5000 level.

Waiver/Remission. The department head must submit a waiver/remission request to the graduate dean for approval no later than the first day of classes for the semester. The waiver and/or remission must be used before the last day for registering or adding classes in the semester for which it was awarded (15th day of classes). The waiver and/or remission are available for a maximum of 12 credits per semester, with the number of eligible credits indicated on the Program of Study, which must be submitted by the end of the second semester for a master’s student and the end of the third semester for a doctoral student. Audited courses do not qualify for waiver/remission. For more information, refer to the Graduate Student Tuition Waivers and Remission Policy on the School of Graduate Studies website: http://www.usu.edu/gradsch/TuitionWaiverPolicy.htm.

Western Regional Graduate Programs (WRGP)

Residents of participating states may enroll in graduate programs approved as Western Regional Graduate Programs (WRGP) by the Western Interstate Commission for Higher Education (WICHE) without paying nonresident tuition. USU’s WRGP degrees are the MS and PhD in Biometeorology, Toxicology, and Watershed Science; and the MS in Mechanical Engineering, and in Human Resources. Information is available in the School of Graduate Studies.

Fellowships

Fellowship and scholarship awardees must be full-time, matriculated students enrolled in approved graduate-level course-
work. Application for these, as well as for departmental fellowships and awards, is made through the departments, except for the Martin Luther King Fellowship (see below).

Presidential Fellowships include a $12,000 stipend for the academic year, a waiver of the nonresident portion of tuition, and for doctoral students, the resident tuition remission. Criteria include a 3.50 GPA and quantitative and verbal GRE scores at the 70th percentile or above.

Vice President for Research Fellowships include a $15,000 stipend for the academic year, a waiver of the nonresident portion of tuition, and for doctoral students, the resident tuition remission. Criteria are the same as for the Presidential Fellowships. In addition, the student must be in a research degree program that includes a master’s thesis or doctoral dissertation.

University Fellowships also include a $12,000 stipend for the academic year, a waiver of the nonresident portion of tuition, and for doctoral students, the resident tuition remission. Criteria are the same as for Presidential Fellowships.

Martin Luther King Fellowships are available to African-American students. The fellowship is typically for $2,000 and includes a waiver of the nonresident portion of tuition. The department usually awards an assistantship or other support, the amount of which varies. Application for this fellowship is made through the School of Graduate Studies.

Scholarships

Resident Tuition Scholarships. Scholarships covering the resident portion of tuition are available each semester on a competitive basis through the departments. Awardees must be full-time matriculated students and must maintain a 3.0 or higher GPA.

Seely-Hinckley Scholarships are awarded each year to four graduate students with superior academic records. College deans nominate, for the following school year, outstanding scholars who would not be able to attend or would be delayed in attending USU without financial assistance.

Other Financial Assistance

Many students who do not receive assistantships or fellowships receive financial assistance by working for departments or other campus units. Graduate students are generally not employed by the University for more than 20 hours per week. Employment beyond 20 hours per week must be approved by the student’s advisor and degree-program department head.

Graduate students may apply for Federal Stafford Loans, Federal Perkins Loans, Federal Supplemental Loans for Students (SLS), Emergency Loans, and Federal College Work-Study through the Financial Aid Office. More information can be found in the Financial Aid and Scholarship Information section of this catalog, page 22, or by contacting: Financial Aid Office, Taggart Student Center 106, Utah State University, 1800 Old Main Hill, Logan UT 84322-1800, tel. (435) 797-0173. Also visit the following website: http://www.usu.edu/finaid/.

For information about GI Bill Benefits, contact: Office of Veterans Services, Taggart Student Center 246, Utah State University, 1600 Old Main Hill, Logan UT 84322-1600, tel. (435) 797-1102.

### Graduate Admission Procedures

School of Graduate Studies
Utah State University
0900 Old Main Hill
Logan UT 84322-0900
tel. (435) 797-1189

#### Requirements

Application-for-admission forms are obtained from and returned to the School of Graduate Studies. The form must be accompanied by a nonrefundable application fee of $50 for U.S. citizens and $60 for international students. **Note: Fees must be paid before applications will be evaluated.**

**Dual Degrees.** A student may apply for only one degree program at a time. If a student wishes to be considered for two degree programs, an application should be submitted for the first degree program. If admission is granted, the student may then apply for a second degree program after submitting a letter from the head of the department to which the student has been admitted. The letter should indicate that the department has no objection to the student applying for the second degree program. This application process applies to both separate and concurrent degree programs (see **Concurrent Degrees**, page 98).

**Bachelor’s Degree.** A bachelor’s degree from an accredited college or university is required for admission to a graduate program. A three-year bachelor’s degree is generally not acceptable. A master’s degree may be required for admission to a doctoral program.

**Grade Point Average.** A minimum 3.0 GPA for the last 60 semester credits is required.

**Transcripts.** Each previously attended college and/or university, including USU, must be listed on the application form, and the applicant must have an official transcript from each institution (except USU) sent directly to the USU School of Graduate Studies. Transcripts accumulated on one record are not acceptable. Transcripts must be submitted for all coursework above the high-school level and all prior degrees. Transcripts not in English must be accompanied by a notarized translation.

Transcripts submitted as application credentials become the property of the School of Graduate Studies and will not be copied for or returned to the applicant.

**Admissions Tests.** An admission test is required of all applicants. Scores at or above the 40th percentile are required by the School of Graduate Studies. Departments may set higher criteria. Most applicants must take the Graduate Record Examination (GRE) general test (minimum of 40th percentile on the verbal and quantitative tests). Some departments will accept the Miller Analogies Test (MAT) for master’s degree applications. Applicants to the Master of Business Administration, the MS in Business Information Systems, and Master of Accounting programs are required to take the Graduate Management Admission Test (GMAT). Registration forms for the GRE and the GMAT are available at the School of Graduate Studies. Applicants should request that their test report be sent directly to the School of Graduate Studies. The official test report must be received before an application is considered complete.
Recommendation Letters. Three letters of recommendation are required; each must address the applicant’s potential for success in the proposed graduate degree program. If the applicant has been enrolled in school during the last five years, at least two of the letters must come from persons from whom the applicant has taken academic coursework. The letters must be sent directly to the School of Graduate Studies by the writers. The forms for letters of recommendation (included in the application packet) should be used.

All materials submitted as part of the application credentials become the property of the School of Graduate Studies and will not be copied or returned to the student.

International Applicants. International applicants from non-English-speaking countries must demonstrate competency in the English language. A minimum score of 550 on the Test of English as a Foreign Language (TOEFL), which is administered throughout the world, satisfies that requirement, unless the student’s department requires a higher score. An official TOEFL score is required. The TOEFL score is valid for only two years. If an international applicant has a degree from a university in an English-speaking country, the TOEFL is not required.

An applicant who is admitted with a TOEFL score below 550 or below a departmentally required minimum, and who has not obtained a degree in an English-speaking country, must take the English Language Placement Test given by the Intensive English Language Institute (IELI) at USU. The test must be taken before a student is allowed to register. The results of the exam are used to place students into one of three categories: (1) full-time study of English in the Intensive English Language Institute; (2) a combination of English-language study and academic study, if approved by the IELI director, the student’s advisor, and the graduate dean; or (3) full-time academic studies. Students placed in the Intensive English Program must remain in the program until the required English proficiency is attained. Those in category (1) are not allowed to register for non-IELI classes.

International students must also submit an I-20 application form and a financial guarantee. Because of immigration regulations, international students cannot be admitted to provisional matriculation.

Application Target Dates
Completed application forms, transcripts, letters of recommendation, test scores, and the application fee should be submitted on or before the following dates (some departments have different deadlines; see departmental descriptions). It may not be possible to process applications for the following semester when they are submitted after the target date.

- March 15 for summer semester
- June 15 for fall semester
- October 15 for spring semester

As soon as an application is complete, a recommendation is made by the appropriate department to the graduate dean, who must approve all admissions. The official notification of acceptance or rejection is sent by the graduate dean.

Program Continuity
A fee of $20 is charged if a student begins a graduate program before or after the semester for which he or she was accepted. If a graduate student’s attendance is interrupted for more than one semester, the department or the School of Graduate Studies may require the student to reapply for admission.

Multiple Degree Programs
With the approval of the cooperating departments and the graduate dean, students may pursue more than one degree program.

An applicant should apply for admission to the first degree program. If admission is granted, the student may then apply for a second degree program, after submitting a letter from the head of the department to which the student has been admitted. The letter should indicate that the department has no objection to the student applying for the second degree program.

Graduate General Regulations

Each graduate student is responsible to know the policies, regulations, and procedures of the School of Graduate Studies and of his or her department or program, and to see that they are followed and that the timelines are met. The policies and regulations stated in this catalog and in departmental handbooks may be changed between publication dates, and students are responsible to obtain up-to-date information.

Time Limit
A master’s degree must be completed within six years of matriculation. A doctorate must be completed within eight years of matriculation.

Coursework that is more than eight years old may not be used for a graduate degree. If permitted by the departmental or interdepartmental degree program policy, a supervisory committee may allow revalidation through testing, following a plan developed by the supervisory committee and approved by the dean of the

School of Graduate Studies. The results must be verified in writing to the graduate dean by the student’s major professor or other person(s) responsible for the testing. Work experience cannot be substituted for out-of-date coursework or used for revalidation.

Graduate credits from another institution that exceed the eight-year limit at the time of degree completion may be transferred to a USU graduate degree only if the student’s supervisory committee provides a justification acceptable to the graduate dean. Then, the revalidation procedures described above apply.

Student Classifications
A matriculated graduate student has been accepted by a department, with the concurrence of the dean of the School of Graduate Studies, to an approved graduate degree program and has enrolled at the University. A student may be accepted on a provisional matriculation basis when (1) information, such as GRE scores, is yet to be received by the School of Graduate Studies, or
(2) when a missing prerequisite or academic deficiency must be remedied. The conditions and time limit for remedying these deficiencies must be specified to the student in writing at the time of admission. If the conditions are not met as specified, the student’s participation in the degree program will be terminated. International students cannot be admitted on provisional status.

A **full-time matriculated graduate student** must be one of the following:

1. Registered for 9 or more graduate credits; or
2. Registered for 6 or more graduate credits if employed as a graduate assistant for 15 hours per week or more; or
3. Registered for 3 graduate credits with all required coursework completed and only the research component of the degree remaining (the student’s Program of Study must have been submitted to the School of Graduate Studies); or
4. Registered for at least 3 graduate credits during the semester of the final thesis/dissertation defense or, in a nonthesis degree program, the last semester of coursework required on the student’s Program of Study.
5. Registered for at least 9 graduate credits for each semester in which the doctoral tuition remission is received.

**Note:** To defer a loan or to receive student loans, graduate students must be registered for at least 6 credits.

A **matriculated-probationary graduate student** has been placed on probation status because of inadequate progress in his or her degree program. The conditions to be met and the time limit for meeting them must be specified to the student in writing at the time he or she is placed on probation. If the conditions are not met as specified, the student’s participation in the degree program will be terminated.

Graduate assistants and fellowship recipients must be full-time matriculated students with a GPA of 3.0 or above, and must be registered each semester of the assistantship or fellowship, including summer.

A **nonmatriculated postbaccalaureate student** holds a bachelor’s degree, is enrolled for USU coursework, but has not been accepted to a graduate degree program. If an application for graduate studies has been submitted to the School of Graduate Studies, a student may apply through the School of Graduate Studies to enroll as a nonmatriculated student. A letter must be submitted from the graduate department head or graduate program coordinator giving permission for the student to be entered on the computer as a nonmatriculated student. If the student does not intend to pursue a graduate degree, the student should apply to the undergraduate Admissions Office to enroll as a nonmatriculated student. A **maximum of 12 semester credits** earned as a nonmatriculated, postbaccalaureate student may be used in a graduate degree program, but only if approved by the student’s supervisory committee.

An international student must be admitted to a degree program and hold a valid F-1 or J-1 visa before enrolling in classes at Utah State University. A student on an F-1 or J-1 visa must maintain full-time student status throughout the degree program. For other information about the University, he or she can contact the International Students and Scholars Office, Utah State University, 0140 Old Main Hill, Logan UT 84322-0140, tel. (435) 797-1124.

**Split Form Policy**

An undergraduate student doing well in his or her studies and planning a graduate degree at USU may file a Split Form to request that some coursework be reserved (split out) from the undergraduate degree. The instructor’s permission is required for an undergraduate student to register for graduate courses. For a Split Form to be approved, the student must be within 30 semester credits of completing bachelor’s degree requirements, have filed an Application for Graduation in the Graduation Office (a copy of which must be attached to the split request), **be currently taking at least one required undergraduate class**, have a cumulative undergraduate GPA of 3.0 or higher at the beginning of the semester listed on the Split Form, and have applied for admission to the School of Graduate Studies. In accordance with School of Graduate Studies admission policy (see page 90), a transitional student will not be matriculated in the School of Graduate Studies until his or her bachelor’s degree has been completed. A maximum of 9 semester credits may be split out during a bachelor’s program.

A Split Form, which must include one or more required undergraduate courses from the student’s Application for Graduation, should be filed in the School of Graduate Studies, along with a copy of the Application for Graduation, before grades are posted for the semester requested to be split. A **Split Form cannot be processed after the bachelor’s degree has been closed out and posted on the transcript**. The form must be signed by the undergraduate advisor and the graduate department head or departmental graduate program chair/coordinator before it is submitted to the School of Graduate Studies. If approved by the dean of the School of Graduate Studies, the form will be processed and forwarded to the Graduation Office. Approval of a Split Form does not guarantee acceptance to the School of Graduate Studies.

**Course-Level Numbering and Acceptability**

- **7000-7990** are doctorate-level courses. With supervisory committee and instructor approval, they may be used in a master’s program.
- **6000-6990** are master’s-level courses. With supervisory committee approval, they may be used in a doctoral program.
- **5000-5990** are advanced, upper-division courses and may be used in a graduate program if approved by the supervisory committee (see below).
- **3000-4990** are junior/senior, upper-division undergraduate courses. Up to 3 semester credits of coursework at this level may be used (see below).

No more than 15 semester credits of 3000-5990 level coursework may be used for a graduate degree, except for a doctorate without a master’s degree, for which a total of 21 semester credits of 3000-5990 level coursework may be used. Up to 3 semester credits of coursework at the 3000-4990 level may be included within the 15 or 21 semester credit limit, upon recommendation by the student’s supervisory committee and approval by the graduate dean. To be approved, such courses must be outside the student’s graduate-degree field. Courses that students entering the graduate program are expected to have taken as undergraduates and prerequisites for graduate courses are not acceptable.

**2990 and below** are lower-division courses and are not acceptable for graduate degree programs of study.

- **6990 and 7990** (continuing graduate advisement) credits, INST 7920, and IELI 7920 cannot be used in a degree program.

Audited courses may not be used for a degree program or toward status as a full-time student. Credits in the following areas are not acceptable in a degree program: foreign languages, continuing graduate advisement, individual home study, military science, and courses numbered below 3000. No more than 12 workshop credits may be applied to a master’s degree.
Minimum Grades and Credit Acceptability

Graduate students are required to maintain at least a 3.0 GPA for degree-program courses. Grades below C will not be accepted for a graduate degree. Some departments do not accept C grades.

P-Grade Policy. P (Pass) will be accepted only for seminars, special problems, interdisciplinary workshops, thesis or dissertation research, and continuing graduate advisement. Credits for a course with a P grade cannot be transferred from another university.

Correspondence Course Credits. Continuing Education correspondence (independent home study) courses are not accepted for graduate degrees.

Credit by Special Examination. Credit earned by special examination cannot be used to satisfy the course requirements for a graduate degree or to meet the residency requirement.

Transfer Credits

A student’s supervisory committee may recommend transfer of graduate credits earned at another accredited institution. The credits must not have been used for another degree. Only 12 semester credits earned before matriculation at USU may be transferred. Credits with P grades cannot be transferred. Transfer credits cannot replace required residency credit. Transfer credits are subject to approval of the supervisory committee and the dean of the School of Graduate Studies (see Time Limit, page 91).

Rights in Inventions

It is the student’s responsibility to be aware of University policy in regard to rights in inventions. (Information is available in the Office of the Vice President for Research.)

Research Approval

All University research involving human subjects, animal subjects, radiation materials, recombinant DNA, or biohazardous materials must be reviewed and approved by the appropriate University committee(s) before the research is started. Graduate students are, with the assistance of their advisors, responsible for obtaining the necessary approval for their research. Verification of approval must be submitted to the School of Graduate Studies before the student’s master’s Program of Study or doctoral Application for Candidacy can be approved. For further information, contact the School of Graduate Studies or the Office of the Vice President for Research.

Continuous Graduate Registration

Graduate students using University facilities or faculty time must be registered for a minimum of 3 graduate credits every semester until completion of all degree requirements, except, in some cases, the semester of final thesis or dissertation approval (see below). Students employed as graduate assistants or graduate instructors during all semesters, including summer, must be registered as full-time matriculated students (see pages 91-92). More than 3 credits of continuous registration may be required by a department. An off-campus student in a planned Extension program who is enrolled in a 1- or 2-credit course that is the only course offered locally that semester may be approved by the graduate dean for continuous registration upon written recommendation of the department head. Continuous registration may be for courses, seminars, independent study, research credit, or 6990 or 7990 (Continuing Graduate Advisement). The continuous registration requirement goes into effect the semester a student matriculates in the School of Graduate Studies.

A graduate student who is not using University facilities or faculty time may meet the continuous registration requirement by paying the Continuous Registration Fee of $15 per semester (not necessary for summer semester). This alternative requires a written request from the department head, including verification that the student is not using University facilities and/or faculty time. International students usually do not qualify to pay the Continuous Registration Fee because of immigration regulations.

The semester a student defends (or redefends) a thesis, Plan B paper, or dissertation or takes final oral examinations, he or she must be registered for at least 3 credits. Doctoral and master’s Plan A, Plan B, and Plan C students will be given until the last day of the next semester (known as a “grace” semester) following the defense to finish degree requirements, and Plan C students will be given until the last day of the next semester after coursework completion to finish degree requirements. If a student has not completed all degree requirements by the end of the grace semester, the student must pay a $100 Late Completion Fee for each semester following the grace semester. If working with faculty involves more than routine submission of the thesis or dissertation to the thesis coordinator, registration for 3 or more credits is required.

Because of SEVIS regulations, a student holding an F-1 or J-1 visa is not eligible to pay the $100 fee to complete the degree, but must be registered as a full-time student through the semester of completion.

Leave of Absence

A leave of absence, during which continuous registration is not required, may be granted under the following conditions:

1. Illness, required military service, and other extenuating circumstances acceptable to the department head and the graduate dean.
2. Lack of availability of courses in a planned Extension program.
3. Participation in a planned program based primarily on summer semester courses.

For either 2 or 3, the student must have an approved Program of Study on file in the School of Graduate Studies before a leave will be granted.

A leave of absence must be approved by the graduate dean, upon written recommendation of the department head. A leave of absence may be the basis for extending the time limit to complete a degree, but not to extend the time limit for course validity.

Notice of Failure to Register and Reactivation Procedures

A student who does not maintain continuous registration will be notified and a copy of the notification will be sent to the department. If, after notice, the student fails to register, the department will be notified and the student’s records will be put on inactive status. On the recommendation of the department, the student’s file may be reactivated, if the time limit for the degree has not expired. The student will be required to pay the Continuous Registration Fees or register for the semesters missed, as determined by the department and the School of Graduate Studies.

Low-Scholarship Notification

Students whose grade point average (GPA) is below 3.0 for any semester will be notified by letter that their academic performance is unsatisfactory. Students whose cumulative GPA falls below 3.0 will be placed on probationary status. If a student remains
students are expected to do original, scholarly work in preparation for future professional and academic roles. Academic dishonesty is defined in The Code of Policies and Procedures for Students at Utah State University (April 2002) Article V, Section 3 (see page 38 of this catalog) to include cheating, falsification of information, and plagiarism.

Violations of the above policy will subject the offender to the University disciplinary procedures as outlined in Article VI, Section 1 of the student Code, with the penalties or disciplinary measures to include one or more of the following:

1. **Probation.** Continued participation in an academic program is predicated upon the student satisfying certain requirements as specified by the University. Probation is for a designated period of time and includes the probability of more severe disciplinary penalties if the student does not comply with the specified requirements or is found to be violating the Honor System during the probationary period.

2. **Suspension.** Temporary dismissal from the University for a specified time, after which the student is eligible to return. Conditions for readmission may be specified.

3. **Expulsion.** Permanent dismissal from the University.

4. **Honor System violation.** Assigning a designation with a course grade indicating an Honor System violation involving academic dishonesty.

5. **Denial or revocation of a degree.**

6. **Performance of community service.**

Research is a vital part of the education of most graduate students, and appropriate scientific and research conduct is expected. An allegation of scientific misconduct involving funded research is handled through the Office of the Vice President for Research. If the research is nonfunded, the allegation is handled following The Code of Policies and Procedures for Students at Utah State University.

Research misconduct may be determined during a student’s program or after the program is completed. If a student is found guilty of research fraud, the penalty may include, in addition to any listed above, correction and reanalysis of data and/or rewriting of the thesis or dissertation, with resubmission and redefense of the thesis or dissertation, and/or loss of financial assistance.

**Appeals Procedure**

Graduate students with grievances relating to academic matters may appeal to the dean of the School of Graduate Studies following the steps and procedures in The Code of Policies and Procedures for Students at Utah State University.

Each graduate student must be aware of degree requirements and must work with his or her major professor, supervisory committee, and department head to meet the requirements and specific deadlines.

**Master’s Degrees**

When a student is accepted to a master’s degree program, the department head appoints a temporary advisor, who may become the student’s major professor. In most master’s degree programs, a supervisory committee will be established for each student. During the first semester following matriculation, the student should meet with the department head to discuss the appointment of a supervisory committee. A completed Supervisory Committee form should be submitted by the department head to the dean of the School of Graduate Studies for final approval by the end of the student’s first semester. Committee changes are not to be made during the six weeks prior to the final defense.

A master’s degree supervisory committee must include at least three faculty members who are approved by the department head and the dean of the School of Graduate Studies. At least one member must represent the student’s area of specialization, and at least one must be from outside the specialization area. Adjunct

**Graduate Degree Requirements**

- **Monitoring of Progress**
  - The student’s department and the School of Graduate Studies monitor the progress of graduate students. For continued participation in a graduate program, a student must complete requirements in a timely manner. In reviewing a student’s progress, several factors will be considered, including demonstrated ability to develop a thesis proposal, independence in the conduct of research, performance on comprehensive examinations, GPA, and special program requirements. Satisfactory progress also involves maintaining the standards of professional ethics and integrity expected in the student’s discipline.

- **Academic Nepotism**
  - A faculty member is not to participate in admission or graduate assistant employment decisions, serve as major professor, or serve on the supervisory committee of a relative, including a person with whom he or she has or has had an amorous relationship. Graduate students may enroll in classes taught by a relative only under special conditions. For information, contact the department head or the School of Graduate Studies.

- **Matriculation of Faculty**
  - It is the policy of USU not to grant advanced degrees to its own faculty, except under unusual circumstances (see Faculty Policy 404.1.4).

- **Academic Honesty and Research Misconduct**
  - Maintaining the highest standards of academic honesty and research ethics is especially important at the graduate level, where students are expected to do original, scholarly work in preparation...
faculty can be members with the approval of the dean of the School of Graduate Studies. Upon recommendation of the department head, emeritus faculty may serve on supervisory committees, but may not chair new committees.

Within School of Graduate Studies and departmental requirements, the supervisory committee determines the courses for the student’s Program of Study; conducts departmental qualifying examinations (if required); supervises the student’s thesis research, Plan B paper, or project; and conducts the defense or final examination. The defense or final examination must be scheduled through the School of Graduate Studies. The major professor, who serves as the chairperson of the committee, usually directs the thesis, paper, or other degree project.

Three copies of a Program of Study form, one of which must be the original with signatures in ink, should be submitted to the School of Graduate Studies by the student before the end of the second semester following matriculation. The Program of Study must be submitted at least two months prior to the final examination or, for Plan C programs, completion of coursework. Amendments to the Program of Study require the signature of the major professor and written notification to each member of the supervisory committee.

**Plan A.** The Plan A option for a master’s degree requires preparation of a thesis. From 6-15 semester credits of thesis research are required. The semesters during which a student registers for thesis credit should correspond as closely as possible to the semesters in which the thesis work is done and faculty supervision is provided.

The thesis for a Plan A master’s degree is to be a contribution to the field of knowledge based on the student’s own research or a treatment and presentation of known subject matter from a new point of view. The student and major professor should decide upon a problem or subject for the thesis study by the end of the student’s first semester of graduate study.

A Thesis Proposal, signed by the entire committee, should be submitted by the student to the School of Graduate Studies along with the Program of Study form.

The student and all committee members are required to sign a Data and Copyright form and a Plans for Publication form. The forms are given to the student with his or her copy of the approved Supervisory Committee form and must be submitted to the School of Graduate Studies prior to the final defense.

**Plan B.** The Plan B option requires the production of a paper or a creative work of art. At least 2 credits of thesis research are required, but no more than 3 credits of thesis credit can be included on the Program of Study.

The Plan B paper is usually a review of literature, with conclusions drawn after conceptualizing an area of inquiry, planning a systematic search, and analyzing and critiquing the acquired information. The summary and conclusions developed should enhance knowledge in the discipline.

Plan B papers and reports should follow the same format specifications as theses and dissertations and are expected to reflect equivalent scholarship standards, even though they may be less intensive and not demand the originality of a Plan A thesis. Plan B papers are defended, but are not reviewed by the School of Graduate Studies thesis coordinator or signed by the graduate dean. Plan B papers must be submitted to the library to be microfilmed.

**Plan C.** A master’s degree option with no thesis or Plan B paper is available in some programs. A departmentally approved program that includes a culminating creative or integrative experience must be filed in the School of Graduate Studies. Generally, a course or seminar on research methods is required, but thesis credits are not accepted. Plan C students should contact the School of Graduate Studies early in their final semester to be certain that all degree requirements, including completion of graduation forms, will be met.

**Master of Arts.** Requirements for the Master of Arts (MA) degree (except in the Art Department) include two years (approximately 15 semester credits) of an acceptable second language, with grades of C or above (unless a higher minimum grade is required by the department), or the equivalent level of learning as determined by testing approved by the supervisory committee and the graduate dean. One year each of two languages, or the equivalent as determined by approved testing, is acceptable if approved by the student’s supervisory committee. Coursework to meet this requirement cannot have been used for another degree and cannot be more than eight years old.

Approved testing procedures include the following:

1. Take and pass (C or above, unless the department requires a higher minimum grade) a language course at the appropriate level (i.e., the final course in a two-year sequence).
2. Take a test given by USU’s Languages, Philosophy, and Speech Communication Department or at the BYU Testing Center and be certified for language equivalency for 15 or more semester credits. To obtain information on languages for which tests are available at USU and BYU, as well as to make arrangements for testing, contact the USU Department of Languages, Philosophy, and Speech Communication.
3. Arrange testing at another university center or testing agency approved by the department and the graduate dean.
4. For an international student: (a) certification of English competency through either a TOEFL score of 550 or above, a passing score on the IELI English Proficiency Test, or completion of IELI courses; and (b) certification of a second language through 1, 2, or 3 above.

**Credit Requirement.** The minimum requirement for a master’s degree is 30 semester credits, except for a Plan C degree for which the minimum is 33 semester credits. For the MEd degree, the minimum number of semester credits is 36. The Master of Fine Arts is regarded as a terminal degree and requires a minimum of 60 semester credits.

**Residency Requirement.** At least 24 semester credits for a master’s degree must be from Utah State University.

**Post-Master’s Professional Degrees.**

Three degrees—the Civil Engineer (CE), Educational Specialist (EdS), and Electrical Engineer (EE)—are designed for students who seek to improve their professional skills and knowledge beyond the master’s degree. The minimum requirement for each of these degrees is 30 semester credits beyond the master’s degree (60 credits beyond a bachelor’s degree). Each degree requires a project report that is prepared to the same format specifications as a thesis, but is not reviewed by the School of Graduate Studies thesis coordinator or signed by the graduate dean.

**Doctoral Degrees.**

When a doctoral student is admitted, the department head appoints a temporary advisor to work with the student until a supervisory committee is established. A Supervisory Committee form must be submitted to the dean of the School of Graduate Studies.
for approval by the end of the student’s second semester following matriculation. Committee changes are not to be made during the six weeks prior to the final defense.

A doctoral supervisory committee must include at least five faculty members with doctoral degrees who are approved by the department head and the dean of the School of Graduate Studies. Three members must be from within and at least one must be from outside the department or interdepartmental degree-granting program in which the student is matriculated. Adjunct faculty can serve on doctoral committees with the approval of the dean of the School of Graduate Studies. Upon recommendation of the department head, emeritus faculty may serve on supervisory committees, but may not chair new committees.

The supervisory committee specifies the student’s Program of Study; supervises the student’s qualifying examination (if there is one) and comprehensive examination, unless some other departmental or program procedure is in place; approves the dissertation proposal and supervises the student’s research and preparation of the dissertation; and conducts the final oral examination. The major professor is the chairperson of the committee and usually directs the student’s research. Continuation in a doctoral program is contingent upon the availability of a major professor.

By the end of the third semester, the student should have submitted a Program of Study to the School of Graduate Studies. Amendments to the Program of Study require the signature of the major professor and written notification to the other members of the supervisory committee.

The student and all committee members are required to sign a Data and Copyright form and a Plans for Publication form. The forms are given to the student with his or her copy of the approved supervisory committee form and must be submitted by the student to the School of Graduate Studies with the Program of Study.

Some departments or interdepartmental programs administer qualifying examinations. Each department or program has the responsibility of administering comprehensive examinations.

Following completion of all or most courses, successful completion of comprehensive examinations, and approval of a proposal for dissertation research, and at least three months before the final defense, the student must submit an Application for Candidacy form to the School of Graduate Studies, along with a copy of the dissertation proposal, signed by all members of the supervisory committee. Submission of the candidacy form is a major step in the student’s program, because the committee and department head thereby attest that the student is ready to conduct independent dissertation research, although successful completion of that requirement is not guaranteed.

Credit Requirement. The minimum requirement for a doctoral degree is 60 approved semester credits in addition to a master’s degree, or 90 approved graduate semester credits with no master’s degree. Coursework cannot be used for more than one degree.

A minimum of 12 dissertation credits is required for a post-master’s doctorate and a minimum of 18 for a no-master’s doctorate. The semesters during which a student registers for dissertation credit should correspond as closely as possible to the semesters in which the dissertation work is done and faculty supervision is provided.

Residency Requirement. For the PhD, a minimum of 33 USU credits is required. At least three semesters, two of which must be consecutive, of full-time registration in residency at USU are required. For the EdD, a minimum of 39 USU semester credits is required. At least three semesters must be full-time registration in residence at USU; none of the semesters need to be consecutive, but two full-time semesters must be taken on campus prior to dissertation credit. Some departments also have language requirements.

With the approval of the supervisory committee and the graduate dean, graduate credit may be transferred from an accredited graduate school, provided the minimum residency requirements are met and the credit has not been used for any other degree. Transfer credit more than eight years old may not be acceptable (see Time Limit section, page 91). Transfer credits will be shown on official USU transcripts upon completion of the degree.

Preparation and Approval of Theses, Plan B Papers, and Dissertations

Before beginning work on a thesis, Plan B paper, or dissertation, a student should obtain the Publication Guide for Graduate Students, available online or from the USU Bookstore, and the style manual or journal approved by the supervisory committee and/or department. These documents will guide the student in the proper preparation of his or her manuscript. Theses and dissertations may be prepared in either traditional or multiple-paper format. One article or article-manuscript may not be submitted as a thesis or dissertation.

Preparation of a thesis, Plan B paper, or dissertation is the culminating learning experience for a graduate student. The quality of the product, which should represent the student’s own best work, is the responsibility of the student. Monitoring the quality of the thesis, Plan B paper, or dissertation and mentoring the student in writing are responsibilities of the major professor, with the assistance of the supervisory committee. Editing by anyone other than the major professor and the supervisory committee should be limited to mechanics, such as spelling and grammar.

Drafts of sections should be submitted periodically to the major professor for critique. Committee members should be consulted, especially on sections that involve their special expertise. Upon request, the School of Graduate Studies thesis coordinator (in Main 164) will review an early draft for format and style.

Oral Examination and Defense. The final defense should be scheduled by the student after all courses and the thesis, Plan B paper, or dissertation are completed. Changes in the membership of a supervisory committee cannot be made during the six weeks prior to the defense without a written request from the department head and approval of the graduate dean. At least four weeks prior to the defense, the student shall give a copy of the thesis, Plan B paper, or dissertation to each member of the supervisory committee for approval or corrections. An Appointment for Examination form must be completed by the student and committee, indicating approval of the proposed time and place for the examination and defense, and submitted to the student to the School of Graduate Studies a minimum of ten working days prior to the exam.

The deadline for completing degree requirements is the last day of the semester. When the defense is scheduled during a semester break, the student must enroll for at least 3 credits the following semester.

No committee member should agree to proceed with a defense until he or she has carefully read and approved the thesis, Plan B paper, or dissertation. If any member of a committee believes that the document is not ready to be defended, he or she should notify the student and major professor and not sign the Appointment for Examination form. The defense should then be rescheduled.

The oral examination of the thesis, Plan B paper, or dissertation is a defense of a final document. Only minor changes, usually editorial, should be required following the defense. If major changes are required, a defense of the revised document should be held.
The chairperson of the examination is appointed by the graduate dean. At the examination, the student defends his or her thesis, Plan B paper, or dissertation and answers questions about the area of specialization. The results of the defense and any additional requirements are recorded on the **Record of Examination Completion** form, which is submitted to the School of Graduate Studies.

All members of the supervisory committee must approve and sign the thesis, Plan B paper, or dissertation. In the event of lack of unanimity, the matter is taken to the dean of the School of Graduate Studies.

Any final examination held without following the proper procedures is invalid. Graduate students failing to complete all degree requirements within one year of a successful defense will be required to redefend. Students must register for at least 3 credits the semester of redefense.

The student is responsible for proofreading the thesis/dissertation and having it read and approved by the department before submitting a final committee-approved and signed copy to the thesis coordinator in the School of Graduate Studies. The thesis coordinator will review the paper for proper format and conformity to departmental and School of Graduate Studies standards. The coordinator will attach a checksheet of format, stylistic, and mechanical problems and will mark examples of needed changes on the paper.

Format corrections and required rewriting must be completed before the thesis coordinator will submit the thesis or dissertation to the graduate dean for approval. The graduate dean examines each thesis and dissertation before approving and signing it. Any thesis or dissertation may be selected for further review by members of the faculty not on the student’s supervisory committee or by expert reviewers at other institutions before being accepted by the dean.

The student may reserve a processing date for the thesis/dissertation by completing the appropriate form after the thesis/dissertation defense. The final committee-approved and signed thesis/dissertation should be submitted to the thesis coordinator by at least the day before the reserved processing date. If a processing date has not been reserved but the student would like to finish by the end of a semester, he or she must submit the final committee-approved and signed thesis/dissertation to the thesis coordinator at least seven weeks before the last day of the summer or fall semester and at least eleven weeks prior to the spring semester commencement deadline. At other times, the signed thesis/dissertation must be submitted at least four weeks prior to anticipated program completion.

### Final Steps

The following forms must be completed and submitted to the School of Graduate Studies, before degree requirements are considered completed.

1. **Graduation Fee Payment Form** requires $15 payment at the Cashiers Office.
2. **Commencement Data Card**
3. **Survey of Earned Doctorates**, if a doctoral student
4. **Questionnaire for Hometown News Release**—optional
5. **Alumni Card**

In addition, three copies of the thesis or dissertation and one additional copy of the title page and an abstract for ProQuest (UMI) (150-word maximum for theses and 350-word maximum for dissertations) must be submitted to Current Periodicals in the Library. The following fees must be paid at this time:

- Binding fee for two of the three required copies . . . . . . . . . . . . $30
- Binding and processing fee for personal copies* . . . . $15 per copy
- ProQuest (formerly UMI) Microfilming Fee . . . . $55 (doctoral)
- ProQuest (formerly UMI) Microfilming Fee . . . . $45 (master’s)
- ProQuest Copyright Registration Fee . . . . . . . . . . . . . . $45 (optional)

*The student is responsible for verifying that the personal copies are complete and have been copied and/or printed without errors.

The Current Periodicals personnel will provide a paper receipt, which must be submitted to the School of Graduate Studies before the degree is considered completed.

The final committee-approved Plan B paper must be taken to Special Collections in the Merrill Library to be microfiched. Special Collections personnel will provide a paper-receipt that must be submitted to the School of Graduate Studies before the degree is considered completed.

Also, incomplete grades must be removed from the student’s record by the major professor using forms provided by the Enrollment Services Office. For nonthesis master’s programs, the School of Graduate Studies must receive a letter of completion from the department head or interdepartmental program director. **It is the student’s responsibility to ensure that these final steps are taken.**

### Delay of Publication Policy

A thesis or dissertation must not contain material that cannot be disclosed publicly. However, occasionally it is in the University’s best interest to delay disclosure of the contents of a thesis or dissertation while patenting and/or commercial development possibilities are investigated or for a period of report review by a funding agency. In such cases, publication of a thesis or dissertation through submission to the Merrill Library and to ProQuest (UMI) may be delayed without delaying award of the student’s degree. A copy of the publication delay policy, including the procedures for requesting a delay in library submission, may be obtained from the School of Graduate Studies.

### Diplomas and Commencement

Diplomas are ordered by the registrar’s office at the end of each semester. If a student needs verification of completion of a degree before the diploma arrives, the registrar will provide an official **Certificate of Completion**. The actual date of completion is usually the date the graduate dean approves a thesis/dissertation or the date a departmental letter of completion is received by the School of Graduate Studies.

Only students completing degrees by the published Commencement deadline date for a given year will be included in the official Commencement program for that year, although other students who complete requirements by a later date during spring semester, established by the graduate dean, may participate in the graduate Commencement/Hooding ceremony.
Graduate Interdepartmental Curricula

Interdepartmental Concurrent Degrees

Students may pursue concurrent master’s degrees or concurrent master’s and doctoral degrees with the approval of the cooperating departments and the graduate dean.

An application should be submitted for the first degree program. If admission is granted, the student may then apply for a second degree program after submitting a letter from the head of the department to which the student has been admitted. The letter should indicate that the department has no objection to the student applying for the second degree program. To be considered as concurrent degrees, admission to the second degree program must be finalized before the end of the first semester in the first degree.

Guidelines for Concurrent Master’s Degree Programs. In special cases, a student may complete concurrently the requirements for two master’s degrees in different departments but with fewer than the total credits required by both programs, provided that the following conditions are met:

1. The student must formally apply and be accepted into both programs by the end of the first semester of the student’s graduate program.
2. The chairperson of the student’s supervisory committee in each department must also be a member of the other committee.
3. The supervisory committee, the two department heads, and the graduate dean must approve the Program of Study for each degree.
4. There can be a maximum of 9 credits of overlap in courses between the two degree programs, and the overlap must be in the elective or broadening courses. With the allowance of overlapping, a student could thus complete the requirements for both degrees with up to 9 fewer semester credits than the usual minimum total for two degrees.

Guidelines for Concurrent Doctoral-Master’s Degree Programs. In special cases, a student may complete concurrently the requirements for a doctorate and a master’s degree in different departments with fewer than the total credits required by both programs, provided that the following conditions are met:

1. The student must formally apply and be accepted into both programs by the end of the first semester of the student’s graduate program.
2. The student’s doctoral supervisory committee must consist of four members from the doctoral department and two members from the master’s department if the student is on a thesis plan. The master’s committee must consist of two master’s departmental members and the chair of the doctoral committee.
3. The student’s supervisory committee, the two department heads, and the graduate dean must approve each Program of Study.
4. There may be a maximum of 15 semester credits of overlap in courses between the two degree programs, and the overlap must be in the elective or broadening courses. With the allowance of overlapping, a student could thus complete the requirements of both degrees with a minimum of 75 semester credits rather than the usual 90 minimum.

Interdepartmental Degrees and Certificates

Several interdepartmental graduate degrees are offered at Utah State University. These include: the Interdepartmental Doctoral Program in Education (EdD, PhD), the Interdepartmental Program in Ecology (MS, PhD), the Master of Business Administration (MBA), the Interdepartmental Program in Social Sciences (MSS degree), the Interdepartmental Program in Toxicology (MS, PhD), and the Master of Natural Resources (MNR). Also offered are the following three interdisciplinary certificates: National Environmental Policy Act (NEPA), Natural Resource and Environmental Policy, and Natural Resources and Environmental Education (NREE).

Descriptions of the interdepartmental graduate programs are included alphabetically within the Instructional Units and Programs section of this catalog.
Agriculture

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WWW: http://www.ag.usu.edu

Associate Dean for Academic Programs: Donald L. Snyder, Agricultural Science 218, (435) 797-2383, don.snyder@usu.edu

Associate Dean for Research and Director, Agricultural Experiment Station: H. Paul Rasmussen, Agricultural Science 225, (435) 797-2207, paul@agx.usu.edu

The College of Agriculture includes the following departments:

- Agricultural Systems Technology and Education (ASTE)
- Animal, Dairy and Veterinary Sciences (ADVS)
- Economics (Econ)
- Nutrition and Food Sciences (NFS)
- Plants, Soils, and Biometeorology (PSB)

Degrees and curriculum options are listed in the Instructional Units and Programs section of this catalog. In addition to programs in the departments, the interdepartmental MS and PhD degrees in Toxicology involve more than one department.

Agriculture today is a dynamic, rapidly changing industry. It includes more than farming or producing food and fiber. It embodies all the occupations connected with the production, processing, marketing, and distribution of farm products.

Agriculture is the nation’s largest industry. Of the 131 million people employed in the United States, about 21 million (16 percent) work in agriculture. This includes about half a million scientists who serve agriculture directly or indirectly. The agricultural industry is the biggest buyer, seller, and borrower in the United States, and it has the largest investment of any industry.

Today’s agriculture offers graduates challenging opportunities in a highly technological and competitive society. Students must be prepared to interact in such a society when they complete their formal education.

The success of various curricula in agriculture is manifest by the achievements of the graduates. They are setting new standards of today’s agriculture. Successful modern agricultural production requires an understanding of the latest scientific knowledge and an ability to apply the information. The production curriculum will satisfy the needs of a student who plans to be involved in production agriculture, to be a farm manager, or to work directly with farm operators as a businessman or as a government or farm organization employee.

Admission Requirements

Undergraduate students accepted in good standing by the University are eligible for admission to the College of Agriculture.

Facilities and Equipment

The E. G. Peterson Agricultural Science Building houses the administrative offices of the College of Agriculture; the Agricultural Experiment Station; University Extension; the Animal, Dairy and Veterinary Sciences Department; and the Plants, Soils, and Biometeorology Department. The Animal, Dairy and Veterinary Sciences Department personnel are housed in the Agricultural Science Building; the Animal Sciences Building, the Biotechnology Center, the Scaggs Laboratory, and the Veterinary Science Building. The Agricultural Systems Technology and Education Department is located in the Agricultural Systems Technology and Education Building. The Economics Department is housed in the George S. Eccles Business Building. The Department of Nutrition and Food Sciences is housed in the C. A. Ernstrom Nutrition and Food Sciences Building. Some classes and laboratories are located on Agricultural Experiment Station facilities near the campus, where research and teaching interact. Research units located in more distant areas of the state provide research opportunities for graduate students and faculty members.

Curricula in Agriculture

Students may work toward the Bachelor of Science degree in any of the departments of the College of Agriculture. Prevetinary training is offered in the Department of Animal, Dairy and Veterinary Sciences.

There are three basic curricula offered by most departments: (1) science, (2) general or production, and (3) business. Departmental listings detail the requirements for earning a degree in these curricula.

Science. Students who choose the science curriculum are taught the fundamentals of physical and biological sciences that are significant to agriculture. In the basic science courses, students prepare themselves for graduate work and eventually research and teaching careers in the natural sciences. Graduates in science curricula are also prepared to do research or technical work in agriculturally oriented businesses such as farm chemicals, livestock health, feed processing and marketing, crop breeding, water use, and food processing.

Science curricula are offered in the Departments of Animal, Dairy and Veterinary Sciences; Nutrition and Food Sciences; and Plants, Soils, and Biometeorology.

General or Production. This curriculum is designed to educate students to meet the special demands of today’s agriculture. Successful modern agricultural production requires an understanding of the latest scientific knowledge and an ability to apply the information. The production curriculum will satisfy the needs of a student who plans to be involved in production agriculture, to be a farm manager, or to work directly with farm operators as a businessman or as a government or farm organization employee.
This curriculum is offered in the Departments of Agricultural Systems Technology and Education; Plants, Soils, and Biometeorology; and in animal and dairy majors of the ADVS Department.

Business. The businesses and industries that buy from, sell to, and provide service for people involved in production agriculture are expanding the need for employees educated in agriculture. These enterprises include feed, fertilizer, machinery, and chemical firms that supply the producer’s needs, as well as marketing firms that assemble, process, ship, and merchandise agricultural products. Managers of large-scale farm enterprises also profit from the kind of education provided by the business curriculum. Students who want to capitalize on their agricultural background while pursuing a business or industrial career should consider the business option.

This curriculum is offered in the Departments of Economics; Agricultural Systems Technology and Education; Nutrition and Food Sciences; Plants, Soils, and Biometeorology; and in the animal and dairy majors of the ADVS Department.

Interdepartmental and intercollege cooperation has and will continue to facilitate the development of various other curricula. Students should not hesitate to inquire about the possibilities of following a curriculum that would allow for special needs. Advisors in each department are available and should be consulted for guidance in scheduling classes and in planning careers.

Financial Support

The College of Agriculture and the agricultural industry in the Intermountain West annually sponsor over 100 scholarships, internships, and assistantships. The college and the local agribusinesses also support many students through work experience programs. For further information, contact the College of Agriculture Dean’s Office (Agricultural Science 223) and/or individual department offices.

Safety and Liability in Classes and Laboratories

Certain classes and laboratories involve a risk of bodily injury or of damage to clothing. Students should take appropriate precautions and wear suitable protective clothing. Some of the risks include handling or being near animals, slick floors or corrals, use of toxic or corrosive substances, and the use of sharp or breakable instruments and equipment. Students should take safety precautions during demonstrations or work with animal tissues or operative procedures. Students must assume their own liability protection for travel to and from classes, laboratories, and field trips. The University and its employees assume no liability in the performance of classroom or laboratory instruction or on scheduled field trips, or for other dangerous activities. The student, by voluntarily participating in these classes and activities, agrees to assume the risk and not hold USU or its staff liable.
Business

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Senior Associate Dean: Clifford R. Skousen, Business 206, (435) 797-2331, cskousen@b202.usu.edu
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Associate Dean for Business Relations: Ross E. Robson, Business 309, (435) 797-2279, rossr@b202.usu.edu
Director of Development: Alta L. Markeson, Business 305, (435) 797-3720, altam@b202.usu.edu
Director of the Small Business Development Center:
Franklin C. Prante, East Campus Office Building 124, (435) 797-1780, fprante@ext.usu.edu
Director of Business Undergraduate Programs: Ruth C. Harrison, Business 302A, (435) 797-2272, rharrison@b202.usu.edu
Director of Business Graduate Programs:
Mary Jo Blahna, Business 302B, (435) 797-2272, maryjo.blahna@usu.edu

Academic Departments. The College of Business includes the following academic departments. Information about degrees and curriculum options are listed in the departmental sections of this catalog.

Accountancy, School of Business Administration Business Information Systems Economics
(jointly administered with the College of Agriculture)
Management and Human Resources

Interdisciplinary/College Programs. The College of Business offers the following programs in addition to those offered by academic departments. Detailed descriptions of these programs are provided in this section of this catalog and in the separate Master of Business Administration (MBA) section.

Business Minor
Dual Major and Second Bachelor’s Degree in Business International Business Minor Master of Business Administration (MBA)

Nondegree and Other Programs. A wide variety of seminars and development programs are sponsored by academic departments and other units of the college. For example, Business Relations offers annual seminars in accounting, banking, customer service and marketing, human resources, international business, management information systems, and quality and productivity. The Management Institute meets the unique continuing education needs of a specialized segment of the population: supervisors, managers, and executives who provide leadership and direction for both private and public sector organizations. The Small Business Development Center provides a variety of specialized diagnostic, consultative, manpower development, and industrial development services to individual businesses.

Accreditation. All bachelor’s and master’s degree programs in business are accredited by AACSB International—The Association to Advance Collegiate Schools of Business. This association is the professional accrediting agency in business. Accreditation by AACSB International facilitates transferability of credits to other institutions and acceptance of the credentials of graduates by the business community.

Objectives
The college is engaged in the following three primary areas of activity: education, outreach, and research.

The college’s educational objectives emphasize preparation for professional careers in business. The managerial and technical skills associated with such preparation may also lead to careers in other types of organizations, such as health service, government, and education. This preparation is directed at both entry-level and mid-career qualifications. Thus, students can be immediately productive on a new job assignment and at the same time have the depth and breadth of education to assume increasing responsibilities. Additionally, experienced managers and business people can learn needed new capabilities and renew their educational backgrounds with college programs. Besides its career orientation, the College of Business educational objectives include a commitment to enhancing the lifelong learning opportunities for responsible citizenship and personal satisfaction where economic and business dimensions are critical ingredients.

In implementing its outreach objectives, the college extends its resources and services to off-campus patrons by offering distance education programs and classes, participating in Continuing Education Centers, and by conducting on-site visits to individual firms and organizations, thereby enhancing the quality of life and economic well-being of citizens of the state.

The college is committed to an aggressive program of basic and applied research to insure the continued enlargement of the base of understanding about business, government, and other complex institutions; about the processes of managing; and about the economic foundations upon which they function.

Undergraduate Programs

Admission and Graduation Requirements

Freshman Admission. Students may be admitted directly into the College of Business as incoming freshmen if they have less than 24 earned post-high school college credits and if all of the following conditions are met: (1) admitted to Utah State University; (2) designated a College of Business major on USU application or submitted a College of Business application to the College of Business Career and Education Opportunities Center; (3) ACT Composite of 24 or higher; and (4) high school GPA of 3.5 or higher.
All admitted freshmen, regardless of declared College of Business major, must first complete the following four courses, or their equivalents, with a C grade or better in each course, as prerequisites to College of Business courses numbered 3000 and above: ECON 1500, Introduction to Economic Institutions, History, and Principles; MATH 1100, Calculus Techniques; STAT 2300, Business Statistics; and PSY or SOC 1010, General Psychology or Introductory Sociology.

Non-Freshman and Transfer Admission. USU students and transfer students from other accredited colleges and universities may be admitted directly to any College of Business major if they have met the following conditions: (1) admitted to Utah State University; (2) earned 24 or more post-high school college credits with 3.5 GPA or higher; and (3) designated a College of Business major on USU application (transfer students) or submitted a College of Business application to the College of Business Career and Education Opportunities Center (USU continuing students).

Admission for students not meeting the above conditions is competitive based on available space in the College of Business. Application forms, available at the College of Business Career and Education Opportunities Center, may be submitted after completion of at least 24 credits of coursework, including the pre-business course requirements, or equivalent, with a C grade or better. An essay will also be required.

Pre-Business Course Requirements (13 credits). Applicants will be ranked according to an Application GPA that is calculated as follows: one-third weight on 13 credits earned in four required courses (ECON 1500, MATH 1100, STAT 2300, and PSY or SOC 1010); one-third weight on last 24 credits earned; and one-third weight on overall GPA. Essays will be evaluated by the admissions screening committee.

Grades for courses which have been repeated will be discounted one step each time courses are repeated for the College of Business Application GPA (e.g., A- to B+). Students may not repeat a course more than twice, and may have no more than 10 repeats in total to earn a degree. (College of Business courses are limited to one repeat.)

Matriculation Requirement. No more than 15 USU College of Business credits (ACCT, BA, BIS, BUS, MHR), numbered 2000 and above, earned as a nonbusiness major (before acceptance into the College of Business) can be applied to a College of Business degree. More than 15 business credits can be transferred from other accredited institutions. However, additional USU credits added to previously earned transfer credits may not exceed 15.

Enrollment Restrictions. Admission to the College of Business does not ensure access to the courses required for graduation. The following admission requirements must be met by all USU students:

1. There are no restrictions on 1000-level courses.
2. ACCT 2010, 2020, MHR 2990, and BIS 2450, 2550 require as prerequisites at least 15 credits of completed college-level work; an overall GPA (transfer credits included) of at least 2.50, and MATH 1050 or equivalent. In addition, BIS 2450 requires the CIL exam or equivalent.
3. All 3000-, 4000-, and 5000-level courses in the College of Business are restricted to students admitted to the College of Business or another USU major with an overall GPA of at least 2.67 and completion of at least 40 credits.
4. MHR 4880 and 4890 require completion of at least 84 credits for admission.
5. A GPA of at least 2.50 is required in the College of Business Core and in all University courses taken.
6. College of Business courses may be repeated only once.
7. Many College of Business courses have prerequisites and other restrictions requiring adherence. Before registering for courses within the College of Business, students should refer to course listings in this catalog or consult with their advisor to ensure they have completed the necessary prerequisites.

University Studies Requirements. All freshmen-level students who enter USU Fall of 1998 and thereafter will be required to meet the University Studies requirements. Students who have received an Associate of Arts/Science degree from a college or university in the Utah System of Higher Education or from a school with which USU or the College of Business has an articulation agreement will be considered to have fulfilled the General Education portion of the University Studies requirements, but must still complete the Depth Education portion. It is recommended that all business students visit with an advisor in the Career and Education Opportunities Center, Business 310A, to clarify their specific requirements in this area. Additional information about these requirements is available on pages 42-49 of this catalog.

USU Courses and Business Courses. At least 30 of the last 60 semester credits must have been completed at USU, 10 of which must be included within the last 40 credits presented for the bachelor’s degree. This includes credits earned through classes offered at the Logan campus, at designated centers, or by USU’s distance education programs.

Optional P/D+, D, F Grade Restriction. This option (see the USU “Grading Policy,” page 36) is not available for any required courses for majors and minors in the College of Business.

College of Business Stop-out Policy. Students having a break in attendance of College of Business programs in excess of one year will be subject to the college and departmental requirements in effect at the time of their return.

Graduation. Students must satisfy all University, college, and departmental major requirements to be eligible for graduation. Refer to appropriate sections of this catalog for details.

Minor in Business

The college offers a minor for nonbusiness majors consisting of the five courses listed below. This minor is designed to develop a general background and perspective in business. Completion of this minor will acquaint students with each business discipline. Advisement for the minor in business is through the College of Business Career and Education Opportunities Center in Business 310A. An overall minimum GPA of 2.50 is required for the five courses. Students are responsible to complete prerequisite courses where applicable. Required courses for the minor in business include ACCT 2010; BA 3400 or 3460; BA 3500; MHR 3110; and one of the following courses: ECON 3400, MHR 2990, or BIS 3100.
Minor in International Business

Both College of Business majors and nonmajors are eligible to receive the International Business Minor. This minor is designed to develop a general background and perspective in business. All students who plan to pursue this minor receive academic advisement from the College of Business Career and Education Opportunities Center in Business 310A. This minor consists of four courses selected from a group of six courses (listed below) and completion of either a Language Competency Option or a Regional Studies Option. Four of the following seven courses are required as part of this minor: BA 4300 (International Finance), BIS 4550 (Principles of International Business Communications), BIS 5700 (Internet Management and Electronic Commerce), ECON 3400 (International Economics for Business), ECON 5150 (Comparative Economic Systems), MHR 3820 (International Management), and MHR 4890 (Business Strategy in a Global Context). Information about the Language Competency and Regional Studies Options is available in the Career and Education Opportunities Center, Business 310A.

Other Professional Student Organizations

The following student organizations are sponsored by College of Business departments and are available for membership, depending upon student objectives and qualifications.

American Marketing Association (AMA): Organization for marketing and marketing education majors.

American Production and Inventory Control Society (APICS): Professional society for production majors.

Beta Alpha Psi: Honorary professional accounting fraternity.

Beta Gamma Sigma: Honorary business fraternity. (See page 71 for further information.)

Association for Systems Management (ASM): Organization for students planning careers in information processing and information systems management.

Delta Pi Epsilon (DPE): National graduate honorary fraternity in business education.

Delta Epsilon Chi (DEX): Co-curricular organization for marketing education and marketing majors.

Economics Club: Organization for students majoring in economics.

Finance Club: Organization for students majoring in finance.

Institute of Management Accountants (IMA): Organization designed for accounting majors.

MBA Association: Organization for MBA graduate students.

Sigma Iota Epsilon (SIE): National honorary and professional management fraternity.


Scholarships, Fellowships, and Assistantships

A number of scholarships and assistantships are available to College of Business students at both the undergraduate and graduate levels. There are also opportunities for employment in research projects and other activities. Assistantships for graduate students are available for both teaching and research. Applications for undergraduate scholarships may be made directly to the Career and Education Opportunities Center, Business 310A.

Course Descriptions

Business (BUS), page 358
Education and Human Services

Dean: Gerard R. Giordano
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Phone: (435) 797-1437
E-mail: shannon.johnson@usu.edu
WWW: http://www.coe.usu.edu

Associate Dean for Teacher Education, Graduation, and Educator Licensing: Francine Fukui Johnson, Education 101, (435) 797-1443, francine.johnson@usu.edu
Associate Dean for Education Extension: Michael K. Freeman, Education 114A, (435) 797-1474, michael.freeman@usu.edu
Associate Dean for Research: Carol J. Strong, Education 453A, (435) 797-1471, carol.strong@usu.edu

The College of Education and Human Services provides preparation programs for prospective teachers, counselors and other professionals in education, and for professionals in the human services area and in corporate settings. Students are urged to refer to the more detailed descriptions of programs, majors, and areas of specialization contained in this catalog.

Accreditation. Utah State University is a member of the American Association of Colleges for Teacher Education and is accredited by the National Council for the Accreditation of Teacher Education and the Utah State Board of Education. Students who are licensed to teach in the state of Utah may qualify for licensure in other states and the District of Columbia. Additional material accreditations include: American Association of Family and Consumer Sciences, American Psychological Association, American Speech-Language-Hearing Association, Council on the Education of the Deaf, and National Association of School Psychologists.

University Studies Requirements. All students graduating from the College of Education and Human Services must complete the USU University Studies requirements (see pages 42-49).

Admission Requirements to Teacher Education. Students wishing to enter the Teacher Education Program at Utah State University must formally apply for admission and be approved by the Office of the Associate Dean for Teacher Education, as well as by the department where the teaching major is being offered. All applicants are required to submit a record of their ACT scores, pass the Teacher Education Writing Exam, and take a speech and hearing test. Students are not permitted to enroll in the education professional core classes prior to being admitted to the Teacher Education Program.

Detailed information about admission to the Teacher Education Program should be obtained from a departmental advisor or from the Office of the Associate Dean for Teacher Education, Graduation, and Educator Licensing.

Teacher Licensing. The Dean, College of Education and Human Services is assigned responsibility for the development, approval, and administration of Teacher Licensing requirements for students.

The College of Education and Human Services currently offers preservice teacher preparation leading to licensure in 34 different areas. In addition, advanced programs leading to professional licensure are available for administrators, supervisors, school counselors, school psychologists, school library media specialists, speech pathologists and audiologists, educators of the deaf, and specialists in special education. Training is also available in English as a Second Language (ESL), reading, distance education, and gifted and talented education.

Specific requirements for each license may be obtained from the Office of the Associate Dean for Teacher Education, Graduation, and Educator Licensing or from the department in which the major work is offered. All students who desire licensure must complete a criminal background check.

For the early childhood, elementary, or secondary license, a closely supervised program of student teaching is conducted in selected schools throughout the state. Students should be financially prepared to live off campus during the semester selected as their professional semester of student teaching.

The Bachelor of Science degree with a major in elementary education, secondary education, or special education is designed for students preparing to teach in any of these fields. Students majoring in other departments of the University who wish to prepare for teaching are admitted to teacher education curricula as heretofore described. An endorsement in middle education is also available.

Dual Licensing. A student desiring to obtain early childhood and elementary education, elementary and secondary education, elementary and special education, elementary and deaf education, early childhood and deaf education, or secondary and special education licenses should consult with an advisor in the education departments early in his or her program. Ordinarily, dual licensure will require at least one additional semester of work.

Teacher Placement Service. The Teacher Placement Service functions as an integral part of the University Placement Center. Students may register with the service, which will help in compiling the proper credentials to be used in placement interviews. Application for placement services should be made prior to student teaching whenever possible. No fee is charged for using the center.

Facilities. The College of Education and Human Services Edith Bowen Laboratory School is a functioning elementary school on the University campus, serving as a research, demonstration, and teacher training center.

The Center for Early Childhood Education provides educational experiences and resources for teachers and parents that reflect the most current understanding of the social, emotional, physical, and cognitive needs of children in pre-kindergarten, kindergarten, and the primary grades.

The Center for the School of the Future strives to determine what children should be taught and how they can learn it most effectively.
The Center for Persons with Disabilities is a multi-discipline training, research, and service center where students engage in activities of observing, tutoring, practicums, interning, and working individually with materials designed especially for disadvantaged youth and adults.

**Graduate Study**

Programs at the graduate level, leading to advanced professional degrees and/or licensure, are available in the administrative, supervisory, human services, clinical, library media, and counseling areas. The Master of Education (MEd), Master of Science (MS), and Master of Arts (MA) degrees are offered in most departments. An Educational Specialist (EdS) program is available in the following departments: Communicative Disorders and Deaf Education, Instructional Technology, and Special Education and Rehabilitation. Interdepartmental Doctorate of Education (EdD) and Doctorate of Philosophy (PhD) degrees are available with specializations in Business Information Systems, Curriculum and Instruction, and Research and Evaluation. A professional Doctorate of Audiology (AuD) is available in the Department of Communicative Disorders and Deaf Education. PhD degrees are offered within the following departments: Family, Consumer, and Human Development; Instructional Technology; Psychology; and Special Education and Rehabilitation.

**Course Descriptions**

Education (EDUC), pages 382-383
Engineering

Dean: H. Scott Hinton  
Location: Engineering 413  
Phone: (435) 797-2775  
FAX: (435) 797-2769  
E-mail: office@engineering.usu.edu  
WWW: http://www.engineering.usu.edu

Associate Dean: Wynn R. Walker, Engineering 413B,  
(435) 797-2788, wynnwalk@cc.usu.edu

Associate Dean: Christine E. Hailey, Engineering 413C,  
(435) 797-3332, chailey@engineering.usu.edu

Academic Advisor for Civil Engineering,  
Computer Engineering, Electrical Engineering,  
and Mechanical Engineering Majors: Kathleen E. Bayn,  
Engineering 310, (435) 797-2705, kathy.bayn@usu.edu

Academic Advisor for Biological Engineering,  
Environmental Engineering, and Majors within  
Department of Industrial Technology and Education:  
Ronnie Green, Engineering 312, (435) 797-2790,  
ronnie@engineering.usu.edu

Development Director: Lynn M. Hubert

Engineering Design and Technology Center Director:  
Stephen S. Reed, Engineering 413F, (435) 797-3789,  
sreed@cc.usu.edu

The College of Engineering includes the following academic departments:

Biological and Irrigation Engineering  
Civil and Environmental Engineering  
Electrical and Computer Engineering  
Industrial Technology and Education  
Mechanical and Aerospace Engineering

The College of Engineering includes the following research units:

Anderson Center for Wireless Teaching and Research:  
Director to be appointed
Center for Profitable Uses of Agricultural Biproducts:  
Conly L. Hansen, Director
Center for Self-Organizing and Intelligent Systems:  
Kevin L. Moore, Director
Center for Space Engineering: Todd J. Mosher, Director  
Engineering Experiment Station: Alma P. Moser, Director
Huntsman Environmental Research Center:  
Maurice G. Thomas, Director
Institute for Natural Systems Engineering:  
Thomas B. Hardy, Director
International Irrigation Center:  
L. Humberto Yap-Salinas, Director

National Center for Design of Molecular Function:  
Linda S. Powers, Director
Utah Center for On-Site Wastewater Treatment:  
Judith L. Sims, Director
Utah Transportation Center: Anthony Chen, Acting Director
Utah Transportation Technology Transfer Center:  
Doyt Y. Bolling, Director
Utah Water Research Laboratory:  
Mac McKee, Director

Some of the recent areas of research in the Engineering Experiment Station include water management, toxic and hazardous waste management, solid waste recycling, risk assessment, transportation, structural systems, geotechnical analysis and buried structures, CAD/CAM, robotics and automation, thermal and cryogenic systems, image processing and compression, computer networking, parallel computing, neural networks, and virtual reality.

The College of Engineering has the major involvement in:

Utah State University Research Foundation:  
David G. Norton, CEO
Space Dynamics Laboratory: Michael D. Pavich, Director
Manufacturing Extension Partnership:  
Stephen S. Reed, Director

Mission

The overall mission of the College of Engineering is to (1) prepare engineers and technologists to work in a complex technological world and create a better future by solving today’s problems; (2) engage in research and development that will improve engineering design and practice; and (3) extend knowledge and research to industry and government.

Goal

The goal of the academic programs of the College of Engineering is to provide engineering and technical education enabling engineering students to:

1. develop as ethical professionals who understand engineering and technology in its societal context;
2. learn modern engineering/science and technology principles and their application in conducting experiments and analyzing data;
3. gain experience in working on engineering problems and designing solutions to meet desired needs;
4. acquire skills in communicating effectively and working on teams; and
5. understand the importance of life-long professional development and learning.

The college strives to create a brighter future by working with students, employers, industry, and government research partners to achieve this objective.
Programs

The undergraduate engineering BS degree programs offered by USU, which are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC/ABET), include: Biological Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Enviromental Engineering, and Mechanical Engineering.

At the graduate level, Master of Engineering (ME), Master of Science (MS), and Doctor of Philosophy (PhD) degrees are offered in these specific majors, along with the Civil Engineer (CE) and Electrical Engineer (EE) degrees.

The Industrial Technology and Education Department offers BS degrees in Technology and Industrial Education, Aviation Technology—Maintenance Management, and Aviation Technology—Professional Pilot, as well as an MS degree in Industrial Technology. Admission and academic requirements for the ITE Department are considerably different than those for the other engineering departments. For details, see the Industrial Technology and Education section of this catalog (pages 227-229).

For details about the various majors and specialties offered by departments and programs within the College of Engineering, see the respective departmental sections in this catalog.

Assessment

The College of Engineering is committed to assessing the quality of its academic departments and programs, in order to assure that the desired educational outcomes will be achieved. Faculty members within the college strive to assure that their students obtain the skills and abilities needed for success in their chosen fields.

The college uses a variety of tools and methods to gather information and data to evaluate progress in meeting the college’s program goals and objectives, and to take actions to continually improve the quality of students’ educational experience.

Undergraduate Programs

Objectives

The objectives of the engineering curriculum are: (1) to provide students with professional competence enabling them to enter and progress rapidly in their professional careers, (2) to provide an understanding of the physical and social world in which they live and work, and (3) to provide a basis for continued intellectual growth, professionally and socially.

In the engineering programs, the curricula begin with studies in mathematics, basic science, introductory engineering, and introductory engineering design. These basic science and engineering skills are coupled with communication skills, as well as courses in humanities and social sciences. The professional engineering programs continue with engineering science, engineering design, and computer utilization. Engineering design activities start during the freshman and sophomore years, progressing in-depth during the junior and senior years as the student’s proficiency increases. The design experience culminates with a capstone design sequence, which builds upon the fundamentals of engineering, communication skills, science, mathematics, humanities and social sciences, economics, ethics, safety, reliability, aesthetics, and social impact.

The expected outcomes of the professional engineering programs are: (1) to unite engineering sciences and computer skills with engineering design to enhance the practical problem-solving abilities, decision-making proficiency, and creativity of the engineering student; (2) to provide for an understanding and appreciation of professional responsibility and ethics; (3) to expand a sensitivity to the economic, legal, and social dimensions of engineering decisions; and (4) to provide the foundation and help instill a desire for life-long learning.

Studies in the humanities and social sciences serve not only to meet the objectives of a broad education, but also to meet the objectives of the engineering profession. In the interest of making engineers fully aware of their social responsibilities and better able to consider related factors in the decision-making process, the College of Engineering requires coursework in the humanities and social sciences as an integral part of the engineering program. To satisfy this requirement, courses selected must provide both breadth and depth and be planned to fulfill an objective appropriate to the engineering profession.

Admission Requirements

Engineering Requirements. In addition to the policies of the University concerning admission of students, the following regulations apply to the engineering programs:

1. In order to complete an engineering curriculum in four years, high school students must complete at least two years of algebra, one year of geometry, one-half year of trigonometry, four years of English, and courses in computers, chemistry, and physics. If these courses are not taken in high school, they must be taken in college prior to starting the regular engineering programs. Students with deficiencies in several areas will probably require five years to fulfill graduation requirements.

Students can earn university credits in English, humanities, and social sciences by receiving appropriate scores on the College Level Examination Program (CLEP) tests. Advanced placement (AP) credit may be obtained in calculus, chemistry, English, history, and physics.

2. Transfer students from other colleges or universities will be referred to the Engineering Admission Committee for evaluation. Criteria considered in admission decisions for transfer students include resources available in the requested department and the transfer GPA, along with an evaluation of the program of the former college or university. Decisions concerning academic standing once the student is admitted to USU will be based solely on USU grades.

3. Students registered on campus (including General Registration) must be approved by the Engineering Admission Committee before transferring to the College of Engineering. Students in this category must have demonstrated, by courses taken at USU, a potential to succeed in the major of their choice.

Professional Engineering Program

Introduction. The purpose of the Professional Engineering Program (PEP) is to provide a quality education for engineering students by (1) requiring that students be fully prepared for upper-division engineering coursework by having satisfactorily completed all required preprofessional courses and (2) limiting enrollment in upper-division courses consistent with resources available within the departments and the college.
Policy. Enrollment in upper-division engineering courses (3000-level and above) is available only to students who have been accepted into the PEP or an appropriate graduate program or have a nonengineering major which requires a specific engineering class for which the student has passed the prerequisite courses.

Application Requirements. Current PEP applications listing the required PEP courses and admission standards are available from the various departments and the office of the Dean of Engineering. The minimum requirements a student must satisfy in order to be eligible to apply for admission to a professional program are:

1. The student must be in good academic standing in the University and the college.
2. The student must achieve a grade of C- or better in every required preprofessional course. Required preprofessional courses are defined by each major. They include math, science, and engineering courses, as well as ENGL 2010. The 2.3 minimum GPA requirement (see item 3 below) does not include ENGL 2010. The P/D+, D, F grading option may not be used except in freshman English Composition.
3. The student must achieve an overall grade point average of 2.3 or better for all required preprofessional coursework completed at USU.

Repeated Coursework. A student can repeat no more than three of the required preprofessional courses in order to satisfy the PEP application and eligibility requirements. Multiple repeats of the same course are included in the total of three repeats. Audits count as a time taking a class unless prior written approval is obtained from the college academic advisor.

Transfer Credit. Transfer credit accepted by the department and the college may be applied toward meeting the requirements for admission into the PEP; however, the grades received will not be used in the USU GPA calculation. For students with transfer credits, a final decision on admission into the PEP will not be made until after the applicant has completed at least 12 semester credits of acceptable engineering, math, and science coursework at USU. Some of this coursework may include upper-division classes taken by permission.

Applications. Students should apply to the Professional Program midway through the semester in which they will complete all preprofessional courses. Students may request permission to take a limited number (not to exceed 15 credits) of upper-division courses if they are within 10 credit hours of completing the necessary requirements, have submitted a PEP application, and are registered for all remaining preprofessional courses. The final decision on granting permission to take upper-division classes before admission to the PEP rests with the college academic advisor and the Academic Dean of Engineering.

Admission Procedures. Satisfying minimum eligibility requirements does not ensure that a student will be admitted to a PEP program in a specific department. The number of students accepted in the Professional Engineering Program of a department will be based upon the number of students that can be accommodated in upper-division classes. Applicants will be ranked and selected in order of their academic standing in the required preprofessional courses. Admission into a PEP program is for a period of three years. Students unable to complete graduation requirements during this time will be interviewed by the department head to determine whether special circumstances justify their continuance in the program.

Academic Requirements

The Dean’s Office of the College of Engineering maintains a handout sheet giving current details of all academic regulations of the college. It is the responsibility of the student to know the current regulations and to follow these regulations.

Preprofessional Program. Students must maintain a USU GPA of 2.0 to remain in good standing both in the college and the University. Students in a preprofessional program who are not making satisfactory progress toward admission into a professional program or who become ineligible to enter a professional program will be suspended from the college. Students in good standing in a preprofessional program must still meet the entrance requirements for admission into a professional program.

Professional Program. For all engineering majors in the professional program the following academic regulations apply, in addition to University regulations:

1. A GPA of 2.0 or higher must be maintained in all engineering/math/science courses required for, or used as technical electives in, the chosen major. Courses which were part of the preprofessional program requirements and University Studies courses are not included in this GPA calculation.
2. No more than 10 hours of D or D+ credit may be applied toward meeting graduation requirements in engineering/math/science classes.
3. College of Engineering courses may be repeated only once. Audits count as a time taking a class unless prior written approval is obtained from the department head. A maximum of three required or elective courses completed as part of a professional program can be repeated in order to meet graduation requirements. (Courses completed as part of a preprofessional program are not included in this total of three repeats.)
4. The P/D+, D, F grading option may not be used in required or elective courses completed as part of a professional program. (The P/D+, D, F grading option is approved for University Studies Courses.)
5. The academic regulations listed above (1-4) apply to required coursework and any elective engineering/math/science course which could be used to satisfy graduation requirements for the chosen degree. That is, once a student completes a particular technical elective, it becomes a required course for that student.
6. Students in violation of departmental or college academic regulations, no longer eligible for graduation, or not making satisfactory progress toward a degree, will be placed on probation.

a. Students will be placed on probation if they (i) earn an F in an engineering/math/science course which could be used to satisfy graduation requirements for the chosen degree (see No. 5 above); (ii) have more than 10 hours of D credit (see No. 2 above); or (iii) have a GPA of less than 2.0 (see No. 1 above).

b. Students remain on probation until they improve their standing by repeating and passing all failed classes, repeating classes to reduce the number of D credits to 10 or less, and/or by raising their GPA above 2.0.
c. While on probation, a student must earn a semester GPA of 2.0 or higher in engineering/math/science classes and must not earn any grades of D or F.

While on probation, a student may not preregister. The student’s major code will be changed to a preprofessional code. The student must meet at least once each semester with the college academic advisor to work out a schedule having the primary goal of correcting the existing academic problems.

General Engineering

Engineering students are encouraged to select a major as soon as possible. Many of the courses taken during the freshman year are common to all engineering majors; however, there are significant differences in the courses taken during the sophomore year. Students who have not selected a specific major should meet with the college academic advisor for assistance in planning a personalized program. Students who choose to remain in general engineering must be prepared to meet the specific requirements of a professional program in the department of their choice.

Additional Engineering Information

Professional Societies. Faculty members of the departments hold memberships in various professional societies and organizations.

Student chapters or societies include Society for Engineering in Agricultural, Food, and Biological Systems, American Institute of Aeronautics and Astronautics, American Society of Civil Engineers, Chi Epsilon, Institute of Electrical and Electronic Engineers, American Society of Mechanical Engineers, American Water Resources Association, Tau Beta Pi, International Technology Education Association, National Intercollegiate Flying Association, Professional Flight Society, American Welding Society, Society of Environmental Engineering Students, and Society of Women Engineers. Students are encouraged to affiliate with appropriate student societies.

The Engineering Council is comprised of a student from each department, a representative from each student society, and a staff member from the Dean’s office. The college senator is chairperson. The council meets regularly to provide effective student-staff-administration liaison.

ROTC. Many engineering students find satisfaction in serving their country in the Reserve Officer Training Program (ROTC) and as reserve officers after graduation. Junior and senior ROTC students receive compensation equivalent to a substantial scholarship. See the Department of Aerospace Studies section (pages 123-124) or the Department of Military Science section (pages 265-266) of this catalog.

Scholarships, Fellowships, and Assistantships. A number of scholarships and assistantships are available to College of Engineering students. Interested high school seniors are encouraged to submit the Application for Undergraduate Admission and Scholarships to the Admissions Office before February 1 of the year they wish to receive assistance. Continuing students, transfer students, and returning students should contact the Dean’s Office, College of Engineering for a scholarship application. Completed applications are always due February 1. There are also opportunities for employment on research projects and other activities.

Concurrent BS/Master’s Program

Qualifications

The concurrent BS/Master’s program allows engineering students to begin taking graduate-level classes during their senior year. This permits them to complete requirements for both the BS degree and the master’s degree concurrently during two years. Students in this program have a greater selection of graduate courses, since many graduate courses are taught during alternate years. In addition, the student’s senior design project could be a start for a graduate design project or thesis. After completing their BS degree, students in the program can earn a master’s degree in only one additional year. Both the BS and the master’s degree can generally be earned with 150 total credits, although students should note that a Plan C MS requires 3 extra credits.

Procedures

Students must complete their junior year in engineering with a 3.3 GPA, both overall and during the last 60 semester credits. No later than the beginning of the first semester of the senior year, they must apply to the department offering their major and be accepted into the concurrent program. For application forms, students should contact their department office or the College of Engineering Advising Center (Engineering 314A).

To prepare a two-year completion plan of study, students must meet with their approved faculty advisor. (Department head gives approval for advisor.) Students must take the GRE exam and submit scores to the School of Graduate Studies. (See major department for minimum GRE qualifying scores.)

Students must fill out an application for admission to the School of Graduate Studies, with departmental acceptance into the concurrent program indicated in the upper-right corner of the first sheet. A Split Registration Form, which also indicates departmental acceptance into the concurrent program, must be filled out and submitted for each semester the student is enrolled in the concurrent program.

Formal acceptance into the School of Graduate Studies is required. The student must select a graduate committee, which must be approved by the School of Graduate Studies. The proposed master’s program must be approved by the committee, as well as by the School of Graduate Studies.

During the second year of the concurrent program, the student must pay graduate tuition. When the student is within 21 credits of completing both degrees, he or she will be coded as a graduate student. Thereafter, the student will pay graduate fees and will be eligible for loans, but not grants.

An application for graduation with a BS degree must be completed. The student must maintain a 3.0 or higher GPA in courses approved for his or her concurrent program.

Graduate Programs

For information about graduate programs, admissions, assistantships, and fellowships, see departmental sections of this catalog.
Research. The College of Engineering pursues an extensive program of research through the Engineering Experiment Station and the various research centers, institutes, laboratories, and departments. There are opportunities for graduate students to participate, and many undergraduates can find employment in research programs.

Engineering Experiment Station. The Engineering Experiment Station furthers engineering science, education, and practice through a variety of research programs to serve the needs of Utah and the nation. The experiment station especially encourages the development of interdisciplinary interdepartmental research. Major programs are conducted by the following:

- Anderson Center for Wireless Teaching and Research
- Center for High-Speed Information Processing (CHIP)
- Center for Profitable Uses of Agricultural Biproducts
- Center for Self-Organizing and Intelligent Systems
- Center for Space Engineering
- Huntsman Environmental Research Center
- Institute for Natural Systems Engineering
- International Irrigation Center
- National Center for Design of Molecular Function
- Utah Center for On-Site Wastewater Treatment
- Utah Transportation Center
- Utah Transportation Technology Transfer Center
- Utah Water Research Laboratory

Utah Water Research Laboratory. The Utah Water Research Laboratory offers facilities and student support for water research, including surface and ground water resources management and use. Strong programs have been developed through multiple projects in weather modification, water quality control, waste water treatment, hydraulics, flood and erosion control, hydrology, groundwater modeling, salinity control, water use in energy development, water systems optimization, and the socioeconomic aspects of water resources planning. Studies are coordinated with academic programs in the departments of Civil and Environmental Engineering, Biological and Irrigation Engineering, and related departments in other colleges.

International Irrigation Center. The International Irrigation Center conducts an extensive program of irrigation training and technology transfer through multi-lingual courses and through research. The center contributes significantly to improve irrigation practice, water management, and food production through these activities.

USU Research Foundation and Space Dynamics Laboratory. The research laboratories comprising the USU Research Foundation are located near the USU campus at Logan and at Bedford, Massachusetts. The faculty members of these laboratories hold academic appointments as appropriate in the Electrical and Computer Engineering, Mechanical and Aerospace Engineering, and Physics departments, and working assistantships are available for good undergraduate and graduate students in these and closely related departments. The faculty and staff specialize in upper-atmospheric and space measurements using electro-optical and electrodynamical instrumentation flown on rockets, satellites, aircraft, and balloons. A recent project flew a cryogenically cooled interferometer spectrometer aboard the space shuttle.

Graduate Study. The college offers graduate study programs leading to the ME, MS, CE, EE, and PhD degrees. For further information and details, see individual departmental sections of this catalog.

Course Descriptions
General Engineering (ENGR), page 391
Humanities, Arts and Social Sciences

Dean: Gary Kiger  
Location: Main 338  
Phone: (435) 797-1195  
FAX: (435) 797-1092  
E-mail: hass.general@usu.edu  
WWW: http://www.hass.usu.edu

Associate Dean; Director, Center for International Studies; Co-director, Asian Studies  
Major and Minor: R. Edward Glatfelter, Main 333, (435) 797-1196, edwardg@hass.usu.edu

Associate Dean: Christine Hult, Main 338E, (435) 797-8619, christine.hult@usu.edu

Associate Dean: Charlotte Thralls, Main 338B, (435) 797-1231, charie.thralls@usu.edu

Director, Science/HASS Advising Center: Mary E. Leavitt, Student Center 302, (435) 797-3883, mleavitt@hass.usu.edu

Liberal Arts and Sciences Program: Contact Science/HASS Advising Center, Student Center 302, (435) 797-3883

The College of Humanities, Arts and Social Sciences has the following departments and programs:

- Aerospace Studies
- American Studies
- Art
- Asian Studies
- British and Commonwealth Studies
- Center for International Studies
- English
- History
- Intensive English Language Institute
- Interior Design
- International Studies
- Journalism and Communication
- Landscape Architecture
- and Environmental Planning
- Languages, Philosophy, and Speech Communication
- Liberal Arts and Sciences
- Military Science
- Mountain West Center for Regional Studies
- Music
- Nora Eccles Harrison Museum of Art
- Political Science
- Sociology, Social Work and Anthropology
- Theatre Arts
- Undeclared
- Women and Gender Studies

A listing of majors and degrees can be found under each department or program.

Within the College of Humanities, Arts and Social Sciences are found those departments which provide career preparation in some of the most interesting and vital academic fields. The study of society, the governing of society and its history, communication in a number of languages, the various aspects of culture—all these appeal to an increasing number of undergraduate and graduate students. Many train for careers in these fields; more—scientists, engineers, etc.—take courses to broaden their horizons and add interest to their lives.

It is probably fair to say that the social trend is toward an awareness that while material things are important they are not enough for a full life. For this, the individual may turn to literature, art, music, and theatre. Concern with environmental problems may lead the student to an investigation of landscape architecture. The complexities of modern life necessitate an understanding of the social sciences and history. It is within the College of Humanities, Arts and Social Sciences that these needs may be met.

Admission and Graduation Requirements

Students accepted in good standing by the University are eligible for admission to the College of Humanities, Arts and Social Sciences. Because of limitations of faculty and/or space, a few departments within the college, such as Art, LAEP, and Sociology, Social Work and Anthropology, limit enrollment in their professional programs. See the departmental sections in this catalog and the department head for information regarding these limitations and/or requirements in addition to the University graduation requirements.

Undeclared

Coordinator: Mary E. Leavitt  
Student Center 302, (435) 797-3883, mleavitt@hass.usu.edu

The chief function of the Undeclared program is the advisement of students who have not yet decided upon a major or area of specialization. Students in the Undeclared program typically work on their University Studies requirements while exploring major options. This allows them to make progress toward overall degree requirements and provides them with extra time to make wise, informed decisions. Undeclared students are advised by counselors in the Science/HASS Advising Center until they choose a major.

Students who are enrolled in another department but feel they have chosen their major unwisely may transfer to the Undeclared program upon receiving permission from the dean of the College of Humanities, Arts and Social Sciences.

No degree is offered through the Undeclared program. Most Undeclared students are freshmen or sophomores. Typically, by the junior year, most students have selected a major and are involved in taking major courses. Students do not usually remain in the Undeclared program beyond 60 credit hours or past the end of the sophomore year.
Women and Gender Studies

Co-directors: Patricia Gantt, Ray B. West 205, (435) 797-2718, pgantt@english.usu.edu; Anne Shifrer, Ray B. West 301C, (435) 797-2731, annes@cc.usu.edu

Women and Gender Studies at Utah State University is a multidisciplinary program focusing on the role of gender in the everyday experiences of women and men. Students are provided with opportunities to examine the diverse experiences, perspectives, and contributions of women in the past, present, and future, both nationally and internationally. Specific courses examine the processes of gender role socialization, and the resulting cultural beliefs and stereotyped images of women. As a result, students gain appreciation for the role of gender and its practical implications in their basic life experiences, thus preparing them to understand current and future changes in the roles of women.

Each semester, Women and Gender Studies courses are taught by faculty members from a variety of disciplines, including Anthropology, Journalism and Communication, English, Fine Arts, Health and Physical Education, History, Natural Resources, Political Science, Psychology, Special Education, and Sociology. Throughout the year, several special topics courses are offered, and new courses are continually being developed. Two Women and Gender Studies scholarships are awarded to undergraduates.

Students may enroll in individual courses or apply coursework toward either a minor in Women and Gender Studies or an Area Studies certificate.

Further information may be obtained from one of the co-directors or from the Science/HASS Advising Center (Student Center 302).

Mountain West Center for Regional Studies

Director: To be appointed, Main 303, (435) 797-3630

The Mountain West Center for Regional Studies gathers scholars, departments, and resources of Utah State University to facilitate an interdisciplinary approach to regional studies. The center is founded on three assumptions: that the humanities are essential to the fulfillment of the University’s mission, that regional studies make possible a better understanding of the values and assumptions that shape society, and that such studies are strengthened by communication and cooperation among academic departments.

The center brings together scholars and students from history, folklife and folklore, anthropology, the fine arts, and literature. It develops programs, administrates scholarships, and provides support for research on the Mountain West. It makes possible symposia, publication, interpretation, preservation, public outreach, and graduate student training in the humanities.

The cooperating programs of the center include American Studies, the David and Beatrice Evans Biography and Handcart Awards, the Fife Folklore Program and Archives, the Nora Eccles Harrison Museum of Art, the Ronald V. Jensen Living Historical Farm, the Merrill Library Special Collections, the Utah History Fair, the Utah State University Anthropology Museum, the Utah State University Press, Western American Literature, and the Western Historical Quarterly.

Science/HASS Advising Center

Director: Mary E. Leavitt
Assistant Director: Irene B. McInerney
Advisor: Lisa R. Hamblin
Advisor: Jill S. Hoffmann
Advisor: Sally B. Peterson
Advisor: Lynne M. Slade
Program Coordinator: Susan Parkinson

Office in Student Center 302, (435) 797-3883

The Science/HASS Advising Center (SHAC) is a campus office designed to provide academic advising for students in the College of Science and the College of Humanities, Arts and Social Sciences. Academic advisors counsel these students in the University Studies requirements.

Academic advising is provided through the center to all Liberal Arts and Sciences majors. Undeclared students also are advised in the center, with special emphasis on major exploration and career counseling.

Advising

College of HASS students receive advising concerning University and College of HASS policies and procedures, as well as in University Studies, the Liberal Arts and Sciences Program, graduation requirements and processes, and the USU Area Studies Certificate programs. In addition, students are advised concerning academic choices, low grade point averages, and other problems.

Academic Services

SHAC represents the dean in providing academic services to undergraduate students in the College of HASS. This includes requests for academic record changes and other documentation requiring the dean’s signature. Coordination of academic problems, support, or referrals to other University services are also provided. Transcript evaluations, including international and transfer records, are made and approved in SHAC.

Graduation

All HASS graduation matters are processed through SHAC. Students should begin the graduation process at least one month prior to the graduation application deadline, and the application should be turned into SHAC at least two weeks prior to the deadline in order to avoid a late fee. A final review of University Studies (or other General Education programs) and other University graduation requirements will be made and the final approval signature added before the application is returned to the student for payment of the fee. If the student wishes to amend the application to substitute or drop courses that are listed on it, a Supplement Form must be submitted through SHAC.

The Area Studies Certificates are awarded at the time of graduation. Application for the certificate should be made through SHAC.

Liberal Arts and Sciences majors, Undeclared students, and all HASS students are welcome to explore the various services of the center.
Center for International Studies

Director: R. Edward Glatfelter (HASS Dean’s Office), Main 333, (435) 797-1196, edwardg@hass.usu.edu

The Center for International Studies promotes and coordinates international academic exchanges between the University and institutions of higher education abroad. Major objectives of the center are: (1) to develop bilateral university linkage programs, (2) to facilitate faculty and student exchange programs, and (3) to promote collaborative research programs, joint seminars, workshops, and conferences. The center also serves as the University academic center for international studies curriculum offerings and the Certificate for International Development program.

American Studies

Major and Minor

Program Director: Jan Roush, Ray B. West 312G, (435) 797-2729, jan.roush@usu.edu

Many important issues associated with the origin, evolution, and manifestation of American culture transcend the boundaries of traditional subject areas, so are best explored from a variety of perspectives or disciplines. The American Studies major and minor provide students with the opportunity to integrate studies in various fields into a broader understanding of American culture and its antecedents. Although housed in the Department of English, the American Studies Program permits students to choose relevant courses for their cognate areas from a variety of participating departments throughout the University.

Major. To obtain a degree in American Studies, students must complete a total of 49 credits, including 10 credits of core requirements, introducing foundations of American literature, region, and culture; 6 credits chosen from the 3000 level, exposing students to the diversity of American culture; and 9 credits of upper-division work (4000 level), allowing students to approach American literature and culture through various genres.

In addition to completing the required English classes, students must complete 21 credits from two of the following cognate areas: folklore, history, nature and environment, and political science. Students will be required to meet with either the director or the undergraduate advisor to determine appropriate courses for the cognate areas.

The final course, a senior capstone, encourages graduating students to reflect on their overall coursework, synthesizing the perspectives they have gained about American culture in an extended research project reflecting their interdisciplinary academic experience.

Minor. For an American Studies minor, students must select 6 credits from the core courses. Also, a minimum of 12 credits must be selected in one of the four cognate areas.

Core Requirements (10 credits). ENGL 1110, 2160, 2170, 4610.

Cultural Diversity Required Courses (select a minimum of 6 credits). ENGL 3070, 3300, 3520, 3620.

Genre Required Courses (select a minimum of 9 credits). ENGL 4310, 4340, 4350, 4360, 4370, 4630, 4900.

Capstone (3 credits). ENGL 4690.

Asian Studies Major and Minor

Program Co-directors: R. Edward Glatfelter (HASS Dean’s Office), Main 333, (435) 797-1196, edwardg@hass.usu.edu; Jing Huang, Main 330C, (435) 797-0099, jhuang@hass.usu.edu

Major. To graduate with a BA degree in Asian Studies, students must complete a minimum of 27 credits approved by one of the Asian Studies program co-directors. The program must include a minimum of 9 credits selected from the Core Courses. Also, a minimum of 18 elective credits are required, which must include 8 credits chosen from the Asian Studies Electives, and 9 credits from the General Electives, selected after consultation with the Asian Studies program advisor. In addition, at least 8 credits of an Asian language are recommended.

Core Courses (required minimum of 9 credits): ART 4780, HIST 3460, SOC 4710 (Asian Societies), ECON 5400, GEOG 4200 (when region covered is Asian), PHIL 3710, POLS 3230, 3250, 4220, 4470.

Asian Studies Electives (minimum of 8 credits required for major): HIST 3480, PHIL 4900 (when syllabus includes Asian philosophies), POLS 3250, 4220 (when syllabus includes Asian Conflicts), SOC 4730, ENGL 3320 (when syllabus includes Asian literature).

General Electives. For a listing of general electives, consult the Asian Studies Major Requirement Sheet.

Asian Languages. Descriptions of Asian language courses can be found listed alphabetically by prefix in the Course Descriptions section of this catalog.

British and Commonwealth Studies Minor

Program Coordinator: To be appointed

The minor in British and Commonwealth Studies, sponsored jointly by the English and History departments, allows undergraduates to experience interdisciplinary study and broaden their international perspectives. Students engage in interdisciplinary study by doing extended work outside their home departments, while at the same time integrating their study around a single area.
They enhance their international experience by deepening their knowledge of the British Isles and by expanding their knowledge of British culture through its contact with other world cultures in the imperial, Commonwealth, and post-colonial eras. This minor requires a minimum of 18 credits. The program selected must be approved by the coordinator of the British and Commonwealth Studies Minor at least one year prior to graduation. Alternatives to this program are possible, but any alternative must be approved by the coordinator. Courses used to fulfill requirements for the English or History majors may not be used for the British and Commonwealth Studies minor.

All students must complete ENGL/HIST 2040 (British and Commonwealth Cultures), and must then complete four courses from the following: ENGL 2140, 2150, 3310, 4300, 4320; HIST 3510, 3720, 4210, 4250, 4390. Finally, they must take either ENGL 5920 (Directed Study) or HIST 4930 (Directed Readings), in which they complete an individual project on a topic concerning Britain and/or the Commonwealth.

Classics Minor

Coordination: Mark L. Damen, Susan O. Shapiro, and Frances B. Titchener
Department of History, Main 323, (435) 797-1290

An academic minor is available in the field of Classical Studies with three areas of emphasis: Classical Civilization, Latin Language, and Greek Language. From the ancient civilizations of the Mediterranean area are derived our government, literature, sciences, and laws. The classical world is the backdrop of the modern world. In association with various majors, the Classics Minor is designed to enhance intellectual abilities and practical skills.

Requirements for the three emphasis areas are as follows:

Classical Civilization: At least 21 credits from an approved list of courses.

Latin Language: 7 credits in upper-division Latin (3000-level or above), plus 6 credits from an approved list of courses.

Greek Language: 7 credits in upper-division Greek (3000-level or above), plus 6 credits from an approved list of courses.

Approved courses for the various minors are listed in the brochure titled Classical Studies. Brochures are available from the Department of History, Main 323.

Nora Eccles Harrison Museum of Art

Director: Victoria Rowe, (435) 797-0164, victoria.rowe@usu.edu
Education Coordinator: Nadra Haffar-Peragallo, (435) 797-8207
Staff Assistant: Linda L. Pierson, (435) 797-1414, lpier@cc.usu.edu
Collections Manager and Registrar: Susanne L. Lambert, (435) 797-0166, susanne.lambert@usu.edu

The Nora Eccles Harrison Museum of Art is the major center for the exhibition of the visual arts in northern Utah. Emphasizing the breadth of artistic expression and the history of art in the western United States, the Museum’s permanent collections include Twentieth Century American sculpture, ceramics, paintings, graphic arts, photographs, and American Indian arts. Selections from the collection are always on view and are rotated periodically to reflect the continuing growth and refinement of the collection. In addition to installations of its permanent holdings, the Museum organizes temporary and traveling exhibitions and serves as a venue for exhibitions of national and international stature. Artist talks, films, docent tours, and educational activities are additional dimensions of the Museum’s programs which are designed to interpret, present, and foster the development of the visual arts.

As a component of Utah State University, the Museum provides educational opportunities for undergraduate and graduate students pursuing professional careers in the museum field. Through on-the-job training, independent study, and internships, students participate in collections care and management, exhibition development, installation design, and educational programming. Research and publication are also integral parts of the Museum’s educational offerings, and students, along with faculty and other scholars, pursue projects which are relevant to the permanent collections and exhibitions.

Named for its benefactor, the Nora Eccles Harrison Museum of Art was made possible through an insightful and generous gift from the Nora Eccles Treadwell Foundation. Designed by internationally acclaimed architect, Edward Larabee Barnes, the 20,000-square-foot structure includes offices, a workshop, library, storage facilities, and five exhibition galleries.

For more information, write or call: Nora Eccles Harrison Museum of Art, Utah State University, 4020 Old Main Hill, Logan UT 84322-4020, (435) 797-0163, FAX (435) 797-3423.

Course Descriptions

Humanities, Arts, and Social Sciences (HASS), page 408
Women and Gender Studies (WGS), page 493
Natural Resources

Dean: F. E. “Fee” Busby
Director of Graduate Education: Todd A. Crowl
Director of Undergraduate Education: Mark W. Brunson
Location: Natural Resources 108
Phone: (435) 797-2452
FAX: (435) 797-2443
E-mail: nradvise@cc.usu.edu
WWW: http://www.cnr.usu.edu

Undergraduate Advisors:
Maureen A. Wagner, Natural Resources 120, (435) 797-2448, maureen@cc.usu.edu
Stephanie W. Hamblin, Natural Resources 120, (435) 797-2473, stephanie.hamblin@usu.edu

The College of Natural Resources has the following academic degree programs:

College of Natural Resources
Master of Natural Resources (MNR)

Aquatic, Watershed, and Earth Resources Department
Ecology (MS and PhD)
Fisheries and Aquatic Sciences (BS)
Fisheries Biology (MS and PhD)
Watershed and Earth Systems (BS)
Watershed Science (MS and PhD)

Environment and Society Department
Bioregional Planning (MS)
Environmental Studies (BS)
Geography (BS, BA, MS, and MA)
Human Dimensions of Ecosystem Science and Management (MS and PhD)
Recreation Resource Management (BS, MS, and PhD)

Forest, Range, and Wildlife Sciences Department
Conservation and Restoration Ecology (BS)
Ecology (MS and PhD)
Forestry (BS, MS, and PhD)
Rangeland Resources (BS)
Range Science (MS and PhD)
Wildlife Biology (MS and PhD)
Wildlife Science (BS)

A list of degree requirements, emphases, and specializations can be found in the catalog section for each department. For a description of the Master of Natural Resources (MNR) professional degree, see page 278.

Interdisciplinary Programs. Many of the degree programs listed above are interdisciplinary to some extent. However, the Conservation and Restoration Ecology, Environmental Studies, and Watershed and Earth Systems programs offer students the opportunity to develop broad interdisciplinary programs to meet their interests. Conservation and Restoration Ecology and Watershed and Earth Systems build on a strong science base; Environmental Studies has a greater emphasis on management and policy.

Minors in Natural Resources. The college offers minors in the following areas:
- Environmental Studies
- Fisheries Science
- Geographic Information Science
- Geography/Geography Teaching
- Recreation Resources
- Watershed Science

Requirements for the minors are found in the appropriate departmental sections of this catalog. Students should also consult a faculty advisor for the minor.

Objectives

The College of Natural Resources provides programs of study and professional training in the use and management of natural resources and the environment. These programs deal with renewable land and water resources and the management of these resources and their ecosystems. Forests, rangelands, wildlife, fisheries, watersheds, and recreation resources comprise the natural resources and environmental areas in which the college has developed professional competence. The college’s expertise in geography provides a link between the management of these resources and their value to our society and other cultures.

The College of Natural Resources programs and facilities provide exceptional opportunities for field experience. Forests and rangelands comprise more than 90 percent of the total Utah land area. The Wasatch-Cache National Forest and other areas of natural lands close to the USU campus provide unlimited study projects and opportunities for demonstration. Yellowstone and other national parks are within one day’s driving distance.

Career Opportunities. The curricula of the college prepare men and women for positions with federal or state agencies, private-sector work in natural resources management and administration, and positions in education.

Summer Employment/Work Experience. Students are strongly encouraged to seek summer employment with faculty research projects or natural resource agencies to gain practical work experience and help refine career goals. Students should check with the College of Natural Resources Academic Service Center in early January regarding summer employment opportunities.

Undergraduate Programs

Academic Policies

Admission. Freshmen accepted in good standing by the University are eligible for admission to the College of Natural Resources. Transfer students need a cumulative 2.5 GPA for admission to College of Natural Resources majors. Departments may impose additional requirements; refer to departmental sections for information.

Students will make more satisfactory progress in natural resources majors if they have had two years of high school algebra; have taken coursework in chemistry, physics, and biology; and have obtained basic computer skills. Four years of English are
also desirable. Prospective students should realize that natural resources fields are highly technical professions, requiring not just field ability, but also high aptitude for scholarship. Success is also correlated with an ability to work well with people.

**Natural Resources—Undecided.** Students who have not yet decided on a specific natural resources major may be admitted to the college as “undecided.” Many of the courses taken during the freshman year are common to all natural resources majors; however, students are encouraged to select a major as soon as possible. Students in the undecided category should meet with the college academic advisors for assistance in planning their educational program and selecting a major.

**Changes in Graduation Requirements.** Students who complete a baccalaureate degree within seven years of enrollment at USU can qualify for graduation by meeting (1) the General Education/University Studies requirements in effect when they initially enrolled at USU (or any revision of the University Studies requirements that has been in effect within seven years of their graduation) and (2) the major requirements in effect when they officially declared their major (or any revision of the major requirements that has been in effect within seven years of their graduation).

Students who have not completed the baccalaureate requirements within seven years of their initial enrollment at USU must have their General Education/University Studies and major requirements evaluated and approved by their department head and dean.

**Academic Responsibility.** The departments publish current major requirement sheets each year. It is the student’s responsibility to know the current requirements and to consult with a faculty advisor in planning and completing his or her degree program.

**Graduation Requirements.** Students must satisfy all University, College of Natural Resources, and departmental major requirements for graduation. Students must complete a series of basic lower-division courses, providing the disciplinary foundation for the natural resource and environmental professions, before advancing to professional coursework; foundation course requirements vary among the departments of the college. Equivalents of the foundation courses can be taken at many two- and four-year colleges. Students intending to transfer to a College of Natural Resources major should consult with a faculty advisor before registering for foundation courses at another school. Some foundation and core courses can be used to satisfy University Studies requirements. College requirements also include a grade point average of 2.5 or higher for all courses taught by the College of Natural Resources. Refer to the appropriate sections of this catalog for further details on graduation requirements.

**Professional Organizations**

Students are strongly encouraged to participate in professional organizations affiliated with their major. The College of Natural Resources has student chapters of the following professional societies:

- American Fisheries Society
- Society of American Foresters
- Society for Range Management
- The Wildlife Society

**Financial Aid**

**Scholarships.** A number of scholarships are available to students in the college. The S. J. and Jessie E. Quinney scholars program offers ten four-year, $2,000 per year scholarships to entering and transfer undergraduate students in the College of Natural Resources. Interested high school seniors and transfer students are encouraged to write to the dean’s office regarding these scholarships.

There are also many $250-$2,500 per year scholarships for continuing students. For details, contact the dean’s office.

**Research**

The College of Natural Resources maintains an extensive program of research through its academic departments and the affiliated Jack H. Berryman Institute, Center for Disturbance Ecology, USDA/APHIS Predator Behavior and Ecology Field Station, USDA Aquatic Ecosystem Monitoring Center, Utah Cooperative Fish and Wildlife Research Unit, and USU Ecology Center. Part-time employment opportunities are often available for undergraduates in college research programs.

**Graduate Programs**

The college offers graduate study programs leading to the MA, MNR, MS, and PhD degrees. See the appropriate departmental sections for information on their graduate programs.

**Financial Assistance**

**Assistantships.** Teaching or research assistantships are awarded through the departments. For further information, students should check with their department and major professor.

**Fellowships.** Fellowships and tuition waivers are awarded on a competitive basis. Incoming graduate students should apply through their major professor.

**Course Descriptions**

Natural Resources (NR), page 451
National Environmental Policy Act (NEPA), page 447
Science

Dean: Donald W. Fiesinger
Location: Eccles Science Learning Center 245
Phone: (435) 797-2478
FAX: (435) 797-3378
E-mail: scido@cc.usu.edu
WWW: http://www.usu.edu/science

Associate Dean for Undergraduate Affairs:
Kandy D. Baumgardner, ESLC 245J, (435) 797-3509, kdb@biology.usu.edu
Associate Dean: Richard J. Mueller, ESLC 245G, (435) 797-2479, rmueller@biology.usu.edu

The College of Science has the following departments and programs:

Biology
Chemistry and Biochemistry
Computer Science
Geology
Mathematics and Statistics
Physics
Cooperative Nursing Program

Degrees, emphases, specializations, and program descriptions are listed with the departments and the Nursing Program. In addition, there is a Center for Atmospheric and Space Sciences (CASS) and two interdisciplinary programs which involve the college. The Department of Biology participates in the Interdepartmental Graduate Program in Toxicology. This program offers research opportunities leading to MS and PhD degrees within several specialties of toxicology. The college also participates in an interdisciplinary, interdepartmental program in ecology which operates under the Ecology Center. The Ecology Center brings distinguished scientists to campus, fosters faculty research, and enhances graduate education in all areas of ecology.

Objectives

USU has always emphasized the sciences. Modern civilization is based on science, most facets of which are fundamental in a land-grant university.

Opportunities for rewarding careers are excellent in the fields of science. These opportunities exist in education, research, conservation, service, and industry.

The curricula of the science departments are designed to achieve five purposes:

First, they serve all students. No college graduate can be considered educated without an appreciation of scientific principles.

Second, the college trains teachers of science at all levels of education. Highly competent teachers are absolutely essential to the continued well-being and development of society.

Third, students are prepared to take positions in industry and business in a highly technological world.

Fourth, education is provided in the health fields both at the preprofessional and entry level. The college has excellent programs in preclinical and premedical education with an exceptional record of placing students in dental and medical schools. Undergraduate degrees in the various departments of the college can be tailored to include preclinical and premedical training. Other programs prepare graduates to enter the health profession directly upon graduation.

Fifth, the College of Science educates research scholars in many fields of science. This is accomplished by completing a sound undergraduate degree in the field, followed by graduate specialization.

Students planning to enter the sciences are urged to discuss their plans and goals early with advisors, who are available in each academic department. Basic coursework in mathematics, chemistry, physics, and computer science is essential to most areas of science.

Admission Requirements

Students accepted in good standing by the University are eligible for admission to all departments in the College of Science. Students majoring in Computer Science must qualify for advanced standing status on the basis of their academic performance. Specific details are given in the Computer Science section of this catalog (see page 175).

College of Science Core Requirements

Mathematics Requirement. All bachelor degree candidates in the College of Science must complete one year of calculus, consisting of MATH 1210 and 1220. In some degrees or options within degrees, the second semester of calculus may be replaced by STAT 3000. The substitution will be for specific degree programs, and not by student choice.

Science Requirement. Every bachelor degree candidate in the College of Science must complete a year-long sequence outside of his or her major department. The approved sequences are: (1) BIOL 1210, 1220; (2) CHEM 1210, 1220; (3) GEOL 1150, 3200; (4) PHYX 2110, 2120; and (5) PHYX 2210, 2220.

Science Major (Undecided)

A beginning freshman student who wishes to major in science, but who has not selected a specific major, may register in the college as an Undecided Science Major. A course of study will be developed that will attempt to maximize transfer into the various departmental majors in the college. Students in the Undecided Science Major will be required to transfer to a departmental major after one year of study.

Scholarships

Scholarships are available through the college and some of the departments. Students should contact the college or their major department for further information about these scholarships.
Graduate Assistantships and Fellowships

Excellent graduate assistantships and fellowships are available in all departments. Assistantships are available both for teaching and research. Applications should be made directly to the department concerned. For more information, see the Graduate Financial Assistance section of this catalog (pages 89-90).

Graduate Programs

Graduate programs leading to the MS degree are available in each department in the college. In addition, the Department of Mathematics and Statistics offers a MMath (Master of Mathematics) degree. The departments of Biology, Chemistry and Biochemistry, Computer Science, Mathematics and Statistics, and Physics offer programs leading to the PhD degree. See the departmental sections in this catalog for more information on these programs.

Liberal Arts and Sciences Major

The College of Science, in cooperation with the College of Humanities, Arts and Social Sciences, sponsors a Liberal Arts and Sciences (LAS) Major. LAS promotes integrated learning across the life sciences, humanities, physical sciences, arts, and social sciences. All USU students are welcome in LAS. The LAS Major is described on page 249.

Honors Program

Several departments in the college participate in the University Honors Program by offering special honors courses and by sponsoring an option for graduation with departmental honors.

Undergraduate Research

The sciences provide an ideal setting for research. All departments within the College of Science provide opportunities for undergraduate students to participate in research activities. Interested students should discuss this option with their academic advisor or with an associate dean in the college office.

Course Descriptions

Science (SCI), page 477
Accountancy

Department Head: Richard L. Jenson
Location: Business 511
Phone: (435) 797-2335
FAX: (435) 797-1475
E-mail: maryann.clark@usu.edu
WWW: http://www.usu.edu/cob/acct

Director of Graduate Accounting Programs: Cassy J. H. Budd,
Business 518, (435) 797-3958, cassybudd@cc.usu.edu

Undergraduate Advisor: Joslyn M. Heiniger, Business 308,
(435) 797-8620, joslyn.heiniger@usu.edu

Degrees offered: Bachelor of Science (BS), Bachelor of Arts
(BA) in Accounting; Master of Accounting (MAcc); participates
in Master of Business Administration (MBA)

Undergraduate options: The BS or BA in Accounting requires
selection of one of the following options: Accounting, Business
Information Systems, Economics, Finance, Management or Hu-
man Resource Management, Marketing, Personal Financial
Planning, or Operations Management. Many of these options
qualify for a minor. A dual major in Accounting and Economics is
available.

Graduate specialties: MAcc—Professional Accountancy,
Taxation, Personal Financial Planning, Information Systems, and
Finance. MBAs with specializations in Accounting and Personal
Financial Planning are offered in the College of Business (see
MBA—Accounting and MBA—Personal Financial Planning pro-
grams).

Undergraduate minors offered: Accounting and Personal Finan-
cial Planning

Undergraduate Programs

Mission

The mission of the School of Accountancy at Utah State Uni-
versity is excellence in accounting education through teaching, re-
search, and service. The school endeavors to provide high-quality
accounting preparation for professional careers, to intellectually
contribute to the field of accounting through the dissemination of
meaningful research, and to render service. The school is dedi-
cated to fostering economic and social progress, and to develop-
ing students into responsible and ethical citizens committed to
active roles in their profession and service to society with a quest
for lifelong learning.

Objectives

The objective of the School of Accountancy is to provide high
quality accounting preparation for professional careers in indus-
try, public accounting, and other organizations. The undergradu-
ate programs are devoted to providing basic conceptual account-
ing, information systems, and business knowledge, along with
general education, as a well-rounded foundation for career de-
velopment. The fostering of high-quality student organizations is
fundamental to the career-development process for on-campus
programs.

The accounting curriculum is designed to help students pre-
pare to meet changes in social, economic, and technological de-
velopment. Academic course requirements for the bachelor’s
degrees include general education coursework, as well as support-
ing courses in mathematics, economics, business information sys-
tems, business communications, business administration, account-
ancy, and information technology. The programs provide an op-
portunity to choose from a number of elective courses to broaden
educational backgrounds and enhance employment opportunities.

Career Opportunities

Practice in the profession of accounting has become more
complex, with computerized information and accounting systems
becoming an integral part of the various accounting and business
functions. University training is essential to prepare for high-level
accounting careers in business, government, and public account-
ing.

Graduates of the accounting program find employment in a va-
riety of industrial companies, nonbusiness and government agen-
cies, and both large and small public accounting and business
advisor firms. Graduates hold all levels of positions within organi-
zations, including supervisors, managers, partners, controllers, fi-
nancial vice presidents, and chief executive officers. Nonbusiness
units and government agencies, such as the Utah State Auditors
Office, the Federal Bureau of Investigation, and the Internal Re-
veme Service, provide jobs in many varied accounting functions.

Requirements

College of Business Requirements. All students majoring in
accounting must satisfy the College of Business requirements,
provided on pages 101-102. Academic advising about these re-
quirements is available in the College of Business Career and Ed-
ucation Opportunities Center, Business 310A.

Accounting Admission Requirements. In addition to meeting
the College of Business requirements, students must have
achieved a cumulative overall GPA of 3.0 or higher and have
earned a grade of B or better in ACCT 2010 before they will be
allowed to enroll in ACCT 3110 or 3310.

General Instructions for all Accounting Majors. Since some
accounting courses are not offered every semester and many have
prerequisites, students should plan their program at least a year
ahead.

Accounting Major Requirements. For a bachelor’s degree in
accounting, students must complete at least 120 credits, including
at least 24 credits in accounting and at least 90 credits in nonaccounting courses. To qualify for graduation as an account-
ing major, a student must maintain an accounting and an overall
GPA of at least 2.5. All accounting majors are required to complete the University Studies requirements (see pages 42-49), the Pre-Business course requirements (see page 102), and BA 3400, 3500, 3700; BUS 3250; ECON 3400; MHR 3110, 4880 or 4890, ACCT 3110, 3120, 3310, 3410, 4500, 4510. In addition, accounting majors select one of the option areas below.

Option Areas for Accounting Majors
(Those marked with an *“*” qualify for a minor.)

**Accounting.** Select 6 additional accounting credits from the following: ACCT 5210, 5220, and 5400. ACCT 5210, 5220, and 5400 (or their equivalents) must be completed either prior to or as part of an MAcc or MBA-Accounting degree.

*Business Information Systems.* Select 12 additional credits in business information systems and computer science from the following: BIS 2300, 3100, and 3330; plus one course selected from CS 1700, 3410, or 3510.

*Economics.* Select 12 additional credits in economics and/or accounting from the following: ECON 4010 or 5010 and ECON 4020 or 5000, plus two additional courses from economics or accounting. If the two additional courses are selected from economics, requirements for a dual major in accounting and economics may be met (see Dual Major below).

*Finance.* Select 12 additional credits in business administration and/or accounting from the following: BA 4450, 4460, and two courses from: BA 4300, 4410, 4420, 4430 (one additional accounting course may be substituted for one of the two BA courses listed in this group).

Management or Human Resource Management. Complete 12 additional credits as approved by the Department of Management and Human Resources.

*Marketing.* Complete 12 additional credits in business administration and accounting as follows: BA 4510, 4530, 4540, 4550. (One additional accounting course may be substituted for BA 4530 or 4540.)

Personal Financial Planning. This option will not appear on student transcripts, and will not qualify as a minor for students majoring in accounting. Complete 12 additional credits in personal financial planning and business administration as follows: PFP 5060, 5070, 5080; BA 3460 or 4460.

*Operations Management.* Select 12 additional credits in business administration and accounting from the following: BA 4720, and three courses from BA 3080, 4750, 4790, 5730 (one additional accounting course may be substituted for one of the BA courses listed in this group).

Dual Major

**Accounting and Economics Dual Major.** Select 12 credits in economics in addition to the courses required for an accounting major from the following: ECON 4010 or 5010; ECON 4020 or 5000; and 6 credits of upper-division Economics electives.

**Accounting Minor**

Students with a major in an area other than accounting may qualify for an accounting minor by completing the following 6 courses (18 credits): ACCT 2010, 2020, 3110, 3120, 3310, and 3410 or 4500. A 2.5 grade point average must be achieved for accounting courses taken.

**Personal Financial Planning Minor**

Students with a major in an area other than accounting may qualify for a personal financial planning minor by completing, with at least a 2.5 grade point average, the following 5 courses (15 credits): ACCT 3410, PFP 5060, 5070, 5080, and BA 3460 or 4460. These courses are registered with the Certified Financial Planner (CFP)® Board of Standards. Students completing these courses will qualify to sit for the comprehensive CFP® Examination.

**Second Bachelor’s Degree in Accounting**

Students seeking a second bachelor’s degree in accounting must be approved by the School of Accountancy, must achieve an accounting and overall grade point average of 2.5, and must complete the course of study listed above for an accounting major.

**Honors Degree Option**

Academically able students who would like to experience the major in greater depth are encouraged to pursue Department Honors. Honors students will have the opportunity of working one-on-one with professors in selected classes. They will do original, independent work, taking them beyond the basics and allowing them to enjoy the benefits of close supervision and mentorship. Their senior project will provide an opportunity to collaborate with a faculty member on a problem which is significant personally and in accounting. Participating in Department Honors may enhance students’ chances of obtaining fellowships and admission to graduate school, and gains them membership in the USU Honors Program. For further information about Department Honors, contact the College of Business Honors Advisor, Professor Dwight Israelsen, Business 608, tel. (435) 797-2298; contact the Honors Office, Merrill Library 374; or visit the Honors website at [http://www.usu.edu/honors](http://www.usu.edu/honors).

**Beta Alpha Psi**

The Delta Omega Chapter of Beta Alpha Psi, the national honorary and professional accounting fraternity, provides many professional accounting experiences for qualifying accounting students throughout their academic program.

**Institute of Management Accountants**

The student chapter of the Institute of Management Accountants (IMA) provides professional experiences in the area of management accounting. This organization is especially for students interested in careers in industry, not-for-profit organizations, governmental organizations, and accounting and business entrepreneurship.
**Financial Planning Student Association**

The Financial Planning Student Association (FPSA) provides students with opportunities to supplement classroom instruction with speakers from the financial planning industry, office visits, and internships at state and national meetings of professional associations in the financial services industry.

**Graduate Programs**

The graduate programs provide greater breadth and depth in accounting, taxation, information systems, and management to develop a high level of understanding, skill, and leadership capability to enter professional accountancy and related business careers. The Master of Accounting (MAcc) and the Master of Business Administration-Accounting Specialization (MBA-Accounting), offered by the College of Business, qualify graduates to sit for the Certified Public Accountant examination.

**Admission Requirements**

See general admission requirements, pages 90-91. In addition, candidates are selected based on the combined consideration of their score on the Graduate Management Admissions Test (GMAT) and their grade point average from the previous 60 semester credits (90 quarter credits) completed. Generally, 200 times the GPA plus the GMAT score must total 1,150 or more. Additionally, for MAcc Programs, the minimum acceptable GMAT score is at the 40th percentile and the minimum GPA is 3.0. In addition, scores for each section of the GMAT must be at least at the 40th percentile. For information about admission to the MBA—Accounting Specialization Program, see Admission Requirements for the MBA Program, page 153. Letters of recommendation, professional experience, professional certification, and leadership are also considered in admission decisions for all accounting graduate programs. Students may apply for admission to the graduate programs during their senior year of baccalaureate study. USU accounting students may take graduate courses during their last semester of undergraduate study, provided prerequisite courses have been completed, they have been admitted into a graduate program, and a split registration form is approved by the dean of the School of Graduate Studies. (See Split Form Policy, page 92.)

Students with an undergraduate degree in accounting which meets the USU undergraduate program requirements have completed all of the preparatory work for graduate study. Students with less than the equivalent of the undergraduate program are expected to make up the deficiencies. The director of Accounting Graduate Programs will assist in necessary program scheduling. Students are encouraged to satisfy undergraduate deficiencies by taking equivalent graduate business administration, management and human resources, and economics core courses when possible.

Graduate students are expected to maintain an overall GPA of 3.0 to remain in the program.

Complete information relative to the details of the program and course scheduling is available from the School of Accountancy.

**Graduate Degree Programs**

**MAcc requirements for students who have an undergraduate accounting major or equivalent (33 credits)**

**Program of Study.** Students matriculated in the Master of Accounting degree must complete an approved program of study consisting of at least 33 credits. This program must include completion of the Foundation Requirements, the MAcc Core Requirements, and one of the Areas of Specialization Requirements. At least 15 credits must be earned in approved Accounting courses numbered 6000 or above. Details for each requirement type are provided in the following paragraphs.

**Foundation Requirements.** Students who have not completed undergraduate coursework in Corporate Income Taxation (ACCT 5400 or equivalent) must include ACCT 6400 in their MAcc program of study. Students who have not completed undergraduate coursework in both Accounting for Business Combinations (ACCT 5210 or equivalent) and Accounting for Government and Nonprofit Entities (ACCT 5220 or equivalent) must include the 6000-level offering of the omitted course in their MAcc program of study.

**MAcc Core Requirements.** The core courses required for this degree include: ACCT 6410, 6510, 6550, 6610; PFP 6560; and BIS 6150.

**Master of Accounting Specializations**

In addition to meeting the Foundation Requirements and MAcc Core Requirements, students complete requirements for one of the following specializations:

**Professional Accountancy Specialization.** Required courses for this specialization are: ACCT 6350, 6500, 6540, and 6600.

**Taxation Specialization.** Required courses for this specialization are: ACCT 6420, 6440, 6460, and one course chosen from PFP 6600, 6670, or 6680.

**Personal Financial Planning Specialization.** Students must complete PFP 6060, 6070, 6080, and one course chosen from ACCT 6420, 6440, or 6460. In addition, students must complete, or have previously completed, the equivalent of BA 3460 or 4460 (neither of these courses count as part of the 33-credit MAcc degree requirement). This specialization satisfies the requirements to sit for the national Certified Financial Planner (CFP) examination.

**Information Systems Specialization.** Students must complete ACCT 6500, 6600, and an additional 6 credits of approved systems-related courses.

**Finance Specialization.** Complete ACCT 6350, plus 9 credits selected from approved finance-related courses.

**Accelerated Program for Nonaccounting Undergraduate Majors**

**MAcc for nonaccounting undergraduate majors (51 to 69 credits).** Candidates for this program must score at or above the 50th percentile on all sections of the GMAT and have a 3.3 minimum GPA for the last 60 semester credits. This program requires...
the successful completion of the Integrative Pre-MBA Core (BUS 6160, 18 credits), which is offered summer semester only, plus an additional 51 credits. Students with undergraduate degrees in business subjects (other than accounting) need not take the Integrative Pre-MBA Core and therefore may earn the MAcc in 51 credits. The 51 credits include: ACCT 3110, 3120, 3310, 3410, 4510, the Foundation Requirements, the MAcc Core Requirements, and one of the MAcc areas of specialization.

**MBA—Accounting Specialization**

Students admitted to the MBA Program may earn an Accounting Specialization by completing the MBA Advanced Required Courses, 18 credits (see MBA program description, page 153), and by completing at least 12 approved 6000-level accounting credits as part of their MBA program of study. To qualify for this specialization, students must complete, or have previously completed, the equivalent of ACCT 3110, 3120, 3310, 3410, 4510, 5210 (or 6210), 5220 (or 6220), 5400 (or 6400), 6510, and 6610.

**MBA—Personal Financial Planning Specialization**

Students admitted to the MBA Program may earn a Personal Financial Planning Specialization by completing the MBA Advanced Required Courses, 18 credits (see MBA program description, page 153), and the following: PFP 6060, 6070, 6080; ACCT 3410 or 6400; and BA 3460 or 4460. This specialization satisfies requirements to sit for the national Certified Financial Planner (CFP) examination.

**Financial Assistance**

Financial assistance is available in the form of President’s Fellowships, Graduate School Fellowships, graduate assistantships, and special School of Accountancy scholarships. Applications for assistance should be made after the application for admission to the School of Graduate Studies is filed, but before March 1 of each year. Application forms are available from the School of Accountancy, and the awards are normally announced by April 15.

**Professional Organizations and Activities**

Graduate students are encouraged to participate in professional organizations, such as the USU chapters of Beta Alpha Psi (National Honors Fraternity for Financial Information Professionals), the Institute of Management Accountants, and the Financial Planning Student Association. The Federation of Schools of Accountancy, the American Institute of Certified Public Accountants, the Utah Association of Certified Public Accountants, and other professional organizations sponsor professional activities for accounting graduate students.

**Accountancy Faculty**

**ATK Thiokol Professor**
Richard L. Jenson, systems

**Larzette G. Hale Professor**
I. Richard Johnson, financial, business combinations

**Richard C. and Vera C. Stratford Professor**
David H. Luthy, systems

**Arthur Andersen Alumni Professor**
Richard L. Ratliff, auditing, financial, internal audit

**Ernst & Young Professor**
Clifford R. Skousen, international, managerial, financial

**Arthur Andersen Executive Professor**
Jay H. Price, Jr., financial, governmental, business combinations

**Adjunct Professor**
M. Kay Jeppesen, government contract accounting and administration

**Professors Emeritus**
James W. Brackner
Frank A. Condie
Larzette G. Hale

**Associate Professor**
Irvin T. Nelson, accounting education, financial, managerial

**Assistant Professors**
Cindy Durtschi, financial, forensic
Rosemary R. Fallerton, financial, managerial
E. Vance Grange, financial planning and tax
Garth F. Novack, tax

**Lecturers**
Cassy J. H. Budd, tax and financial
Jack W. Peterson, financial
Franklin D. Shuman, financial, managerial, governmental, business combinations
Dale G. Siler, business law and tax

**Course Descriptions**

Accounting (ACCT), pages 329-330
Personal Financial Planning (PFP), pages 456-457
Aerospace Studies

Department Head: Lt. Colonel Jeffery S. Bateman
Location: Military Science 107
Phone: (435) 797-8723
FAX: (435) 797-8733
E-mail: afrotc@hass.usu.edu
WWW: http://www.usu.edu/afrotc

Undergraduate Programs

Objectives

Air Force ROTC provides educational experiences that develop skills and attitudes vital to the career of an Air Force officer. The purpose of the course is to give an understanding of the mission and the global responsibilities of the United States Air Force. The academic phase develops background in national and international affairs to help understand and evaluate world events.

In addition, the curriculum includes experiences designed to stimulate and develop an interest in the Air Force (e.g., orientation flights and visits to Air Force bases); opportunities to apply the principles of leadership, human relations, management, and staff work in practical situations; and other related experiences.

Requirements

Physical Fitness and Medical. All students must meet the physical fitness and medical standards for general military service.

Age Limitations. To qualify as a pilot or navigator, students must be able to finish the aerospace studies program and graduate from the University before age 29 years. Other students must complete the military program and graduate from the University prior to reaching the age of 30. Age waivers are available up to age 35.

Academic Requirements. Successful completion of the four-, three-, two-, or one-year Air Force ROTC program is required to be commissioned as a Second Lieutenant in the U.S. Air Force. Aerospace Studies classes are taken in addition to the classes required for a bachelor’s degree. In some cases, ROTC classes may be taken in conjunction with a master’s degree program. The program taken is based on the number of years remaining until graduation (e.g., a transfer student with two years remaining until graduation would enroll in the two-year program). The courses, along with the normal schedule for taking them for each of the programs, are listed below:


One-Year Program. AS 3500, 4010, 4110, 4020, 4120.

Summer Training. AS 3500 is a prerequisite for cadets entering the Air Force ROTC two-year program. Training will be given at an Air Force base and will last five weeks. Up to 5 university credits may be granted for this training.

All cadets in the three- and four-year programs will attend a four-week summer training camp. Attendance at this camp is usually between the sophomore and junior year at a selected Air Force base. Up to 4 credits may be granted for this training.

Leadership Laboratory. A Leadership Laboratory period is required each week during the fall and spring semesters for each year of aerospace studies. Interested students should check the current Schedule of Classes for the Leadership Laboratory schedule.

Minor. A minor in Aerospace Studies may be awarded upon completion of commissioning requirements.

Veterans. A veteran may apply for the Air Force ROTC program if he or she can complete the program prior to reaching age 30, with a year for year waiver up to age 35 for each year of active duty service. (The waiver does not apply to the maximum age at graduation to enter flight training of 29.) The general military course (first two years) may be waived for prior military service. However, veterans must successfully complete AS 3400 prior to entering the two-year program.

Scholarships and Financial Aid

Scholarships. Air Force ROTC scholarships are available on a competitive basis. These scholarships pay all or part of tuition and fees, a textbook allowance, and a monthly nontaxable stipend during the school year. High school seniors must apply for four-year scholarships prior to December of their senior year. In-college scholarships can be applied for while enrolled in Air Force ROTC.

Uniforms and Texts. All Air Force ROTC texts and uniforms are furnished at no expense to the student.

Miscellaneous Information

Career Opportunities. To meet the challenges, keep up with technological advancements, and explore the opportunities of the ever-broadening horizons in the aerospace age, officers possessing a variety of skills are required by the Air Force. Interested students should contact the Aerospace Studies Department for information on the Air Force career opportunities related to their academic major.
Aerospace Studies Faculty

Professor
Lt. Colonel Jeffery S. Bateman

Assistant Professors
Captain James Lovewell, Commandant of Cadets
Major Walter D. Martin, Unit Admissions Officer

Information Manager
Staff Sergeant Holly A. Huff

Director of Personnel
Senior Airman Jessica L. Bruckner

Course Descriptions
Aerospace Studies (AS), page 340
Agricultural Systems Technology and Education

Department Head: Gary S. Straquadine
Location: Agricultural Systems Technology and Education 101C
Phone: (435) 797-2230
FAX: (435) 797-4002
E-mail: garys@cc.usu.edu
WWW: http://www.aste.usu.edu

Agricultural Systems Technology and Agricultural Education
Advisor: Eric B. Worthen, ASTE 117, (435) 797-7091, eric.worthen@usu.edu

Agricultural Machinery Technology Advisor: Evan P. Parker, ASTE 137, (435) 797-1928, epparker@cc.usu.edu

Family and Consumer Sciences Education Advisor:
Betty J. Murri, Family Life 303A, (435) 797-1565, betty.murri@usu.edu

Degrees offered: Bachelor of Science (BS) in Agricultural Education; BS, Master of Science (MS) in Agricultural Systems Technology; BS in Family and Consumer Sciences Education

Undergraduate emphases: BS—Agricultural Systems Technology: Agribusiness and Agricultural Mechanization

Graduate specializations: MS—Agricultural Extension Education, Agricultural Mechanization, Family and Consumer Sciences Education and Extension, International Agricultural Extension, and Secondary/Postsecondary Agricultural Education

One-year Certificate and Associate of Applied Science (AAS): Agricultural Machinery Technology

Requirements

Departmental Admission Requirements. Admission requirements for the Department of Agricultural Systems Technology and Education are the same as those described for the University on pages 15-18. Students in good standing may apply for admission to the department.

Bachelor of Science in Agricultural Education. Preparation in Agricultural Education includes technical agriculture, economics, and business. Students selecting the teaching option will also enroll in principles and techniques of teaching courses.

Students interested in teaching agricultural production and processing, agricultural mechanics, horticulture, or natural resources will be guided into areas of their major interest. Agricultural backgrounds or summer agricultural experiences are necessary for teacher certification.

An application for admission to teacher education should ordinarily be completed before the junior year (see College of Education and Human Services requirements, page 104). Approval for admission to teacher education is a prerequisite to enrollment in education and psychology courses. A 2.75 GPA is required for admission to the teacher education program.

Requirements for the Bachelor of Science in Agricultural Education are listed briefly. For more detailed information on courses and the recommended sequence for taking them, see the major requirement sheet available from the Agricultural Systems Technology and Education Department.

The Agricultural Education major involves four teaching areas, which correspond with the Utah agricultural education program model design. Students must complete the University Studies requirements (see pages 42-49). In addition, students must complete the following courses in preparation for teacher licensure: SCED 3100, 3210, 4200, 4210; SPED 4000; and ASTE 2710, 3240, 3300, 3620, 4150, 4300, 5500, 5630. An Instructional Technology course must also be taken (contact departmental advisor to determine which course to take).

All students in the Agricultural Education major will complete a core of technical agricultural courses to include ASTE 1010, 3050, 3080; ADVS 1110; BIOL 1110, 1210; CHEM 1110; and SOIL 3000. Students are required to designate a program emphasis for the following areas: Production and Processing; Agricultural Systems; Horticulture; and Natural Resources. Approximately 50 credits in a technical agriculture specialization are required in each of the four program area choices. All students who seek an agricultural education teaching position in Utah are encouraged to complete the biological science teaching endorsement, which includes an additional 19 credits.

Bachelor of Science in Agricultural Systems Technology (AST). This major has two emphases: Agribusiness and Agricultural Mechanization. Preparation in either emphasis includes technical agriculture, economics, and business. The agricultural mechanization emphasis requires additional courses in technical electives and communication skills development.

Undergraduate Programs

Objectives

The programs offered in the Agricultural Systems Technology and Education Department are for students who are preparing for positions as family and consumer sciences or agricultural education teachers, as well as for positions in family and consumer sciences education or agricultural extension, agricultural mechanization, agribusiness, and agricultural production and management.

The facilities for these programs include laboratories with specially designed equipment for practical instruction in agricultural systems and mechanization, including computer applications, agribusiness, agricultural buildings, engines, electricity, hydraulics, machinery, and repair welding. Family and Consumer Sciences Education students use laboratories equipped for instruction in secondary education, clothing production, textile science, early childhood, nutrition, and interior design.
The Bachelor of Science in Agricultural Systems Technology, Agribusiness Emphasis, includes the following courses: ASTE 1010, 2200, 2830, 3030, 3050, 3080, 3090, 3100, 4100, 4900, 5260; ACCT 2010; CHEM 1110; ECON 1500, 3030, 3050; MATH 1050; SOIL 3000; STAT 2300; and 24 credits of departmental electives. Students will complete a minor in Business or Agribusiness. Additional requirements in Animal Science; Plant and Soil Sciences; and Forest, Range, and Wildlife Sciences must also be met. In addition, students must complete the University Studies Requirements.

Bachelor of Science in Agricultural Systems Technology, Agricultural Mechanization Emphasis, includes the following courses: ASTE 1010, 2200, 2830, 3030, 3050, 3080, 3090, 3100, 4100, 4900, 5260; ACCT 2010; CHEM 1110; ECON 1500, 3030; MATH 1050; and SOIL 3000. Students must also fulfill University Studies requirements and complete designated electives.

Bachelor of Science in Agricultural Systems Technology and Agribusiness includes the following courses: ASTE 1010, 2200, 3030 (or 4100), 3050, 3090, 3200 (or 3080), 3600, 5260; ECON 1500, 1550, 3030, 3050, 4010, 4030, 5030, 5050, 5350; ACCT 2010, 2020, MATH 1050, 1100; MHR 2990; and STAT 2300. Students must also complete University Studies requirements.

The Associate of Applied Science Degree in Agricultural Machinery Technology requires 60 semester credits that include a minimum of 6 credits of University Studies classes, 38 credits in Agricultural Mechanization, and 6-10 credits in business and related classes. Required courses include: ASTE 1010, 1120, 1130, 1610, 1620, 2200, 3030, 3080, 3090, 3600, 3720, and 3730.

Agricultural Machinery Technology Certificate. This one-year agricultural program meets the needs of persons interested in employment opportunities with agricultural dealerships and companies in the areas of parts and service, as well as with farm suppliers, feed and fertilizer agencies, corporate farms and ranches, and other related industries. The vocationally oriented agricultural technology program includes a cooperative occupational experience placement at the end of the first year of instruction.

Requirements for the one-year program include a minimum of ASTE 1010, 1120, 1130, 1610, 1620, 2200, 3030, 3080, 3090, 3600, 3720, 3730. See major requirement sheet available from the department for more information.

Minor in Agricultural Systems Technology. A minimum of 18 credits approved by a faculty advisor are required.

Bachelor of Science in Family and Consumer Sciences Education (FCSE). This major provides professional preparation for teaching Family and Consumer Sciences Education and Occupational Family and Consumer Sciences Education in public schools, or for employment as a family and consumer scientist in business or government agencies, and extension. Many states, including Utah, require a master’s degree to work for extension.

This composite major includes study in nutrition and food sciences, family and human development, interior design, housing, apparel and textiles, and consumer sciences, plus professional education courses.

Student teaching in secondary public schools is required. Internships in extension or business are available.

The Bachelor of Science in Agricultural Systems Technology, Agricultural Extension Education, includes the following courses: ASTE 1010, 2200, 2830, 3030, 3050, 3080, 3090, 3100, 4100, 4900, 5260; ACCT 2010; CHEM 1110; ECON 1500, 3030, 3050; MATH 1050; SOIL 3000; STAT 2300; and 24 credits of departmental electives. Students will complete a minor in Business or Agribusiness. Additional requirements in Animal Science; Plant and Soil Sciences; and Forest, Range, and Wildlife Sciences must also be met. In addition, students must complete the University Studies Requirements.

Bachelor of Science in Agricultural Systems Technology, Agricultural Mechanization Emphasis, includes the following courses: ASTE 1010, 2200, 2830, 3030, 3050, 3080, 3090, 3100, 4100, 4900, 5260; ACCT 2010; CHEM 1110; ECON 1500, 3030; MATH 1050; and SOIL 3000. Students must also fulfill University Studies requirements and complete designated electives.

Bachelor of Science in Agricultural Systems Technology and Agribusiness includes the following courses: ASTE 1010, 2200, 3030 (or 4100), 3050, 3090, 3200 (or 3080), 3600, 5260; ECON 1500, 1550, 3030, 3050, 4010, 4030, 5030, 5050, 5350; ACCT 2010, 2020, MATH 1050, 1100; MHR 2990; and STAT 2300. Students must also complete University Studies requirements.

The Associate of Applied Science Degree in Agricultural Machinery Technology requires 60 semester credits that include a minimum of 6 credits of University Studies classes, 38 credits in Agricultural Mechanization, and 6-10 credits in business and related classes. Required courses include: ASTE 1010, 1120, 1130, 1610, 1620, 2200, 3030, 3080, 3090, 3600, 3720, and 3730.

Agricultural Machinery Technology Certificate. This one-year agricultural program meets the needs of persons interested in employment opportunities with agricultural dealerships and companies in the areas of parts and service, as well as with farm suppliers, feed and fertilizer agencies, corporate farms and ranches, and other related industries. The vocationally oriented agricultural technology program includes a cooperative occupational experience placement at the end of the first year of instruction.

Requirements for the one-year program include a minimum of ASTE 1010, 1120, 1130, 1610, 1620, 2200, 3030, 3080, 3090, 3600, 3720, and 3730. See major requirement sheet available from the department for more information.

Minor in Agricultural Systems Technology. A minimum of 18 credits approved by a faculty advisor are required.

Bachelor of Science in Family and Consumer Sciences Education (FCSE). This major provides professional preparation for teaching Family and Consumer Sciences Education and Occupational Family and Consumer Sciences Education in public schools, or for employment as a family and consumer scientist in business or government agencies, and extension. Many states, including Utah, require a master’s degree to work for extension.

This composite major includes study in nutrition and food sciences, family and human development, interior design, housing, apparel and textiles, and consumer sciences, plus professional education courses.

Student teaching in secondary public schools is required. Internships in extension or business are available.

The suggested sequence for completing required coursework for the Family and Consumer Sciences Education Major includes the following courses.

**Freshman Year:** ENGL 1010; FCHD 1500; FCSE 2040, 2510; ID 1750, 1790; MATH 1010, 1050; NFS 1020; USU 1320. Computer and Information Literacy (CIL) requirements must be met or waived. Students should also register for the child development lab.

**Sophomore Year:** CHEM 1110, 1120; ENGL 2010; FCHD 2400, 2450; FCSE 3030, 3040; NFS 1240, 2020; USU 1300. Students should apply to the Secondary Teacher Education Program (STEP) during the spring of their sophomore year.

**Junior Year:** FCHD 3350, 4550; FCSE 3060, 3300, 3400; NFS 4070; SCED 3100, 3210; SPED 4000; Instructional Technology course (contact advisor for course number); DHA course.

**Senior Year:** FCHD 4960; FCSE 4300, 4400, 5500, 5630; SCED 4200, 4210.

### Graduate Programs

#### Admission Requirements

See general admission requirements, pages 90-91. Applications will be considered throughout the year. However, students who wish to be considered for financial aid must apply by February for the coming academic year. No application will be considered until all required information arrives at the office of the School of Graduate Studies.

#### Course Requirements

**Master of Science.** The MS program requires the completion of a minimum of 30 credits beyond the bachelor’s degree. These credits must be approved by a supervisory committee. However, to optimize a student’s academic experiences, 36 credits are recommended. A 10- to 15-credit core curriculum is required and includes courses in research/statistics and completion of a Plan A thesis for 6 credits or a Plan C program with a minimum of 33 credits. Students are also expected to select and complete an area of specialization. To complete all requirements, students should expect to be enrolled for a minimum of two semesters.

In the Family and Consumer Sciences Education and Extension specialization, a Plan B option is available. This plan involves 30 credits of instruction (including a minimum of 3 thesis credits) and the development and presentation of a creative project.

The following four specializations are available for the MS in Agricultural Education:

- **Agricultural Extension Education** specialization provides a program for individuals interested in cooperative extension work. The curriculum for the program includes coursework related to managing people; planning, implementing, and evaluating programs to promote technology transfer (adult education); understanding research techniques relevant to agricultural education; and the managing of fiscal affairs.

Electives are selected from each of the following departments: Agricultural Systems Technology and Education; Animal, Dairy and Veterinary Sciences; Economics; Biology; Plants, Soils, and Biometeorology; Forest, Range, and Wildlife Sciences; and Instructional Technology.
The purpose of the Family and Consumer Sciences Education and Extension specialization is to expand academic preparation in an area of study such as family studies, housing, textiles and clothing, nutrition and food sciences, and management of personal resources. This specialization places emphasis on teaching and curriculum/program development and/or Extension. Students are prepared for community professions, including secondary teaching (since students earn a teaching license), urban and rural extension, social science, and business. Study may lead to supervisory and administrative positions in business, technical schools, and applied technology colleges, or to consulting positions in mass media and industry. The master’s degree does not result in a teaching license for public schools.

The Agricultural Mechanization Systems specialization allows for theoretical and applied study in the mechanical systems used in agricultural production, processing, and distribution. The curriculum for this program emphasizes coursework related to managing people; planning, implementing, and assessing systems used in the production and processing of agricultural products or services; and understanding research techniques used in agricultural systems technology. The remainder of the program is designed to be interdisciplinary, depending on student needs.

The International Agricultural Extension specialization was developed to prepare agriculturally educated people to perform administrative and supervisory roles in less-developed countries. The curriculum for this program includes coursework related to managing people; planning, implementing, and evaluating programs to promote technology transfer; and managing fiscal affairs. Electives are selected from each of the following departments: Agricultural Systems Technology and Education; Animal, Dairy and Veterinary Sciences; Economics; Biology; Plants, Soils, and Biometeorology; and Instructional Technology.

Research

The Utah Agricultural Experiment Station, a component of the College of Agriculture, supports graduate work in several areas of Agricultural Systems Technology and Education. Other state and federal agencies also support research in agricultural systems.

Financial Assistance

Both departmental and formal grant support are available to graduate students and are awarded on a competitive basis. Students requesting financial support should apply to the department.

Research assistantships are available through faculty members who have ongoing projects with the Utah Agricultural Experiment Station or who hold special research grants from the University, private companies, or state-federal agencies. Acceptance to pursue graduate study does not guarantee the student financial assistance.

Requirement Changes

Graduation requirements described in this catalog are subject to change. Students should check with their departments concerning possible changes.

Agricultural Systems Technology and Education Faculty

Professors
Robert L. Gilliland, extension
Bruce E. Miller, agricultural systems and mechanization
Weldon S. Sleight, teacher preparation
Gary S. Straquadine, agricultural education/extension

Adjunct Professor
Kevin C. Kesler, 4-H and youth development programs

Professor Emeritus
Gilbert A. Long, agricultural education

Associate Professor
F. Richard Beard, research and extension, agricultural engineering

Assistant Professors
John D. Harrison, agricultural waste management/extension specialist
Rhonda L. Miller, sustainable agriculture/agricultural systems
Rudy S. Tarpley, agricultural education, teacher preparation
Nancy Thompson, family and consumer sciences education

Instructor
Betty J. Murri, apparel and textiles

Lecturers
Evan P. Parker, agricultural technology and machinery management
Daryl L. Reece, agricultural engineering and equipment repair
Afifa Sabir, education and outreach, Biotechnology Center
Julie P. Wheeler, family and consumer sciences education

Course Descriptions

Agricultural Systems Technology and Education (ASTE), pages 340-342
Family and Consumer Sciences Education (FCSE), pages 397-398
Animal, Dairy and Veterinary Sciences

Department Head: Mark C. Healey
Location: Agricultural Science 230
Phone: (435) 797-2162
FAX: (435) 797-2118
E-mail: advsdept@advs.usu.edu
WWW: http://www.advs.usu.edu

Associate Head: Thomas D. Bunch, Agricultural Science 220,
(435) 797-2148, tombunch@cc.usu.edu

Undergraduate Advisor for Animal Science and Dairy Science majors:
Tami Spackman, Agricultural Science 242, (435) 797-2150,
tami.spackman@usu.edu

Undergraduate Advisor for Bioveterinary Science majors:
Stanley D. Allen, Veterinary Science 211, (435) 797-1900,
sallen@cc.usu.edu

Graduate Programs Coordinator: Jeffrey L. Walters,
Agricultural Science 246, (435) 797-2161,
jeffrey.walters@usu.edu

Degrees offered: Bachelor of Science (BS) and Bachelor of Arts (BA) in Animal Science, Dairy Science, Bioveterinary Science; Master of Science (MS) in Animal Science, Bioveterinary Science, Dairy Science; Doctor of Philosophy (PhD) in Animal Science and Bioveterinary Science; MS and PhD degrees in Toxicology are available through the Interdepartmental Toxicology program

Undergraduate Emphases: Animal Science—Animal Industries, Biotechnology, Science; Dairy Science—Dairy Industries, Science; Bioveterinary Science—Biotechnology

Graduate Specializations: Animal/Dairy Science—Animal Nutrition, Breeding and Genetics, Molecular Biology, Reproductive Biology, Animal or Dairy Management (MS only); Bioveterinary Science (PhD only)—Parasitology, Toxicology, Virology

Certificate Program: Dairy Herdsman

Preventive care bachelor’s degree programs are intended to prepare students for admission to professional veterinary medical schools and/or graduate study in the biomedical sciences. A preventive bachelor’s degree is considered a nonterminal degree. Preventive students may earn a bachelor’s degree in bioveterinary science, or in the science emphasis of animal science or dairy science with a preventer:ary option.

Instruction in the ADVS Department also encompasses a diversified co-curricular program including allied clubs, intercollegiate livestock judging and rodeo teams, and involvement with their respective professional societies.

Animal and Dairy Sciences

Science Emphasis. Designed for students desiring education beyond the bachelor’s degree, this emphasis is a preparatory course of study for students who have a career interest in the following areas: animal research in genetics; reproductive biology; nutrition (public or private sector); biotechnology; teaching; and advanced degrees (MS, PhD, and veterinary school). The science emphasis requires an especially close student-advisor relationship, as postgraduate training is considered essential for professional success in these disciplines.

Animal (Dairy) Industries Emphasis. This emphasis is designed to prepare students who earn a bachelor’s degree for the broadest range of career opportunities in animal agriculture. The Animal Industries Emphasis stresses both traditional skills in the areas of basic and applied animal sciences and related learning experiences in the other agricultural sciences, as well as in the areas of business administration, economics, and management. Students can select either an advanced research project or an internship experience in the animal industries as an integral component of their program of study during the junior or senior year. Graduates from this emphasis may seek career opportunities in production animal agriculture in farm or ranch management, in state or federal government agricultural agencies, and in fields that support or interact with animal agriculture, such as corporate agribusiness, wholesale and retail marketing and sales, economics, accounting, agricultural real estate sales and appraisal, financing and credit operations, public policy, agricultural media and communications, insurance, commodity trading, animal product processing, agricultural cooperatives, and producer/commodity associations.

Animal and Bioveterinary Sciences

Biotechnology Emphasis. This emphasis is designed to prepare students who earn a bachelor’s degree for careers in the expanding biotechnology industry or for graduate study in related fields. Nationwide there are more than 1,200 biotechnology/biopharmaceutical companies, with additional start-ups developing every year. Recent increases in federal funding for research in animal biotechnology, along with heightened private sector activity, have led to unprecedented career prospects in molecular biology, genomics, bioinformatics, developmental biology, and associated areas. USU has made a major commitment to biotechnology since 1986. The ADVS Department is heavily involved in biotechnology research and teaching, and the resources of the Center for Integrated BioSystems are also available to support this emphasis.

Undergraduate Programs

Objectives

Bachelor’s degree students majoring in animal or dairy sciences may choose a program from two career emphasis areas: Science or Animal (Dairy) Industries. The curricula in the animal and dairy sciences are designed to prepare students for a broad base of rewarding careers in the dynamic disciplines of animal agriculture. Teaching and research facilities, flocks, and herds are available for “hands-on” practical laboratory experiences, along with faculty-mentored research projects. An assigned faculty advisor helps students develop, arrange, and expedite their personal undergraduate program.
That students who enjoy lab work and would like to have a BS degree with good job opportunities, and still qualify to apply to veterinary school, may elect to add the Biotechnology Emphasis in Bioveterinary Science to their degree.

Preveterinary Program

Preveterinary students take courses required by veterinary schools. Classes should be planned to assure meeting the current requirements for the veterinary schools to which the student plans to apply for admission. In most cases, preveterinary preparation requires a major portion of three academic years. Students accepted into veterinary school prior to completion of their BS degree may transfer credits back to USU for completion of their BS degree in bioveterinary science.

Utah participates in WICHE (Western Interstate Commission for Higher Education) which provides state subsidization of Utah resident (5 years or longer at the time of application) students entering any veterinary school that is a WICHE-participating school. At present this includes Colorado State University, Washington State University, Oregon State University, and University of California at Davis. Students may also apply to other veterinary schools as out-of-state applicants.

Vocational Subbaccalaureate Program

Dairy Herdsman Certificate. Students completing the required courses and experience in the Dairy Herdsman’s curriculum usually find employment with a commercial or family dairy. Some enter dairy-related businesses. Students desiring to continue their dairy education may complete a BS degree in three additional years with proper planning and suitable academic performance.

Requirements

Departmental Admission Requirements. Undergraduate admission requirements for the animal science and dairy science programs are the same as those described for the University. Students in good standing may apply for admission to the department. New freshmen admitted to USU in good standing qualify for admission to the bioveterinary science major. Students with less than 60 semester credits transferring from other institutions need a 2.2 transfer GPA, and students with less than 60 semester credits transferring from other USU majors need a 2.0 GPA for admission to the bioveterinary science major. All students with 60 or more semester credits need a 2.75 total GPA to be admitted to advanced standing in bioveterinary science.

Departmental Standards. The following minimum requirements apply to all students working toward any bachelor’s degree offered by the ADVS department. Bachelor’s degree candidates must comply with these requirements in order to graduate: (1) courses required for the major may be repeated only once to improve a grade, and (2) courses required for the major may not be taken for pass-fail credit. In addition to these requirements, animal science and dairy science bachelor’s degree candidates must attain a grade point average of at least 2.50 in the ADVS courses specified as requirements in their respective emphasis curricula to graduate. Animal science and dairy science degree candidates must attain an overall GPA of at least 2.50 to graduate. Bioveterinary science degree candidates must attain an overall GPA of at least 3.0 to graduate, except for students with a biotechnology emphasis, who must attain an overall GPA of at least 2.50 to graduate.

Graduation Requirements

Courses required and recommended for meeting BS degree graduation requirements in the various options available in the department are as follows.

Animal/Dairy Science: Science Emphasis

The following courses are required for students pursuing a bachelor’s degree in the animal science or dairy science Emphasis. Courses followed by (A) are required for Animal Science majors. Courses followed by (D) are required for Dairy Science majors. ADVS 1110, 1910, 2200, two 2000-level species production practices courses (A), 2130 (D), 3000, 3500, 3510, 4200, 4250 or 4800, 4560, 4910, 4920, two 5000-level species management courses (A), 5130 (D); ASTE 3090 (D); BIOL 1210, 1220, 3200, 3300; CHEM 1210, 1220, 1230, 1240, 2310, 2320, 2330, 3700; MATH 1050; MATH 1100 or 1210; STAT 2000.

Animal/Dairy Science: Industries Emphasis

The following courses are required for students pursuing a bachelor’s degree in the animal science or dairy science Animal (Dairy) Industries Emphasis. Courses followed by (A) are required for Animal Science majors. Courses followed by (D) are required for Dairy Science majors. ADVS 1110, 1250, 1910, 2200, three 2000-level species production practices courses (A), 2130 (D), 3000, 3500, 3510, 3650 (A), 4200, 4250 or 4800, 4560, 4910, 4920, two 5000-level species management courses (A), 5030 (A, 5130 (D), 5520 (A); ASTE 3050; BIOL 1010; CHEM 1110, 1120; ECON 1500; MATH 1050; NFS 5020 (D); SOIL 2000 or 3000 (D); STAT 1040 or 2000 or 2300. In addition, students majoring in this emphasis must choose three directed elective courses in animal management from the following: ADVS 3300, 5030 (D), one 5000-level species management course in addition to the two courses required for the major (A), 5520 (D), 5550, 5650 (A); ASTE 3090 (D), 3600 (D), 4100 (D); NFS 5020 (A); PLSC 4320; FRWS 4000 (A); SOIL 2000 or 3000 (A). Furthermore, students majoring in this emphasis must choose four directed elective courses in industry from the following: ACCT 2010; ASTE 3090 (A); BA 3400, 3500, 3700; ECON 2010, 3030, 3050, 4010, 4030, 5030; MHR 2990, 3110.

Animal/Bioveterinary Science: Biotechnology Emphasis

The following courses are required for students pursuing a bachelor’s degree in the animal science or bioveterinary science Animal/Bioveterinary Science: Biotechnology Emphasis. Courses followed by (A) are required for Animal Science majors. Courses followed by (B) are required for Bioveterinary Science majors. ADVS 1110, 1910 (A), 1920 (B), 2040, 2200, 3200, 4200, 4910 (A), 4920 (A), 5160 (B), 5240 (B), 5260 (B), two 5000-level Methods in Biotechnology courses (A); BIOL 1210, 1220, 3200, 3300; CHEM 1210, 1220, 1230, 1240, 2310, 2320, 2330, 3700; MATH 1050 (A), 1100; STAT 1040 or 2000. In addition, students majoring in this emphasis must complete 12 credits in directed elective courses from the following: ADVS 3000, 3500, 3510, 4200, 4560, 5490, 5700 (B), 5820, one additional 5000-level Methods in Biotechnology course (A); BIOL 4200, 5150; PHYX 2110, 2120.

Bioveterinary Science

This curriculum includes those courses required for application to WICHE veterinary schools after three years of study. Requirements are as follows:

College of Agriculture
Requirements of more than one ADVS minor.

A specific course may not be used to fulfill the requirements of more than one ADVS minor.

Admission Requirements

Graduate Programs

Admission Requirements

In addition to the general admission requirements (see pages 90-91), applicants should have satisfactory (3.0 GPA or better) grades in completion of previous degree programs. GRE exam, verbal, quantitative, and analytical scores at or above the 40th percentile are required.
The applicant for a graduate program in animal or dairy science should have completed a BS undergraduate program similar to the USU animal science or dairy science Science Emphasis BS degree. This background would include the following courses and their prerequisites: BIOL 1210 and 1220 or their equivalents; CHEM 2310 and 2320 or their equivalents; MATH 1050 and STAT 1040 or their equivalents. Applicants with deficiencies in these areas may be admitted to the graduate program subject to the completion of remedial coursework specified by the department. Other preparatory courses may be specified by the student’s supervisory committee.

Applicants to the bioveterinary science graduate program should have a degree in bioveterinary science, biology, microbiology, chemistry, or one of the animal sciences. Preveterinary students oriented towards graduate research studies are strongly encouraged to apply.

Degree Programs

Master of Science. The MS is available to qualified students with bachelor’s degrees. MS degrees are offered by the department in animal science and dairy science, with five specializations in each, and in bioveterinary science.

Doctor of Philosophy. The PhD degree in animal science is offered with four specializations. It is available to qualified students with master’s degrees in related disciplines. Exceptionally well-qualified applicants may be considered for admission to a postbaccalaureate PhD program. The PhD degree in bioveterinary science has three specializations and is available to qualified students holding a DVM or a master’s degree in a related discipline, or exceptionally well-qualified postbaccalaureate applicants. The PhD is a terminal research degree that is awarded upon successful completion of a comprehensive program of coursework and original research in an approved area of specialization.

Specializations in Animal/Dairy Science

Animal Nutrition. This specialization involves studies in biochemistry, principles of nutrition, animal management, nutritional physiology, and animal feedstuffs. Cooperation with producers, feed industry groups, other departments of the University, and USDA collaborators, along with research funding from private industry, strengthens the graduate program in this area.

Course requirements: Students in the MS program are required to complete the following courses: ADVS 6800, any four ADVS graduate nutrition courses at the discretion of the supervisory committee; one 5000-level Statistics course. Students in the MS program are required to complete or to have completed CHEM 3700 or its equivalent, but will not receive graduate credit for it. Students in the PhD program are required to meet or have met all MS program requirements, as well as to complete the following coursework: ADVS 6800 (additional to the MS requirement), ADVS graduate nutrition courses as directed by the supervisory committee; CHEM 5700, 5710; one 5000-level Statistics course (additional to the MS requirement); additional coursework at the discretion of the supervisory committee to a total of at least 30 credits.

Breeding and Genetics. This specialization involves studies in quantitative genetics, applied animal genetics, statistics, and animal management. Cooperation with other departments, particularly the Department of Biology and the Department of Mathematics and Statistics, and collaboration with other research institutions, livestock producers, and commercial animal breeding companies broadens the resources of this graduate program.

Course requirements: Students in the MS program are required to complete the following courses: ADVS 6300, 6800; BIOL 6170, 6280; STAT 5110; and a minimum of 6 credits in the student’s area of study. Students in the PhD program are required to complete the following courses in addition to those required for the MS degree: ADVS 6800, 6820; MATH 5710, 5720; STAT 6710, 6720.

Molecular Biology. This specialization involves studies in molecular genetics, biochemistry of nucleic acids, cell biology, reproductive physiology, and bioveterinary science. Cooperation with other departments, particularly the Department of Biology and the Department of Chemistry and Biochemistry, the Biotechnology Center, and collaborators at other research institutions allows for a strong graduate program in this area.

Course requirements: Students in the MS program are required to complete the following courses: ADVS 5160 or 5240 or 5260; ADVS 6800; BIOL 4200 or 6210; BIOL 5190; STAT 5200; and a minimum of 6 credits in the student’s area of study. Students in the PhD program are required to complete the following courses in addition to those required for the MS degree: ADVS 6800; CHEM 5700, 5710.

Reproductive Biology. This specialization involves studies in physiology and endocrinology of reproduction; embryo technology, including collection, culture, manipulation, storage, and transfer of embryos; disease transmission, cyto genetics and molecular genetics; and environmental and toxicological influences on reproductive processes and fetal development. Cooperation with other departments and research centers of the University and with USDA collaborators allows for a strong graduate program in this area.

Course requirements: Students in the MS program are required to complete the following courses: ADVS 6200, 6800; BIOL 4200; STAT 5200. Students in the PhD program are required to complete the following coursework additional to the MS requirements: ADVS 6800; BIOL 5150, 6210; CHEM 5700, 5710. Additional coursework for the MS and PhD degree may be required at the discretion of the supervisory committee.

Animal or Dairy Management (MS only). This specialization involves studies in the applications of the principles of genetics, reproductive biology, and nutrition to animal or dairy management at an advanced level. Appropriate emphasis is also placed on statistics, economics and business administration, and range management. The management specialization offers the option of degree programs with or without thesis (Plan A or Plan B). Graduates in management from a program including thesis (Plan A) may pursue advanced studies in more specialized fields. The MS in management without a thesis (Plan B) is considered a terminal degree.

Course requirements: Students choosing either the option with thesis (Plan A) or the option without thesis (Plan B) are required to complete the following courses: ADVS 6200, 6300, 6520 or 6530, 6800; plus one of the following (if comparable course not previously completed at the undergraduate level): ADVS 6090, 6090, 6120, 6130, 6190; one 5000-level Statistics course. Additional courses in related areas will be required as directed by the supervisory committee.

Bioveterinary Science

This degree program involves studies in biochemistry, statistics, pathology, toxicology, virology, parasitology, pharmacology, microbiology, and laboratory animal management. Advanced
Research

The ADVS department conducts a broad range of basic and applied research in the areas of animal reproduction, animal nutrition, livestock and dairy management, animal health, virology, parasitology, toxicology, animal behavior, cytogenetics, and molecular genetics. Department facilities include over 30 research laboratories on campus and at local and regional animal research facilities. There are research herds and flocks of beef and dairy cattle, sheep, and swine housed close to the University. There are additional research units housing beef cattle, sheep, and turkeys located throughout the state. Research in the department is funded by a multimillion dollar budget derived from support by the Utah Agricultural Experiment Station and by substantial outside contracts and grants. Cooperation with other departments and research centers of the University and with federal collaborators enhances the ADVS research and graduate programs. Significant in this regard are the University Center for Integrated BioSystems, the Utah State Animal Disease Diagnostic Laboratories, the Laboratory Animal Research Center, the Center for Environmental Toxicology, the Center for the Genetic Improvement of Livestock, and the on-campus USDA Poisonous Plant Laboratory.

Financial Assistance

Both departmental and research grant support are available to matriculated graduate students on a competitive basis. The department funds a number of graduate assistantships, which are available on a competitive basis to matriculated graduate students who are U.S. citizens, nationals, or residents. Students interested in departmental assistantships may request an application form from the department. Applications for assistantships for the following academic year must be submitted by March 15.

Acceptance to graduate study in the ADVS Department does not constitute a guarantee of financial assistance.

Career Opportunities

Career opportunities are available for students who have earned graduate degrees in the MS and PhD programs offered by the ADVS Department as described below.

Animal and Dairy Science Graduate Degree Programs

Animal Nutrition. Career opportunities exist in extension, university and private research, the commercial animal feedstuffs industry, private consulting firms, and international programs.

Breeding and Genetics. Career opportunities exist in extension university and private research, commercial animal breeding and genetic engineering enterprises, and international programs.

Molecular Biology. Career opportunities exist in university, federal, and private research organizations, and in commercial applications in the rapidly growing area of biotechnology.

Reproductive Biology. Career opportunities exist in extension; university and private research; the pharmaceutical, embryo transfer, and artificial insemination industries; private consultation; and international programs.

Animal or Dairy Management. Career opportunities include extension, private consultation firms, farm and ranch management, sales and service to agricultural producers, agricultural finance, and international programs.

Bioveterinary Science Graduate Degree Programs

Career opportunities in this area exist in research, management, and submanagement positions in public and private health research and testing organizations, and in commercial industries in the health field. Graduates from the MS program may seek admission to advanced degree programs in the biological sciences or veterinary medicine.

Animal, Dairy and Veterinary Sciences Faculty

Trustee Professor

Robert W. Sidwell, virology

Professors

Stanley D. Allen, veterinary diagnostics, laboratory animal management
Clell Y. Bagley, veterinary medicine
Thomas D. Bunch, cytogenetics, embryo biology
Noelle E. Cockett, molecular genetics, identification of genetic markers
Roger A. Coulombe, Jr., veterinary toxicology, molecular biology
Howard M. Deer, pesticides, environmental toxicology
Mark C. Healey, parasitology
Lyle G. McNeal, sheep production, wool science
Kenneth L. White, reproductive physiology, developmental biology

Research Professors

John D. Morrey, virology, transgenic animals
Kamal A. Rashid, in vitro mutagenesis and DNA repair
Donald F. Smee, viral chemotherapy

Adjunct Professors

J. Talmage Huber, dairy nutrition
Lynn F. James, animal physiology
Michael R. Marshall, veterinary medicine
Kanok Pavisuthipaisit, medical science, anatomy
R. Dean Plowman, dairy genetics, management
Rex S. Spendlove, microbiology

Professors Emeriti

Clive W. Arave, behavior, dairy genetics
John E. Butcher, ruminant nutrition
Jay W. Call, veterinary medicine
Warren C. Foote, reproductive physiology
James LeGrande Shupe, veterinary science, comparative clinical medicine
Ross A. Smart, veterinary diagnostic pathology
Norris J. Stenquist, livestock production, nutrition
Wallace R. Taylor, dairy breeding, dairy herd improvement
Don W. Thomas, veterinary medicine

Associate Professors
Thomas J. Baldwin, veterinary diagnostic pathology
Tilak R. Dhiman, dairy nutrition
David D. Frame, poultry production and management
Jeffery O. Hall, veterinary pathology, toxicology
Kenneth C. Olson, range livestock nutrition, management
Lee S. Rickards, molecular genetics, developmental biology
Randall D. Wiedmeier, beef cattle nutrition, management
Allen J. Young, dairy management, reproduction
Dale R. ZoBell, beef cattle production, management

Adjunct Associate Professors
Dale R. Gardner, chemistry/toxicology
Kip E. Panter, animal science/toxicology
Roy W. Silcox, physiology, nutrition
Bryan L. Stegelmeier, pathology
John T. Stellflug, reproductive physiology, biochemistry, statistics
J. Christopher Wilson, veterinary medicine, fisheries

Associate Professor Emeritus
Larry M. Slade, equine nutrition, management

Research Associate Professors
Dale L. Barnard, virology
Ronald L. Boman, dairy nutrition, management

Adjunct Research Associate Professor
Shiguan Wang, cytogenetics, reproductive physiology

Assistant Professors
Ramona T. Skirpstunas, bacterial diseases of fish, veterinary pathology, veterinary laboratory diagnostic medicine
Quinton A. Winger, reproductive physiology, molecular biology

Adjunct Assistant Professors
William E. Day, equine management, reproductive biology
Breck D. Hunsaker, veterinary immunology
Stephen T. Lee, analytical chemistry
Timothy A. McAllister, ruminant nutrition, microbiology

Research Assistant Professor
Jeffrey L. Walters, dairy cattle breeding, statistics

Clinical Assistant Professors
Douglas S. Hammon, clinical veterinarian, dairy reproduction, nutrition
Eleanor P. Jenson, clinical veterinarian, extension veterinarian

Research Assistant Professor Emeritus
Robert E. Warnick, turkey nutrition

Lecturers
Brett R. Bowman, animal science/nutrition
Parl Galloway, animal science, manager of Animal Science Farm
Justin A. Jenson, dairy herdsman coordinator, dairy youth specialist

Course Descriptions
Animal, Dairy and Veterinary Sciences (ADVS), pages 330-333
Aquatic, Watershed, and Earth Resources

Department Head: Chris Luecke  
Location: Natural Resources 210  
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E-mail: chris.luecke@usu.edu  
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Undergraduate Advisors:  
Maureen A. Wagner, Natural Resources 120, (435) 797-2448, maureen@cc.usu.edu  
Stephanie W. Hamblin, Natural Resources 120, (435) 797-2473, stephanie.hamblin@usu.edu

Degrees offered: Bachelor of Science (BS) in Fisheries and Aquatic Sciences; BS in Watershed and Earth Systems; Master of Science (MS) and Doctor of Philosophy (PhD) in Watershed Science; MS and PhD in Ecology; MS and PhD in Fisheries Biology

Graduate specializations: MS, PhD in Ecology—Aquatic Ecology, Conservation Biology, Fisheries Management

Undergraduate Programs

Objectives

The Department of Aquatic, Watershed, and Earth Resources (AWER) offers comprehensive educational opportunities for graduate and undergraduate students in hydrology, geomorphology, biogeochemistry, water quality, watershed management, fisheries, aquatic ecology, remote sensing, and geographic modeling. Departmental faculty provide expertise in fisheries, the hydrologic cycle, conservation biology, restoration and management of aquatic and riparian ecosystems, and in the remote sensing and geographic analysis of the earth’s landcovers. Graduates of departmental programs become scientists and managers for natural resource agencies, professionals with consulting and nonprofit environmental firms, and teachers and researchers at major universities.

Requirements

Departmental Admission Requirements. Admission requirements for the department are the same as those described for the College of Natural Resources (see pages 115-116).

Graduation Requirements. All courses listed as major subject courses must be taken on an A-B-C-D-F basis. A grade of C- or better is required for all AWER courses used to meet the requirements for a major or minor in the department. The grade point average for all courses taught by the College of Natural Resources must be 2.5 or higher.

For information about changes in requirements, course sequence, and scheduling, students should confer with a departmental advisor. The undergraduate program can be readily tailored to individual student needs with the help of a faculty advisor.

Bachelor of Science in Fisheries and Aquatic Sciences. Students must meet the course requirements for University Studies, in addition to the following departmental requirements. The first two years of study include courses designed to give the student a sound scientific background, an introduction to the field of natural resources management, and an introduction to aquatic and earth resources. Some of these courses may be used toward the University Studies requirements, as indicated by the University Studies designations listed in parentheses following the course numbers. Science Foundation courses (35 credits) include: BIOL 1210, 1220 (BLS); CHEM 1210, 1220 (BPS), 1230, 1240; MATH 1050 (QL), 1100 (QL); NR 2220; PHYX 2110; and STAT 3000 (QI). Common Departmental Core courses (19 credits) include: AWER 1020, 3700, 4490, 4930, 4980; and ENVS 5320. Fisheries Courses (19 credits) include: AWER 3100 (DSC/CI), 3110, 4510, 4650, 5200, and 5550. Students must also complete either AWER 5330 or an approved natural resources capstone experience.

In addition to the preceding courses, students in the Fisheries and Aquatic Sciences major must choose a minimum of 24 elective credits. The majority of these elective credits must come from courses directly related to the degree program. All elective courses must be approved by the student’s faculty advisor before enrollment. The following recommended courses will partially satisfy this requirement: AWER 3000, 3820 (QI), 4530, 5150, 5640; and FRWS 4880.

Fisheries Science Minor (18 credits). This minor is designed for students with a strong background in biology. The department head’s approval and a minimum of 18 credits are required. Students must complete the Fisheries Science Core (9 credits) which includes: AWER 3100 (DSC/CI), AWER 3700, and NR 2220. They must also complete 9 credits of Electives, by selecting three courses from the following: AWER 4590, 4650, 5200, 5550, and FRWS 3810.

Bachelor of Science in Watershed and Earth Systems. All Watershed and Earth Systems majors must complete the following Science Foundation courses (19 credits): CHEM 1210, GEOL 1150 (BPS), MATH 1210 (QL), STAT 3000 (QI), and PHYX 2210 (QI). They must also complete the Common Departmental Core (19 credits): AWER 1020, 3700, 4490, 4930, 4980; and ENVS 5320. The following Watershed and Earth Systems courses (18 credits) are also required: AWER 3820 (QI), 4750, 5150, 5170, and SOIL 3000. Students must also complete either AWER 5330 or an approved natural resources capstone experience.

In addition to the preceding courses, 40 elective credits must be completed. The majority of these elective credits must come from courses directly related to the degree program. All elective courses must be approved by the student’s faculty advisor before enrollment. The following lists of recommended courses could be used to satisfy this requirement.
Watershed Science: AWER 4510, 4530, 5200, 5640, 5660; CHEM 1220 (BPS); and FRWS 5350.

Geographic Information Science: AWER 5250, 5760, 5930; MATH 1220 (QL); PHYX 2220 (QI); and STAT 6810.

Watershed Science Minor (15-16 credits). For the Watershed Science minor, students must complete AWER 3700, 4490, 4530, plus two courses selected from the following: AWER 4500, 5150, 5640, 5660.

Geographic Information Science Minor (18-19 credits). For this minor, students must complete the following Watershed and Earth Resources Core Courses (12 credits): AWER 4930, 5930; CS 1700, 1710. Students must also complete 6-7 credits of Electives by selecting two courses from the following: AWER 3900, 5250; FRWS 3750; GEOG 4850.

Career Opportunities

Graduates in Aquatic, Watershed, and Earth Resources occupy an expanding niche in the fields of natural resources and environmental management. Degree holders often work as environmental scientists, hydrologists, fisheries biologists, or specialists in geographic information analysis and remote sensing. With experience and/or advanced degrees, AWER graduates may do natural resource assessment, management planning, and resource impact analysis.

Federal agencies, such as the Forest Service, Fish and Wildlife Service, Geological Survey, Bureau of Land Management, Environmental Protection Agency, National Park Service, Bureau of Reclamation, and National Marine Fisheries Service, hire graduates of AWER academic programs. Graduates also find employment with state natural resource agencies, nongovernmental conservation organizations, and private consulting firms.

Financial Assistance

The main sources of undergraduate financial assistance include University scholarships, grants-in-aid, work-study, and loans. In addition, more than 30 scholarships are offered for eligible students in the College of Natural Resources.

Scholarships are awarded for scholastic and professional achievements at the department, College of Natural Resources, and University level. For more information, contact College of Natural Resources academic advisors. Grants-in-aid and work-study are available from the Financial Aid Office. In addition, departmental faculty often employ undergraduate students to assist in research, extension, and outreach projects. These projects often involve field and laboratory data collection, data management and analysis, and report preparation.

Additional Information

For additional information about the Bachelor of Science requirements, course sequencing, and departmental specialization options and their related coursework, as well as updated information describing current programs and courses offered by the Department of Aquatic, Watershed, and Earth Resources, visit the Aquatic, Watershed, and Earth Resources main office, Natural Resources 210, or visit http://www.cnr.usu.edu/awer.

Graduate Programs

Admission Requirements

General admission requirements apply, in addition to the requirements which follow. Although admission to the graduate program is treated on an application-by-application basis, the following are usually required: (1) a bachelor’s degree from an accredited college or university; (2) a GPA of 3.2 or better (out of 4.0) for the most recent two years of academic coursework; (3) combined verbal and quantitative GRE scores above the 40th percentile; and (4) a letter of “interest and purpose” detailing the applicant’s reasons for seeking an advanced degree. Foreign students should have a TOEFL score of at least 550. The written statement of interest helps match applicants with faculty advisors. A faculty member must agree to serve as the major professor in order for an applicant to be accepted. Prospective students are encouraged to contact faculty members early in the application process to investigate mutual interests, projects, and prospects for financial support.

Previous training in the field is not a prerequisite for admission, although a sound background in the physical and biological sciences is recommended. Successful applicants without the necessary background will be expected to obtain it in the course of their studies for the advanced degree.

Degree Programs

A Master of Science degree in Fisheries Biology or Watershed Science, with emphasis on the management of fisheries or watershed resources directed toward decision-making roles in natural resource agencies, is offered for the applicant with previous agency experience and for the student motivated toward an administrative career. A Doctor of Philosophy degree in Fisheries Biology, Ecology, or Watershed Science is provided for students interested in pursuing a research or academic career.

A thesis or dissertation based on original research performed by the student is required. Written comprehensive examinations are required of all students pursuing the PhD degree. At the discretion of the student’s graduate supervisory committee, an additional oral examination may be required.

The minimum requirement for an MS degree is 30 credits, including at least 24 credits in residency and 6 credits of thesis research. The minimum requirement for a PhD degree is 60 approved graduate credits in addition to an MS degree, or 90 approved graduate credits with no MS degree. At least one year (a minimum of 32 credits), including a minimum of two consecutive semesters, of full-time registration must be in residence at USU.

With committee approval, graduate credit may be transferred from accredited graduate schools, provided the minimum residency requirement (including thesis and dissertation credit) at USU is met. Transfer credit, which must not have been used for any other degree, will be shown on official USU transcripts at completion of the degree.

Master of Natural Resources. The department also participates in the College of Natural Resources Master of Natural Resources (MNR) degree program. For more information, see page 278.
Specializations

The MS and PhD degrees in Fisheries Biology and Ecology allow students to specialize in either Fisheries Management or Aquatic Ecology.

Financial Assistance

General aspects of financial support for graduate students at Utah State University are listed on pages 89-90 in the Graduate Financial Assistance section. This includes important information on the University-wide policies and terms of reference for research and teaching assistantships, graduate tuition obligations and benefits, Western Regional Graduate Programs, and competitive University-wide fellowships and scholarships.

Assistantships

Research assistantships are available through individual faculty members who hold research grants or contracts. Occasionally, teaching assistantships are available through the department. Recipients of teaching assistantships are usually selected from among PhD students.

Western Regional Graduate Programs

The MS and PhD in Watershed Science are Western Regional Graduate Programs. For more information, see page 89.

Aquatic, Watershed, and Earth Resources Faculty

Professors
Charles P. Hawkins, stream ecology, conservation biology, and biomonitoring
Wayne A. Wurtsbaugh, limnology, fish ecology, and watershed biogeochemistry

Adjunct Professors
Christopher Neale, remote sensing
David G. Tarboton, geomorphology, hydrology
James P. Dobrowolski, watershed hydrology, management, and restoration

Professors Emeriti
John A. Kadlec, wetland ecology and biogeochemistry
John M. Neuhold, fisheries biology

Assistant Professors
Todd A. Croll, aquatic ecology and conservation biology
Robert R. Gillies, remote sensing and meteorology
Chris Luecke, lake ecology and fisheries
John C. Schmidt, fluvial geomorphology and water policy
Helga Van Miegroet, biogeochemistry, soils, and ecosystem ecology

Research Associate Professor
Jeffrey L. Kershner, USDA Forest Service, national habitat coordinator, stream ecology and fish-habitat relationships

Adjunct Associate Professor
Joanna L. Endter-Wada, cultural anthropology, natural resource policy and sociology

Assistant Professors
Paul W. Box, geographic information systems, spatial analysis, and modeling
Phaedra E. Budy, assistant leader, fisheries, Utah Cooperative Fisheries and Wildlife Research Unit, fisheries management and aquatic ecology
Michael N. Gooseff, hydrology and hyporheic zone ecology
Nancy O. Mesner, water quality, water policy, and modeling
Michael A. White, ecosystem modeling, remote sensing, and global climatology

Research Assistant Professor
Mark R. Vinson, aquatic invertebrate ecology and biomonitoring

Adjunct Assistant Professors
Michelle A. Baker, ecology, hydrology
David A. Beanchamp, food webs, bioenergetics models, predator-prey interactions, visual foraging
Nicolaas W. Bouwes, Jr., fisheries management, aquatic ecology
David G. Chandler, hydrology
Joel L. Pederson, geomorphology, paleoclimatology, and sedimentology
Brett Roger, USDA Forest Service Aquatic Monitoring Center Program Leader, aquatic ecologist
Juergen Symanzik, computational and graphical statistics
J. Christopher Wilson, director, State of Utah Division of Wildlife Resources Fisheries Experiment Station, fish pathologist/nutritionist

Course Descriptions

Aquatic, Watershed, and Earth Resources (AWER), pages 342-346
Art

Department Head: John Neely
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E-mail: mroberts@hass.usu.edu
WWW: http://www.usu.edu/artdept/

Assistant Head and Undergraduate Program Director:
Sara J. Northerner, Fine Arts Visual 134, (435) 797-3460, northerner@cc.usu.edu

Assistant Head and Graduate Program Director:
Christopher T. Terry, Fine Arts Visual 216, (435) 797-3409, ctterry@cc.usu.edu

Art Education Undergraduate Advisor: Jane S. Catlin,
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Degrees offered: Bachelor of Arts (BA), Bachelor of Science (BS), Bachelor of Fine Arts (BFA), Master of Arts (MA), and Master of Fine Arts (MFA) in Art

Undergraduate emphases: Art Education, Art History, Ceramics, Drawing, Graphic Design, Painting, Photography, Printmaking, Sculpture

Graduate specializations: Ceramics, Drawing, Graphic Design, Painting, Photography, Printmaking, Sculpture

Degrees Offered

Bachelor of Science Degree

The BS degree is a general art degree for the student who is not interested in specializing in one area of art. This degree requires 50 semester credits in Art courses, 30 credits in University Studies courses, and allows for 40 elective credits. A GPA of 2.5 is required for the BS degree. No grade less than C is acceptable in any art class. Art classes may be retaken for a higher grade. This degree does not fulfill the requirements for entrance into graduate schools of art.

Bachelor of Arts Degree

This degree is available primarily to students selecting an emphasis in Art History at USU. BA degree candidates should complete the majority of University Studies lower-division requirements, the modern language requirement, and the foundation curriculum by the end of the sophomore year. This will allow concentration in an area of specialization during the junior and senior years.

In addition, BA candidates must either complete requirements for the Art History Emphasis, as listed below, or the general art requirements as listed under the BS degree. The major professor may also prescribe other courses to serve the particular needs of different students. A minimum of 39 semester credits in art is necessary for this degree.

Bachelor of Fine Arts Degree

The BFA is a professional art degree requiring above-average accomplishment in art. Only students demonstrating considerable promise will be accepted for this more demanding professional degree program. Admission to the Art Department BS program does not guarantee admission to the BFA program. Entrance to the BFA program is by application only. Each emphasis area specifies classes that must be completed, along with the common foundation courses, prior to application to the BFA program. For most students, this will occur at the end of their sophomore year. Transfer students may make application during the spring semester prior to their planned entrance into the department.

To graduate with a BFA degree, students must meet the following minimum requirements:

1. An overall GPA of at least 2.75 must be attained.
2. Students must maintain a minimum GPA of at least 2.75 in the Art Foundation and Art Basic Core classes.
3. No grade lower than a C will be accepted in any art class.
4. In any emphasis area class, no grade lower than a B- is acceptable. Emphasis classes may be retaken for a higher grade.

A minimum of 70 semester credits in art must be completed for the BFA degree. This includes 6 credits of upper-division art history. During the spring semester of their senior year, students must take ART 4910 (Senior BFA Exhibition). Students must also fulfill the standard University Studies requirement of 30 credits, as well as complete 20 credits of electives. Any student unable to complete the necessary requirements for the BFA may still qualify for the BS degree.

Undergraduate Programs

Objectives

The Department of Art’s primary goal is to prepare undergraduate students for careers in either teaching or the applied and fine arts. Requirements in nine different emphasis areas address the specific needs of each career. The Department of Art also serves the University community by offering courses in the University Studies program and by offering training in applied art areas for students in related degree programs.

Departmental Admission Requirements

Entering freshmen are admitted to the Department of Art as BS candidates by meeting the Utah State University admission requirements. New freshmen admitted to USU in good standing must submit a portfolio of 10 35 mm slides of their best work. Details are available from the Art Department. Entrance to the BFA program in studio art is accomplished by formal application after completion of the department’s foundation courses. Students applying for this degree program should have a GPA of at least 2.75. Application to the BFA program is done by portfolio review and should be made during the spring semester in which the prerequisites will be completed. Transfer students should make application during the spring semester prior to their entrance to USU to arrange for the portfolio review of their work prior to acceptance in the department. Participation in the BA program in Art History is limited to students with at least a 2.5 GPA.
Department of Art Curriculum

Foundation Courses. Students in the BS, BA, and BFA degree programs (except for students in the Art History emphasis) need to complete the following foundation curriculum. (Art History students should instead complete the BA foundation courses, which are listed in the Art History section.)

Suggested Sequence:

Freshman year—first semester: ART 1110 (or 1140), 1120 (or 1150), 2710.

Freshman year—second semester: ART 1130 (or 1160), 2140, 2720.

Subsequent curriculum requirements are specific to these individual emphasis areas:

Art Education. The art education curriculum prepares students to teach art in the public schools. Students graduate with a Bachelor of Fine Arts (BFA) degree in art and obtain a secondary education teaching license. The BFA degree requires 70 credits in Art courses. A minimum of 45 credits must be completed in the core and broadening area: ART 1110 (or 1140), 1120 (or 1150), 1130 (or 1160), 2140, 2200, 2230, 2400, 2600, 2650, 2710, 2720, 2800 or 2810, and 6 credits in upper-division art history courses. A minimum of 25 art credits must be taken in a specialization area.

The secondary education teaching license requires the following courses: ART 3000, 3300, 4000, 4300, 5500, 5630; Instructional Technology course (contact advisor for course number); SCED 3100, 3210, 4200, 4210; SPED 4000.

Art History (55 total credits). For the BA degree in Art with an emphasis in Art History, all students must take the following required foundation courses (18 credits): ART 2710, 2720, one studio art course of student’s choice (note prerequisites where necessary), HIST 1040, 1050, and ENGL 2100.

All majors must choose between the following two tracks, and must meet with their advisor to determine a concentration and special area by the beginning of their sophomore year. In addition, the student should have produced two research papers of 10-15 pages each by the senior year.

Track I (18 credits): Students must complete six upper-division courses in art history, consisting of three interrelated courses (e.g., by period) and three distributed widely (i.e., a concentrator in a modern period of art history would select courses from the ancient or medieval, renaissance, and Baroque periods to achieve the wide distribution).

Track II (interdisciplinary track) (18 credits): Students must complete three upper-division courses in art history and two upper-division courses outside the department that make up a special field (these may be combined from area studies, such as the British Commonwealth, French Studies, American Studies, Folklore, or Anthropology; or may consist of a selection of courses that deal with post-colonialism, Women and Gender Studies, and the intersections between art and the history of science, for example; or may include courses that deal with a certain period).

The student must formally apply, in consultation with his or her advisor, to determine the concentration and special area. One additional course in art history (outside the special field) must also be completed. All majors are required to take ART 4790, Research/Writing/Methods (3 credits, offered every year). Students will be advised to take this seminar after they have written a research paper. Students are required to produce a self-assessment portfolio. During the second semester, senior majors must provide a portfolio of their work in art history. No credit is granted for the portfolio (which is not a class). The portfolio consists of a two-page self-assessment of the student’s work and progress in the major; a list of classes taken in art history, studio art, and any related fields that have contributed to the student’s understanding of art history; and examples of the student’s work in art history at all levels, including study-abroad work and internship experiences.

Foreign Language (16 credits): Four semesters of one foreign language are required. (French and German are especially recommended for students who plan to go on to graduate school, but a student may petition to have another foreign language count toward this goal.)

Including foundation, foreign language and major classes, the Art History emphasis requires a total of 55 credits.

Ceramics. Contemporary ceramics represents the extension and synthesis of clay sculpture and vessel traditions. Students are acquainted with the technology of ceramic materials and firing processes, while developing sound craftsmanship as a means to personal expression. Enrichment is provided through the ceramics collection of the Nora Eccles Harrison Museum, numerous ceramics exhibitions, and visiting guest artists. Juniors and seniors in the program may compete for one of the Ellen Stoddard Eccles Scholarships, an endowed scholarship fund set aside especially for undergraduate ceramics majors. Students must complete the following courses for a Ceramics emphasis: ART 2600, 2650, 3610, 3650, 3660, 4610, 4640, 4650, 4910; CHEM 1010 or CHEM 1110 and 1130; and GEOL 1100 or 1150. ART 4640 is repeatable for credit, and must be taken during at least two semesters. ART 4650 is repeatable for credit, and must be taken during at least four semesters.

Drawing. Drawing is the two-dimensional study of form and space, as well as the exploration of drawing media, graphic elements, and visual dynamics. It is an essential discipline for all artists, as it provides the fundamental visual skills needed in their search for a personal idiom. At the same time, drawing itself is also a vehicle of creative expression, visual adventure, and self-discovery. Students must complete the following courses for a Drawing emphasis: ART 2200, 2230, 2400, 3200, 3260, 3610, 4100, 4250, 4260, 4710, and 4910. One course must be chosen from ART 3230, 3240, and 3250. Two additional upper-division art history courses are also required. The remainder of the 70 semester credits can be taken as electives.

Graphic Design. Graphic design is the study of visual communications and the art of presenting information. Visual elements, such as animation, photography, illustration, symbols, and type, are designed or arranged using various techniques and materials. Materials range from traditional ink, paper, and printing presses to video and the internet, using the latest computer software and hardware. Students in graphic design complete a variety of courses that involve working with symbols, trademarks, typography, layout, and all formats of print and publication design. Illustration, digital imaging, motion graphics, animation, and interactive media are also part of the graphic design curriculum. Seniors may specialize in one or more of these areas of study and create a professional portfolio specific to their interests. Graphic Design emphasis students should complete the following courses: ART 2400, 2800 (or 2810), 3400, 3410, 3420, and 4910. A total of 18 semester credits must be taken in 4000-level graphics courses, and 6 semester credits of 4000-level art history courses must be completed.
Painting. The painting curriculum emphasizes an analysis of historical approaches to painting, and the exploration of new ideas, techniques, and materials. Basic courses are designed to foster a respect for the craft of painting, and subsequent courses encourage application of the craft to expressive goals. Central to the focus of painting study at USU is the development of a personal portfolio reflecting the specific interests of the individual. Students must complete the following courses for a Painting emphasis: ART 2200, 2230, 2400, 2600, 2650, 3200, 3260, 3610, 4200, 4210, 4260, and 4910. In addition, one course must be selected from the following: ART 3230, 3240, or 3250. Also, two upper-division courses (3000 level and above) in Art History are required.

Photography. Found throughout all of contemporary life, photographic images shape the way we document, interpret, and direct our lives. As an art form, photography constantly reinvents our concept of beauty, reality, and culture. Within the program in photography, students learn the aesthetic and technical skills of the medium. The fundamentals of craft and the “hands on” application of knowledge at each level will enable the student to pursue a variety of photographic professions. Requirements for the Photography emphasis include: ART 2400, 2810, 3810, 3820, 3830, 4810, 4820, 4830, 4840, 4850, 4860, 4870, and 4910.

Printmaking. Students in the printmaking emphasis have the opportunity to explore all aspects of traditional and contemporary printmaking. After an introduction to the basics of intaglio, lithographic, silkscreen, and relief processes, students are encouraged to continue their development in a specific area of interest. Independent studio projects will investigate the wide field of printmaking, providing a framework for the student to become engaged in a creative pursuit involving both technical and aesthetic considerations. Requirements for the Printmaking emphasis include: ART 2230, 2400, 2800 (or 2810), 3230, 3240, 3250, 3260, 4250, and 4910. Also, students must choose two of the following courses: ART 4710, 4720, 4730, 4740, 4750, and 4760.

Sculpture. Sculpture is the three-dimensional expression of ideas. Its range extends from discrete, permanent objects to ephemeral, multi-media environments.

Students in the sculpture emphasis develop a base of knowledge in traditional approaches to the creation of form. After gaining competency in figure modeling, as well as in stone or wood carving, they explore both site-specific sculpture and sculptural installations. Intermediate and advanced students investigate specific problems involving technical, aesthetic, and conceptual considerations. They develop their own direction, based on both experience with form, materials, and techniques, and an understanding of traditional concerns and contemporary issues in the vast field encompassed today by sculpture.

The following courses are required for students in the sculpture emphasis: ART 2400, 2600, 2650, 2800 (or 2810), 3610, 4610, 4620, 4660, and 4910. In addition, students must complete 6 credits of 4000-level art history courses. Also, ART 3260 is recommended. Other required courses outside of the Art Department are: two Industrial Technology and Education (ITE) courses, and one design course taken through Landscape Architecture and Environmental Planning (LAEP), Theatre Arts (THEA), or Interior Design (ID).

Minor Requirements

Art Minor

The requirements for a minor in studio art are flexible. Generally, the minimum requirements include ART 1110, 1120, and 1130, plus 3 semester credits from the art history group (ART 2710 or 2720), and 12 credits in art. To plan a minor in Art, students should meet with an advisor.

Art History Minor

The requirements for a minor in art history include 24 credits from classes in the Art History group, excluding Art 1100.

USU does not offer an art teaching minor for secondary teachers. Students choosing to train for teaching art in secondary schools must complete the art education major listed under art specialties and must comply with all requirements listed by the Department of Secondary Education.

Graduate Programs

The Department of Art offers two graduate degrees and cooperates with the College of Education and Human Services on another degree. The Master of Arts (MA) and the Master of Fine Arts (MFA) are offered by the Art Department. A Master of Education (MEd) with a specialization in art is offered through the College of Education and Human Services.

Master of Arts

Students are selected for the MA program on the basis of a portfolio demonstrating artistic individuality and a level of development beyond the need of classroom instruction.

Admission Requirements

All applicants are required to have earned a bachelor’s degree in the visual arts or its equivalent. During the last two years of undergraduate work, the GPA in art courses must have been at least 3.0 on a 4 point scale. MAT scores should be at or above the 40th percentile. Applicants taking the GRE should have verbal and quantitative scores at or above the 40th percentile.

Degree Requirements

Candidates for the MA must complete a minimum of 30 credits, to include: (1) 21 graduate studio credits, which may be divided into two or three areas of study at the graduate level; (2) 3 credits which may be earned in classes outside the department; (3) 3 credits of art history; and (4) 3 credits of Research and Thesis.

A total of 12 credits of art history, including undergraduate credits, is required for graduation, but only 3 credits earned as a matriculated graduate student at USU may be applied toward the 30-credit MA requirement. The additional 9 credits of art history may include credits earned at the undergraduate level.

A candidate must complete a minimum of two semesters in residency. Nine credits per semester is considered full-time graduate enrollment, while 12 credits are considered the maximum enrollment. A minimum of three semesters is thus required to complete the 30-credit program.
Master of Fine Arts

The Master of Fine Arts degree is the terminal degree in the visual arts field. The MFA program is designed to allow students to mature to a level of professional competence in the making of art. Related studies augment a rigorous studio program. The prospective student must exhibit both academic excellence and a well-developed personal artistic vision.

Admission Requirements

All applicants are required to have earned a BFA degree in the visual arts or its equivalent, including a minimum of 12 credits of art history. Students must submit either MAT or GRE scores. GPA in art courses must have been at least 3.0 on a 4-point scale. MAT scores should be at or above the 40th percentile. Applicants taking the GRE should have verbal and quantitative scores at or above the 40th percentile.

Degree Requirements

Students must earn 60 credits, to include: (1) 43 credits of graduate-level studio art as determined by the student in consultation with his or her major professor, including a minimum of 6 credits outside of the emphasis area; (2) 6 credits of Graduate Seminar; (3) 2 credits of Graduate Interdisciplinary Critique; (4) 6 credits outside the Art Department as specified by the supervisory committee; and (5) 3 credits of Research and Thesis, which concludes with an MFA thesis exhibition and an oral defense. The MFA thesis is a visual presentation, the equivalent of a written dissertation in other disciplines. The thesis exhibition is the single most important feature of the MFA program; the culmination of at least two years, and often three or more years, of intensive study in a single discipline. The student must also submit a selection of slides documenting the exhibition.

The MFA program is a resident program; it is not possible to complete the requirements for graduation by correspondence. The program is predicated upon the assumption that students will live in the Logan area. Students must complete a minimum of four semesters in residency. Nine credits per semester is considered full-time graduate enrollment, while 12 credits are considered the maximum enrollment. A minimum of five semesters is thus required to complete the 60-credit program; most students require three years.

Application Procedures

Completed applications must include: (1) completed application forms; (2) a letter of intent; (3) transcripts of all previous graduate and undergraduate work; (4) three letters of recommendation from qualified professionals; (5) GRE or MAT scores; and (6) the $40 application fee.

These materials must be sent directly to the School of Graduate Studies. When complete, applications will be forwarded by the School of Graduate Studies to the Art Department for review.

A portfolio of twenty 35mm slides of recent work must be mailed directly to: Graduate Coordinator, Department of Art, Utah State University, 4000 Old Main Hill, Logan UT 84322-4000.

Completed applications and slide portfolios must be received by February 1. Students should note that applications will be considered only at this time, and only completed applications will be reviewed. Admission will only be considered for fall semester.

The deadlines for financial aid may be earlier than the admissions deadline. For further information about financial aid, visit the Financial Aid Office in Taggart Student Center 106; write to: Financial Aid Office, Utah State University, 1800 Old Main Hill, Logan UT 84322-1800; or phone (435) 797-0173.

Applications are reviewed by the Art Department faculty. Candidates are selected primarily on the basis of their portfolio, which should demonstrate a level of development beyond the need of classroom instruction and encouragement. The faculty will also look in the portfolio for evidence of significant personal exploration.

Secondary to the portfolio, but important nonetheless, the applicant’s letter of intent and letters of recommendation will also be given careful consideration. In reviewing these letters, the faculty will look for, among other things, indications that the applicant will be capable of prolonged and concentrated effort, guided by realistic personal goals. Letters should address both academic and artistic accomplishments, as well as potential for further growth in both of these areas.

Applicants are strongly encouraged to visit the USU campus and meet with the faculty in their proposed field of study well in advance of the February 1 application deadline.

Important Note. Please note that the graduate programs in the Art Department have limited enrollment; admission is very competitive. Because only a small fraction of applicants can be accommodated, there can be no guarantee that applicants who meet minimum admission requirements will be accepted into master’s programs.

Financial Assistance

Departmental support is available to graduate students on a competitive basis. Students requesting financial support should apply to the department by February 15. Other assistance is available through the University Financial Aid Office. Students should note that applications for Federal work-study should be mailed during the first week of February.

Art Faculty

Professors
Craig J. Law, photography
John Neely, ceramics
Christopher T. Terry, drawing, painting

Professors Emeritus
Jon I. Anderson, graphic design
Glen L. Edwards, illustration
Adrian Van Suchtelen, drawing

Associate Professors
Jane S. Catlin, art education, painting
Alan Hashimoto, graphic design
Sara J. Northerner, photography
Gregory Schulte, drawing, painting

Associate Professor Emeritus
Marion R. Hyde, printmaking, art education
Assistant Professors

Eileen Doktorski, sculpture
Danielle Foushee, graphic design
JinMan Jo, sculpture
Julie M. Johnson, art history
Laura Johnson, drawing, painting

J. Daniel Murphy, ceramics
Robert Winward, graphic design
Koichi Yamamoto, printmaking

Course Descriptions

Art (ART), pages 336-339
Biological and Irrigation Engineering

Department Head: Ronald C. Sims
Location: Engineering 402G
Phone: (435) 797-2785
FAX: (435) 797-1248
E-mail: bieusu@cc.usu.edu
WWW: http://www.engineering.usu.edu/bie

Undergraduate Advisor: Ronnie Green, Engineering 312, (435) 797-2790, ronnie@engineering.usu.edu

Degrees offered: Bachelor of Science (BS), Master of Science (MS), and Doctor of Philosophy (PhD) in Biological Engineering; MS and PhD in Irrigation Engineering

Undergraduate options: BS—Bioprocess; Bioenvironmental; Biomedical; and Soil and Water Resource Systems Engineering

Graduate specializations: MS, PhD—Agricultural Hydrology; Crop Water-Yield Analysis; Drainage; Evapotranspiration; Groundwater Management and Simulation; Irrigation Conveyance and Control Structures; Irrigation Project Planning, Design, and Operation and Management; Molecular Biology; On-Farm Water Management; Remote Sensing and Geographical Information Systems; Surface, Sprinkle, and Trickle Irrigation Methods

Mission

The mission of the Department of Biological and Irrigation Engineering (BIE) is to teach students preparing to become biological engineers how to apply engineering principles and the knowledge of biological sciences to the solutions of bioresource and biotechnology problems. The department also prepares students for entry into other professions, such as biomedical engineering, medicine, and law.

The BIE program is designed to help students learn to manipulate biological materials for useful purposes, understand the biological literature, and be able to communicate with biological scientists. Biological engineering encompasses engineering applications in a broad range of biological systems. The biological engineering curriculum at USU emphasizes bioprocess and biomedical engineering, as well as soil and water resource systems engineering. The curriculum at both the Bachelor of Science and graduate levels is designed to prepare students for a wide variety of professional jobs related to the utilization, management, and protection of bioresources from nanoscale to watershed scale.

Scope and Objectives

The objective of the Biological Engineering Program is to provide students with broad-based engineering skills necessary to solve biological-based problems. Students first learn to integrate biological sciences with conventional studies in mathematics and chemistry. These skills are broadened with a liberal exposure to humanities and social sciences, then sharpened with the study of engineering topics that develop practical problem-solving abilities; expand a sensitivity to the economic, social, and legal dimensions of technical problems; provide an understanding of ethics and professional responsibility; and stimulate a desire for life-long learning.

Outcomes

The Biological Engineering curriculum emphasizes three important outcomes:

1. The knowledge needed to identify, formulate, and perform the functions of a biological engineer.

2. The intellectual skills and creative abilities graduates should possess in order to design systems and conduct experiments in an interdisciplinary team setting, as well as the ability to use these skills in modern engineering practice.

3. The specific career-preparation competencies of ethical responsibility, effective communications, comprehension of engineering in the global context, and a commitment to life-long learning and self-improvement.

Assessment and Evaluation

The BIE Department is committed to an assessment process aimed at evaluating the effectiveness of BIE programs in preparing graduates as productive professionals. The foundation of departmental assessment is the undergraduate accreditation by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology (ABET).

The accreditation activities performed every six years by the EAC/ABET provide the only formal and external review of the undergraduate program. This assessment ensures that the USU program meets an overall objective and structure consistent with similar programs in the U.S. and Canada.

The biological engineering program is continuously improved through integrating the results of this formal assessment with the day-to-day assessments obtained from both students and faculty. To ensure the overall quality of the program, the department conducts several specific assessments. These are:

1. Annual faculty survey
2. Teaching evaluations
3. Graduating student exit interviews
4. Fundamentals of Engineering Examination performances
5. Biological and Irrigation Engineering Advisory Board, involving employer responses and board reviews
6. Alumni survey
Undergraduate Programs

General biological engineering concepts include the properties of biological materials, electronics and bio-instrumentation, computer use and programming, engineering mechanics, thermodynamics, computer-aided drafting, bio-environmental transport phenomena, and fluid mechanics.

Students gain a strong foundation in biological, chemical, and physical sciences. Each student then selects an option within the field, based on personal interest. These areas of study are tailored for each student with 24 semester credits of technical electives and one-on-one academic advisement with a member of the faculty. Design is a major theme of both the student’s general coursework and specialization, with most courses including open-ended design problems. The entire design experience is brought together in a capstone design course.

The Biological Engineering Program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC/ABET).

Requirements

Admission and Graduation Requirements. The student who is majoring in or planning to major in Biological Engineering needs to be aware of the College of Engineering requirements concerning admission to the college, pre-engineering, admission to the professional engineering school, general education, and other academic requirements. Additional information concerning these items is given in the College of Engineering requirements on pages 107-109. It is the responsibility of the student to be aware of these rules and regulations.

Biological Engineering Curriculum

Biological Engineering is divided into a preprofessional and a professional program involving either a four-year or a five-year schedule that will satisfy the requirements for a BS degree in Biological Engineering. Students receiving credit from the College Level Examination Program (CLEP) or from Advanced Placement (AP) may complete a BS degree program in less than four years. The academic work, particularly in the junior and senior years, is supplemented by hands-on laboratories which are required as part of the coursework. Modification in the program to meet special needs and priorities of a student may be obtained with the approval of the department head and advisor.

Preprofessional Program: BIE 1880, 2330; CHEM 1210, 1230, 2300, 2330; ENGR 1010, 2000, 2020, 2200; BIOL 1210; ENGL 2270; MAE 2400; MATH 1210, 1220, 2250; PHYX 2200; and three credits of Communications Literacy.

Professional Program: BIE 3000, 3200, 3670, 3870, 4880, 4890; BIOL 3300, 5200; CEE 3500; CHEM 3700, 3710; STAT 3000; ECE 2200; Biological Engineering Electives (6-21 credits); Engineering Electives (0-15 credits); Technical Electives (0-12 credits); and University Studies (18 credits).

Additional Information

For more information about the Bachelor of Science requirements and the sequence in which courses should be taken, see major requirement sheet, available from the Biological and Irrigation Engineering Department.

Financial Support

Scholarships, assistantships, grants-in-aid, and work-study programs are available through the University. In addition, the department employs students to assist in engineering research and development. Cooperative education and industrial employment opportunities for students are coordinated by the University Placement Office.

Concurrent BS/Master’s Program

The concurrent BS/Master’s program allows engineering students to begin taking graduate-level classes during their senior year. This permits them to complete requirements for both the BS degree and the master’s degree concurrently during two years. Students in this program have a greater selection of graduate courses, since many graduate courses are taught during alternate years. In addition, the student’s senior design project could be a start for a graduate design project or thesis. After completing their BS degree, students in the program can earn a master’s degree in only one additional year. Both the BS and the master’s degree can generally be earned with 150 total credits, although students should note that a Plan C MS requires 3 extra credits. Finally, students with a master’s degree can expect a much higher starting salary following graduation. (For more information, see College of Engineering section of this catalog, page 109.)

Graduate Programs

Admission Requirements

See general admission requirements identified in this catalog. Admission committees also consider experience, undergraduate record and curriculum, and formal recommendations. A student without an undergraduate engineering background will be required to complete selected undergraduate courses prior to or concurrently with enrollment in graduate courses.

Prerequisites for Matriculation. Students who are admitted provisionally or who have been changed from matriculated to probationary matriculated status will have their records reviewed by a faculty committee when they have completed 12 credits of coursework (among which must be formal engineering courses) or at the end of their second semester at USU. Those students who have earned a 3.0 GPA at that time and desire to be matriculated may apply to the department to have their status changed. If they meet all other academic requirements of the School of Graduate Studies and the department, they will be matriculated and admitted to the degree program. When a student is admitted as a degree candidate, the committee may allow up to 12 credits taken while on nonmatriculated status to be transferred. Nonmatriculated students may continue to study at USU but without degree candidate status. At the end of their studies, nondegree students are granted a Certificate of Completion.

Prerequisite Requirements. All students must have had formal courses in engineering and computer programming, as well as at least one year of calculus. Students without this background can satisfy these requirements by taking the appropriate undergraduate courses at USU. An additional year of calculus (MATH 1210, 1220, and 2250, or equivalent) is required for the MS degree in Irrigation Engineering and for all PhD programs. These background courses will not be counted toward the degree credit requirements.
MS in Biological Engineering and in Irrigation Engineering

Students must have a BS from an ABET-accredited engineering program in the U.S. or its equivalent in their home countries or must take the make-up coursework required for a BS in engineering at USU. It is assumed that the bachelor’s degree mathematical training includes courses in calculus, linear analysis, and differential equations.

Three MS options are available: research (Plan A), technical practice (Plan B), and training/extension (Plan C). All MS students are admitted initially into the technical practice (Plan B) option. They may subsequently transfer to one of the other two options depending upon interests and skills.

Research Option. Students wishing to gain experience in research may select the research option, particularly if they have a long-term goal of PhD study. The minimum requirements for this option are 30 credits, of which 8 may be awarded for the thesis.

Technical Practice Option. Some students may not be interested in pursuing a PhD degree or in doing the research necessary for a thesis. For such students, the technical practice (Plan B) option is offered. The requirements for the degree are similar to those for the research option, with the exception of the thesis. The 8 thesis credits are replaced by 4 credits for a significant engineering report or design project and 4 additional credits of coursework. The minimum course requirement for the technical practice option is 30 approved graduate credits.

Training/Extension Option. Students expecting to terminate their graduate studies at the MS level and wishing to develop an emphasis in the training and/or extension fields of biological engineering or irrigation engineering, may choose the training/extension option (Plan C). The same engineering BS or equivalent requirements noted under the Plan A option apply. The minimum requirements for this degree are 30 approved graduate credits. No report or thesis is required. The degree requirements under this option can be met by taking courses.

Doctor of Philosophy

Two PhD programs are offered in the department: (1) Biological Engineering and (2) Irrigation Engineering. Students who have completed an MS with a thesis (Plan A or equivalent) in an engineering discipline are eligible to apply for admission to a PhD program. Admission will be based on the students’ prior academic records and, if they are graduates of USU, the recommendations of their graduate committees. It is assumed that students are adequately prepared in mathematics and engineering design courses to compete at the PhD level. If such is not the case, a program of courses to make up the deficiency will be required.

In addition to any prescribed review courses and seminars, the minimum requirements for a PhD program include 60 credits of approved graduate courses beyond a master’s degree, satisfactory completion of the comprehensive examinations after completion of the formal coursework, and the writing of a dissertation based on an original research project. The degree requirements beyond a master’s degree can be met by taking courses in engineering design, synthesis, and systems; mathematics; and related science.

Research

In more than 80 years of irrigation engineering experience, USU has attained worldwide prestige through the successful professional records of its many graduates.

The department is heavily involved in overseas research and training activities concerned with managing irrigation systems, on-farm water management, and water resource development.

Research projects in several areas of irrigation and drainage engineering are currently being conducted by the department. Hence, graduate students have the opportunity to conduct research for their degree programs and obtain financial support. Current projects include hydraulics of surface irrigation, consumptive use, return flow quantity and quality of irrigation waters and application techniques, transient flow in tile drainage systems, drain envelops, sprinkler irrigation, trickle irrigation, crop production and water requirements, salt movement, regional groundwater modeling for optimizing sustainable yield, conveyance system modeling and control, and remote sensing.

Specific research projects in the biological engineering option include tissue and biomedical engineering, biosensor design and development, microbial fermentations, environmental control of livestock buildings, the contribution of rural municipalities to nonpoint source pollution, agricultural waste management, and land-based waste treatment systems.

Land application of food processing wastes, extrusion of dairy-based foods, multi-stage anaerobic digestion of biological materials, functional properties of foods, and biological detoxification of metals are some of the topics researched in food engineering.

Financial Assistance

The large departmental research programs make it possible to offer graduate students financial support in the form of assistantships and traineeships. The financial support is mainly available to U.S. citizens with a small number of assistantships for others. The traineeships and assistantships are attached to research projects on the Logan campus and overseas. Traineeships carry tuition waivers and additional financial support.

Additional Information


Biological and Irrigation Engineering Faculty

Professors
Conly L. Hansen, food engineering
Thomas B. Hardy, natural systems
Robert W. Hill, irrigation and water resource extension
Christopher M. U. Neale, remote sensing
Richard C. Peralta, groundwater
Linda S. Powers, bioprocess engineering
Ronald C. Sims, biological process engineering
Wynn R. Walker, surface irrigation, Associate Dean of College of Engineering
Research Professors
Darwin L. Sorensen, soil microbiology
L. Humberto Yap-Salinas, drainage

Adjunct Professor
Bart C. Weimer, microbiology, Director of Center for Integrated BioSystems

Professors Emeritus
Richard E. Griffin, irrigation extension
George H. Hargreaves, crop water requirements
Jack Keller, sprinkle and drip irrigation
Howard B. Peterson, water quality
Gaylord V. Skogerboe, waterlogging and salinity
Glen E. Stringham, surface irrigation
Lyman S. Willardson, drainage

Associate Professors
Gary P. Merkley, conveyance systems
Timothy A. Taylor, bioprocessing

Research Associate Professors
Joan E. McLean, soil chemistry
Judith L. Sims, soil biology

Adjunct Associate Professor
Daryll B. DeWald, cell biology, Associate Director of Center for Integrated BioSystems

Associate Professor Emeritus
Edwin C. Olsen III, international irrigation, water management

Assistant Professors
David W. Brit, biomedical engineering
Kytai T. Nguyen, biomedical engineering
Anhong Zhou, nanobiotechnology

Research Assistant Professors
Arnulfo Gonzalez-Meza, irrigation system transfer
Babukannan Kasilingam, canal hydraulics

Adjunct Research Assistant Professor
Charles D. Miller, biology

Research Assistant Professor Emeritus
R. Kern Stutler, irrigation structures

Course Descriptions
Biological and Irrigation Engineering (BIE), pages 347-349
Biology

Department Head: Jon Y. Takemoto  
Location: Biology-Natural Resources 121  
Phone: (435) 797-2485  
FAX: (435) 797-1575  
E-mail: undergrad_info@biology.usu.edu or graduate_info@biology.usu.edu  
WWW: http://www.biology.usu.edu/

Associate Head: Timothy A. Gilbertson, Biology-Natural Resources 327, (435) 797-7314, tag@biology.usu.edu  
Director of Undergraduate Studies: Dennis L. Welker, Biology-Natural Resources 101, (435) 797-3552, dennis.welker@usu.edu  
Director of Graduate Studies: John M. Stark, Veterinary Science and Bacteriology 231, (435) 797-1913, jstark@biology.usu.edu  
Advisor for Prehealth Professions Programs: D. M. Andy Anderson, Veterinary Science and Bacteriology 331, (435) 797-3518, andy@biology.usu.edu  
Advisor for Public Health Major: David Wallace, Biology-Natural Resources 333, (435) 797-7155, dwallace@biology.usu.edu  
Advisor for Nursing Program: Susan L. Haddock, Biology-Natural Resources 101, (435) 797-2577, susanlh@biology.usu.edu  
Director of Graduate Studies: John M. Stark, Veterinary Science and Bacteriology 231, (435) 797-1913, jstark@biology.usu.edu  
Director of Undergraduate Studies: Dennis L. Welker, Biology-Natural Resources 101, (435) 797-3552, dennis.welker@usu.edu

Advisors for Public Health Major: David Wallace, Biology-Natural Resources 333, (435) 797-7155, dwallace@biology.usu.edu  
Advisors for Nursing Program: Susan L. Haddock, Biology-Natural Resources 101, (435) 797-2577, susanlh@biology.usu.edu

Degrees offered: Bachelor of Science (BS), Bachelor of Arts (BA), Master of Science (MS), and Doctor of Philosophy (PhD) in Biology; BS and BA in Composite Teaching—Biological Science; BS in Public Health; MS and PhD in Ecology; MS and PhD in Toxicology is available through the Interdepartmental Program in Toxicology.

Undergraduate emphases: Biology BS, BA—Biology, Cellular/Molecular, Ecology/Biodiversity, Environmental; Public Health BS—Industrial Hygiene, Environmental Health, Public Health Education

Undergraduate Programs

Objectives

Biology. The Department of Biology offers programs leading to a Bachelor of Science or Bachelor of Arts degree. Majors will complete a core of courses which provide an understanding of biological principles. Upper-division courses provide integration, in-depth study, and an opportunity for specialization within the different degree emphases. Additional coursework in chemistry, physics, statistics, and mathematics provides knowledge and analytical skills in these important related fields. Most biology degrees provide a foundation for graduate work. Biology majors can add a minor area of study, such as business or chemistry, to enhance their employment opportunities.

Prehealth Professions Programs. The Department of Biology supervises premedical, predental, and other health professions. These programs satisfy entrance requirements for most medical and dental schools in the United States and Canada and are recognized for the high quality preprofessional preparation they provide. After four years, the student receives a BS degree in Biology or another major. Coordinator: Susan L. Haddock, Biology-Natural Resources 101. Advisor: D. M. Andy Anderson, Veterinary Science and Bacteriology 231.

Composite Teaching—Biological Science. This major combines content training in biology and related fields (including chemistry, physics, geology, mathematics, and statistics) with education courses. Graduates are licensed to teach at the secondary level. Advisor: Richard J. Mueller, Eccles Science Learning Center 245.

Public Health. The Department of Biology offers preprofessional training in public health. Individuals completing the BS degree have employment opportunities in such areas as environmental health, industrial hygiene, public health education, administration, nursing, nutrition, mental health, and social work. Advisor: David O. Wallace, Biology-Natural Resources 333.

The Department Head, the Director of Undergraduate Studies, and advisors in the Department of Biology are available to provide undergraduate majors with additional information regarding specific programs and career opportunities. The Biology Advising Center and the Director of Undergraduate Studies are located in BNR 101. Program requirements, advising information, and an “Ask an Advisor” e-mail service are on the Department of Biology web page at http://www.biology.usu.edu.

Students with majors in the Department of Biology should consult with their advisors regularly as they plan their course of study. Students have the responsibility to keep themselves aware of major requirements and course prerequisites. General requirements, specific course offerings, and the semesters that courses are taught may change.

Mathematics is an important and required skill to enhance one’s success in the sciences. Proper course level placement in mathematics at the beginning of the degree program is essential. Students should consult with an advisor to determine the appropriate level to begin their mathematics studies for meeting requirements and completion of their major. For detailed information, obtain an official Major Requirement Sheet from the Biology Advising Center.

Requirements

University Requirements. Students are responsible for meeting all University requirements for total credits, upper-division credits, credits of C- or better, and the University Studies Program. (See pages 42-52 in this catalog.)
College of Science Requirements. All college requirements are met by completing the departmental degree requirements; no additional coursework is required.

Departmental Admission Requirements. New freshmen admitted to USU in good standing qualify for admission to the Biology and Public Health majors. Transfer students from other institutions need a 2.25 transfer GPA, and students transferring from other USU majors need a 2.25 cumulative GPA for admission to the Biology and Public Health majors in good standing. Admission requirements differ for the Composite Teaching—Biological Science Major, as explained below.

Admission Requirements for the Composite Teaching—Biological Science Major. New freshmen admitted to USU in good standing qualify for admission to this major. To qualify for admission to the Secondary Teacher Education Program (STEP), new freshmen must acquire a cumulative 2.75 GPA and 60 credits of coursework. Transfer students from other institutions need a 2.25 transfer GPA, and students transferring from other USU majors need a cumulative 2.75 GPA and 60 credits of coursework to be admitted to the major and the STEP. For information on additional admission criteria, students should contact the Department of Secondary Education.

GPA Requirement. To graduate, a candidate for any bachelor’s degree offered by the Department of Biology must maintain a grade point average of 2.25 in all Department of Biology (BIOL or PUBH prefix) courses required for the major. (Composite Teaching also requires a 2.75 cumulative GPA) and a grade of C- or better in BIOL 1210 and 1220. The Pass-Fail option is not acceptable for any course required for the degree, but D grades are permitted within the restrictions of the 2.25 GPA. The Composite Teaching—Biological Science Major requires a cumulative overall GPA of 2.75 for admission and graduation. The 2.25 GPA requirement applies to the Biology, Public Health, and BioMath minors.

BS Degree in Biology. Four different emphases are available within the Biology degree. The Biology Emphasis is the most flexible option. Electives may be selected in any subdiscipline the student wishes to emphasize (e.g., botany, ecology, zoology, entomology, microbiology, etc.). The Cellular/Molecular and Ecology/Biodiversity emphases provide more directed training that is appropriate for research or other technical employment in academic institutions, government agencies, and the private sector. They also provide excellent preparation for graduate work. The Environmental Emphasis prepares students in the biological and physical sciences as they relate to environmental problems and concerns. This degree serves as a foundation for graduate work and provides practical training for employment at the bachelor’s degree level. Emphases will be listed on transcripts to indicate the student’s specialization. The course requirements are as follows:

**Biology Emphasis:** BIOL 1210, 1220, 2220, 3200; BIOL 3300 or 5210; BIOL 5250; one of BIOL 2410, 3050, 3220, 4500, 5400, 5530, 5550, 5560, or 5570; a physiology course with a lab selected from: BIOL 4400 or 5300 or 5540 or BIOL 5600 and 5610; one of BIOL 4100, 4410, 5280, 5310, 5350 or 5800. In addition, students must complete: CHEM 1210, 1220, 1230, 1240, 2310, 2320, 2330, 2340, 3600, 3610, 3700, 3710, PHYX 2110 and 2120, or PHYX 2210 and 2220; MATH 1210; and STAT 3000.

**Cellular/Molecular Emphasis:** BIOL 1210, 1220, 2220, 3200, 4100, 5190, 5210, 5220, 5250; a physiology course with a lab selected from: BIOL 4400 or 5300 or 5540 or BIOL 5600 and 5610 or BIOL 5620 and 5610; one of BIOL 5160, 5240, or 5260; nine credits of 4000-level and above BIOL prefix courses as electives. In addition, students must complete: CHEM 1210, 1220, 1230, 1240, 2310, 2320, 2330, 2340, 3700, 3710, PHYX 2110 and 2120 or PHYX 2210 and 2220; MATH 1210; and STAT 3000.

**Ecology/Biodiversity Emphasis:** BIOL 1210, 1220, 2220, 3200, 3320, 3330, 5250; a physiology course with a lab selected from: BIOL 4400 or 5300 or 5540 or BIOL 5600 and 5610; one of BIOL 2410, 3400, or 5400; one of BIOL 4500, 5530, 5550, 5560, 5570 or 5580; one of BIOL 4060, 5010, 5020, 5170, or 5590; an additional course from one of the three previous groups or the following list: BIOL 4100, 4410, 5280, 5310, 5350 or 5800. In addition, students must complete: CHEM 1210, 1220, 1230, 1240, 2330, 2340, 3700, 3710, PHYX 2110 and 2120, or PHYX 2210 and 2220; MATH 1210; STAT 3000; Geol 1150.

**Environmental Emphasis:** BIOL 1210, 1220, 2220, 3200, 3220, 3300, 5250; a physiology course with a lab selected from: BIOL 4400 or 5300 or 5540 or BIOL 5600 and 5610; one of BIOL 2410, 3400, or 5400; twelve elective credits from: BIOL 4500, 5020, 5050, 5310, 5320, 5410, 5800; PUBH 3610; CEE 5620; ADVS 5400; GEOLE 1150; SOIL 3000. In addition, students students must complete: CHEM 1210, 1220, 1230, 1240, 2310, 2320, 2330, 2340, 3600, 3610, 3700, 3710, PHYX 2110 and 2120, or PHYX 2210 and 2220; MATH 1210; and STAT 3000.

**BA Degrees in Biology and Composite Teaching—Biological Science.** The Composite Teaching—Biological Science Major leads to licensure to teach in secondary schools. The course requirements are as follows: BIOL 1210, 1220, 2220, 3200, 3220, 3300, 4100, 5250; a physiology course with a lab selected from: BIOL 4400 or 5300 or 5540 or BIOL 5600 and 5610; GEOL 1150; SCI 4300; MATH 1210; STAT 3000; PHYX 2110, 2120; CHEM 1110, 1120, 1130. In addition, students must be accepted into the Secondary Teacher Education Program (STEP) and complete the following: Instructional Technology course (contact advisor for course number); SPED 4000; SCED 3100, 3210, 3300, 3400, 4200, 4210, 4300, 4400, 5500, and 5630.

**BS Degree in Public Health.** A four-year program leading to the Bachelor of Science in Public Health is offered by the Department of Biology with options in the following areas: environmental health, industrial hygiene, and public health education. Individuals completing the environmental health option are qualified to take the Registered Sanitarian’s Examination. Those completing the industrial hygiene option qualify to sit for examination by the American Board of Industrial Hygiene following one year of professional experience. The Public Health degree requires a core of biology courses similar to that required for the biology degree; additional biology and public health courses; and chemistry, physics, mathematics, statistics, and allied science and engineering courses appropriate to each emphasis. Three different emphases are available. The course requirements are as follows:
Industrial Hygiene Emphasis: BIOL 1210, 1220, 2000, 2220, 3200, 3300; PUBH 3310, 3610, 5020, 5310, 5320, 5530, 5550; ADVS 5400; three elective credits from: CEE 5610, 5670, 5730, 5790, or PUBH 5300. In addition, students must complete: CHEM 1210, 1220, 1230, 1240, 2300, 2330, 3600, 3610, 3700, 3710; PHYX 2110 and 2120, or PHYX 2210 and 2220; MATH 1210; and STAT 3000.

Public Health Education Emphasis: BIOL 1210, 1220, 2000, 2220, 3200, 3300; PUBH 3120, 4000, 5000, 5010, 5020, 5500; SPCH 1050; NFS 1020, 5210; SOC 3330, 3500; HEP 2000, 2500, 3000, 3600, 3800, 3900, 4200. In addition, students must complete: CHEM 1120, 1210, 1220, 1230, 1240; PHYX 1200; MATH 3000, 3600, 3800, 3900, 4200. In addition, students must complete: CHEM 1210, 1220, 1230, 1240, 2300, 2330; PHYX 2110 and 2120, or PHYX 2210 and 2220; MATH 1210; and STAT 3000.

Environmental Health Emphasis: BIOL 1210, 1220, 2000, 2220, 3200, 3300; PUBH 3310, 3610, 4000, 5000, 5010, 5020, 5310, 5550; NFS 5110; CEE 5730; ten elective credits from: BIOL 3050, 2220, 3400, 4550; SOIL 3000; SPCH 1050; ADVS 5400; and CHEM 3700, 3710. In addition, students must complete: CHEM 1120, 1210, 1220, 1230, 1240, 2300, 2330; PHYX 2110 and 2120, or PHYX 2210 and 2220; MATH 1210; and STAT 3000.

Biology Minor. The Biology minor requires completion of the following: BIOL 1210, 1220; and 12 credits of upper-division (3000-level and above) BIOL prefix courses.

BioMath Minor. This minor requires mathematics and quantitative biology courses beyond those required for the basic biology degrees. It is an excellent option for students considering graduate work. Biology majors may take this minor through the Mathematics and Statistics Department. For details, contact the Biology Advising Center (BNR 101) or James W. Haefner (BNR 233).

Public Health Minor. The Public Health minor requires completion of the following: BIOL 1210, 1220, and 12 credits of upper-division (3000-level and above) Public Health elective courses.

Honors. An Honors Plan is available for students desiring a BS or BA degree “with honors” in Biology. Departmental Honors requires the completion of 9 credits of Honors coursework in upper-division BIOL courses, BIOL 5800H, and a research-based Bachelor’s Thesis. For details, students should contact Kimberly A. Sullivan (BNR 313).

Field Trips. Many biology courses require field trips. Those enrolled are expected to dress appropriately for the conditions and observe any safety precautions issued by instructors. Many courses require modest laboratory fees.

Undergraduate Research—Bachelor’s Thesis in Biology

Students may do undergraduate research work under the supervision of selected faculty members. To receive academic credit, a student must enroll in BIOL 5800, Undergraduate Research. To complete the research project and write a thesis, a student must be enrolled in BIOL 5810, Bachelor’s Thesis, for 3 credits. A thesis supervisory committee must be organized, consisting of an approved biology faculty member and at least one other faculty member. The supervisory committee is subject to the approval of the Director of Undergraduate Studies. Three credits of BIOL 5800H or 5810 may be applied toward elective requirements in some degree programs. Contact the Director of Undergraduate Studies, BNR 101, or Kimberly A. Sullivan (BNR 313) for assistance.

Financial Support

Scholarships, assistantships, grants-in-aid, and work-study programs are available from the University. Both the College of Science and the Department of Biology offer scholarships. Contact the College of Science office (SER 101) and the Biology Advising Center (BNR 101) for details.

Graduate Programs

Admission Requirements

See general admission requirements on pages 90-91. To be recommended for matriculated status, an applicant must have earned a bachelor’s degree (or equivalent) from an accredited institution, and a Biology faculty member must agree to serve as major professor for that applicant. The Department of Biology also considers these guidelines for admission: (1) the transcript should show a minimum GPA of 3.0 (B); and (2) the scores on the verbal and quantitative GRE should be above the 50th percentile and the analytical writing score should be 3.5 or above. Advanced GREs (especially biology) are also recommended. Applicants for whom English is not the primary language must have scored at least 575 on the TOEFL. The applicant’s undergraduate program should be similar to that offered by the Department of Biology at Utah State University, which includes the following and their prerequisites: general biology, microbiology, genetics, ecology, physiology, cell biology, developmental biology, and evolution; general and organic chemistry; calculus; statistics; and physics. Other preparatory courses may be specified by the student’s supervisory committee.

Degree Programs

For those who have demonstrated strong academic capability as well as research interest, the Department of Biology offers the Master of Science Degree and the Doctor of Philosophy Degree in either Biology or Ecology. Graduate degrees in Toxicology are available through the Interdepartmental Program in Toxicology.

Undergraduate majors in Biology at USU with especially strong backgrounds and interest in research may apply for study of the Master of Science degree as transitional students. Acceptance as a transitional student allows undergraduates with advanced standing to integrate up to 9 credits of graduate work into the final semesters of their Bachelor of Science study. Acceptance into this program, as into all graduate programs in Biology, is closely regulated. Formal application through the School of Graduate Studies is required.

Course Requirements

Biology MS and PhD Degrees. Course requirements are determined by the student’s supervisory committee. They will vary depending on the research emphasis selected and the background of the student.

Ecology MS and PhD Degrees. For specific requirements, see the description of the Ecology Interdepartmental Program (pages 179-180).
Research

The Department of Biology provides a dynamic and broad base for research and graduate study through a balanced program of basic and applied studies at ecosystem, population, organismal, cellular, and molecular levels. An outstanding variety of field sites; animal, plant, and microbe growth facilities; and modern well-equipped laboratories are available. Also, the Intermountain Herbarium, an excellent insect collection, the USDA/ARS U.S. National Pollinating Insects Collection, the Stable Isotope Laboratory, and the Center for Integrated BioSystems exist as research and support facilities.

Faculty members participate in and are supported by several interdepartmental programs, including the Ecology Center and the Center for Environmental Toxicology. In addition, many less formal contacts and interactions exist with colleagues in the colleges of Agriculture, Natural Resources, and Science.

Students are encouraged to carefully consider how their career goals match the faculty’s research interests. Prospective students are strongly encouraged to contact faculty members with whom they are interested in working. Because of the combination of a diverse interdisciplinary base and excellent focused research programs, students have an opportunity to learn the philosophies and methods of many branches of biology.

Financial Assistance

Research assistantships are available from the grants of major professors and from Utah Agricultural Experiment Station funds. Teaching assistantships are awarded annually. All awards are made on a competitive basis and specific teaching needs are considered in awarding teaching assistantships. Given satisfactory performance, MS students are supported for at least two years and PhD candidates for at least four years on teaching assistantships. The department may also recommend particularly qualified students for College of Science or University fellowships. Admission to the graduate program of the Department of Biology does not guarantee financial support; however, applicants will not normally be admitted without financial support.

Career Opportunities

Completion of graduate degrees in Biology prepares students for careers in teaching and research in universities and colleges. Many graduates also find employment with private industry and state and national governmental agencies. Specific employment possibilities will depend on the nature of the graduate program pursued. The extensive background provided by a graduate degree also prepares students for eventual administrative responsibilities.

Research Emphases

Research areas of departmental faculty are diverse. Areas of research currently include: Cellular and Molecular Biology: plant-microbial interactions; molecular neurobiology and biophysics; gene regulation and signal transduction; membrane transport; molecular virology; Ecology and Behavior: community and ecosystem ecology; insect ecology and behavior; pollination biology; plant-insect interactions; vertebrate behavioral ecology; mathematical and computer modeling; soil microbiology; fungal ecology; biological control; integrated pest management (IPM); Physiology and Comparative Biology: toxicology and industrial hygiene; insect pathology; plant physiology and pathology; and Systematics and Evolution: systematics and evolution of plants, fungi, insects, reptiles, and amphibians; evolutionary quantitative genetics; biogeography; evolution of chemical defenses and resistance in microorganisms, insects, reptiles, and amphibians.

Research and Teaching Facilities

Herbarium. Graduate study in plant taxonomy offered in the Department of Biology utilizes the extensive facilities of the Intermountain Herbarium. The collection includes over 220,000 research specimens. About 50 percent are from the Intermountain Region, while most of the remainder are from other regions of North America.

Insect Collection. Comprising over a million specimens, the insect collection is available to scientists and graduate students involved in taxonomic research and to those requiring identification of insects in various research projects. The collection primarily covers the Intermountain Region, but it also contains species from nearly all areas of the world. The BNR Building also houses the USDA/ARS U.S. National Pollinating Insect Collection.

Laser Scanning Confocal Microscope. The Department of Biology has a BioRad 1024 Laser Scanning Confocal Microscope. This state-of-the-art technology utilizes highly tuned lasers to give detailed sectional views of the interior of intact structures such as cells and tissues, and greatly extends the advantages of fluorescence microscopy. This microscope is utilized by researchers campuswide, and is an indispensable tool for molecular and cellular studies.

Center for Integrated BioSystems (CIB). The CIB operates three service laboratories and a variety of research projects. The service laboratories provide essential biological resources for biotechnology research and development including: DNA sequencing, peptide synthesis, protein sequencing, antibodies, and fermentation.

Biology Faculty

Professors

Anne J. Anderson, microbiology and plant pathology
Kandy D. Baumgardner, genetics
Edmund D. Brodie, Jr., behavior and evolution
E. W. “Ted” Evans, insect ecology
James W. Haeftner, systems analysis
Joseph K.-K. Li, virology
James A. MacMahon, community ecology
Frank J. Messina, insect biology
Keith A. Mott, plant physiology
William J. Popendorf, industrial hygiene
Peter C. Ruben, neurobiology
Jon Y. Takemoto, microbiology

Associate Professors

Brett A. Adams, cell signaling
Diane G. Alston, integrated pest management
Mary E. Barkworth, plant systematics
Daryll B. DeWald, cell biology
Timothy A. Gilbertson, neurobiology
Bradley R. Kropp, mycology
Joseph R. Mendelson, III, vertebrate systematics
Richard J. Mueller, plant morphology
Gregory J. Podgorski, developmental biology
John M. Stark, microbial ecology and biogeochemistry
Kimberly A. Sullivan, behavioral ecology
Carol D. von Dohlen, insect biology
Dennis L. Welker, molecular biology
Paul G. Wolf, systematics and molecular biology

Assistant Professors
Michelle A. Baker, aquatic ecology
Michael E. Pfrender, evolutionary quantitative genetics

Professors Emeriti
William A. Brindley, entomology and toxicology
Donald W. Davis, entomology and pest management
Keith L. Dixon, ornithology and mammalogy
LeGrande C. Ellis, endocrinology and reproductive physiology
James A. Gessaman, vertebrate physiological ecology
Ting H. Hsiao, insect physiology and biochemistry
Gene W. Miller, plant biochemistry and physiology
Ivan G. Palmblad, evolutionary ecology
Frederick J. Post, aquatic microbiology and microbial ecology
Reed S. Roberts, entomology
Richard J. Shaw, vascular plant taxonomy
John R. Simmons, biochemical genetics
John J. Skujins, soil biochemistry and microbial ecology
Sherman V. Thomson, plant pathology
Nabil N. Youssef, cell biology and parasitology

Associate Professors Emeriti
David B. Drown, environmental health
Wilford J. Hansen, systematic entomology
Raymond I. Lynn, algology and microbial ecology
George W. Welkie, plant physiology and virology

Research Professor
Donald W. Roberts, insect pathology

Research Assistant Professors
Michelle A. Grilley, molecular biology
Joanne E. Hughes, molecular genetics
Charles D. Miller, plant pathology
Mark P. Miller, genetics

Adjunct Professors
James H. Cane, bee biology
Noelle E. Cockett, biotechnology
Robert Fogel, mycology
William P. Kemp, insect ecology
J. Russell Mason, predation, ecology, and behavior
Darwin L. Sorensen, aquatic microbiology
Rex S. Spendlove, virology

Adjunct Associate Professors
John C. Bailey, public health
Dale L. Barnard, chemotherapy of viruses
Jay B. Karren, entomology
Vincent J. Tepedino, entomology

Adjunct Assistant Professors
Daniel A. Boston, DDS, dentistry
Terry Grissold, bee biology
Rosalind R. James, entomology
James P. Pitts, entomology
Theresa L. Pitts-Singer, entomology

Principal Lecturer
David M. “Andy” Anderson, medical technology

Lecturers
John A. Flores II, public health, industrial hygiene
Alice M. Lindahl, invertebrate biology
David O. Wallace, public health, industrial hygiene

Course Descriptions
Biology (BIOL), pages 349-354
Public Health (PUBH), page 472
Business Administration

Department Head: Alan A. Stephens
Location: Business 811
Phone: (435) 797-2362
FAX: (435) 797-2634
E-mail: busadm@b202.usu.edu
WWW: http://www.usu.edu/cob/admin
Undergraduate Advisor: Janet P. Lyons, Business 818, (435) 797-3722, jan.lyons@usu.edu

Degrees offered: Bachelor of Science (BS) and Bachelor of Arts (BA) in Business Administration, Finance, Marketing, and Production Management. The Department of Business Administration participates in the College of Business MBA (Master of Business Administration) degree (see pages 153-154).

Undergraduate Programs

Objectives
The Department of Business Administration offers programs to prepare students for administrative positions in business, government, and other institutions. Specialized training is provided within specific functional fields of business, as well as training directed at understanding the broader aspect of business as it functions within our economy. Training is specifically provided in three areas: (1) Finance, leading to careers in banking, brokerage activities and investment, and positions as financial analysts in industry; (2) Marketing, involving positions in sales, advertising, retailing, distribution, and other similar activities; and (3) Operations Management, leading to careers related to supply chain management, operations planning and scheduling, project management, quality management, and consulting.

College of Business Requirements
All students desiring to major in the Business Administration Department must satisfy the College of Business admission requirements, provided on pages 101-102. Academic advising about these requirements is available in the College of Business Career and Education Opportunities Center, Business 310A.

Business Core. All majors in the Department of Business Administration must complete the following prerequisite courses and business core courses in addition to the specific courses listed for the major.

Prerequisite Courses: ECON 1500; MATH 1100; STAT 2300; and PSY 1010 or SOC 1010. Business majors must take these courses as prerequisite to 3000-, 4000-, and 5000-level courses in the College of Business.

Business Core Courses: ACCT 2010, 2020; BA 3400, 3500, 3700; BIS 2450, 2550; BUS 3250; ECON 2010, 3400; MHR 2990, 3110; and MHR 4880 or 4890. All 3000-, 4000-, and 5000-level courses in the College of Business are restricted to students admitted to the College of Business or another USU major with an overall GPA of at least 2.67 and completion of at least 40 credits.

Majors
The Department of Business Administration offers four majors. An overall GPA of at least 2.50 is required to graduate. Course requirements for each major are listed below.

Finance Major. Finance is concerned with how individuals and firms allocate resources over time. Solutions to allocation problems rely upon the existence of capital markets that allow the exchange of resources over time, and firms that allow individuals to transform current resources into resources available in the future. In particular, finance deals with the financial management of firms, investment management, and the management of financial institutions. In addition to completing the departmental core, students majoring in finance must take BA 4450, 4460; ECON 4010, 4020; and three finance electives. Students must choose two of the following: BA 4300, 4410, 4420, 4430. The third elective may be selected from the required finance electives or from BA 3080; ACCT 3310, 3410; PFP 5060, 5070, 5080; ECON 4030, 5030, 5330, 5600.

Marketing Major. Modern marketing consists of a system of activities designed to help the marketer understand and influence buyer and seller behavior. Within the socio-economic and political environment, the marketer must plan, price, promote, and distribute want-satisfying goods and services to society. The following courses, designed to prepare students in all areas of marketing, must be taken in addition to the departmental core: BA 4510, 4530, 4540, 4550, 4590. Specialized training is provided in three areas: (1) Marketing, leading to careers in sales, advertising, retailing, distribution, and other similar activities; (2) Business Administration Major. A major in business administration is available for those students who have a special career objective that does not fit the other majors. A written proposal is designed by the student and submitted to the department head for approval. This proposal will include a written justification and a list of courses totaling at least 21 credits. For instructions, students should contact the departmental advisor.

Operations Management Major. Operations management involves planning, directing, controlling, and improving the activities related to providing goods and services. The operations manager is responsible for assuring that customer expectations are met, and even exceeded, with regard to quality, delivery, and price. To execute their responsibilities, operations managers must understand how to convert customer demand into specific material, equipment, and labor resources. In addition, they must work with and develop good suppliers, customer relationships, and internal work activities. Required courses include: BA 3080, 4720, 4750, 4790, 5730; MAE 5600 or STAT 5300; and one production elective chosen from ACCT 3310, ECON 5670, or MHR 4630.

Business Administration Major. A major in business administration is available for those students who have a special career objective that does not fit the other majors. A written proposal is designed by the student and submitted to the department head for approval. This proposal will include a written justification and a list of courses totaling at least 21 credits. For instructions, students should contact the departmental advisor.
Minors

The Department of Business Administration offers three minors. A grade point average of 2.50 in the five or six courses of a minor is required. Many of the courses listed under each minor have prerequisites.

Marketing Minor. ACCT 2010; MHR 3110; BA 3500, 4510, 4550; and either BA 4530 or 4540.

Finance Minor. BA 3400, 3500, 4450, 4460; and one of the following: BA 4300, 4410, 4420, 4430.

Operations Management Minor. BA 3500, 3700, 4720; and two of the following: BA 3080, 4750, 4790, 5730.

Other Minors. The College of Business sponsors two minors, a general business minor and an international business minor. Information about these minors can be obtained from the College of Business Career and Education Opportunities Center, Business 310A.

Other Degree Options

Dual Majors. Dual majors are available in accounting, human resources, management, business information systems, and economics. See the applicable department for information.

Second Bachelor’s Degrees. Second bachelor’s degrees are available for all four majors. For information, contact the College of Business Career and Education Opportunities Center, Business 310A.

Additional Information

Advising sheets for majors, minors, second bachelor’s degrees, and the Business Administration major are available from the Department of Business Administration, Business 815, and from the College of Business Career and Education Opportunities Center, Business 310A. These sheets can also be found online at:

Graduate Programs

For information about the Interdepartmental Curriculum for the Master of Business Administration (MBA), see pages 153-154. Master’s degrees are also offered by the following departments in the College of Business: Accountancy, Business Information Systems, and Economics. For further information, refer to the appropriate sections of this catalog.

Business Administration

Faculty

Professors
Kenneth R. Bartkus, promotion management
Drew Dahl, financial institutions and international finance
Peter M. Ellis, production and operations research
J. Robert Malko, corporate and energy utility finance
C. R. Michael Parent, marketing research and strategy
Philip R. Swensen, corporate finance, investments, and managerial economics

Professors Emeritus
Allen D. Kartchner, production and operations research
Eugene C. Kartchner, production and operations research
Calvin D. Lowe, marketing
Paul A. Randle, corporate finance and valuation analysis

Associate Professors
J. Brian Atwater, “theory of constraints,” quality management, lean manufacturing
Cathy L. Hartman, consumer behavior and environmental sustainability
Vijay R. Kannan, supply chain and quality management, cellular manufacturing
Edwin R. Stafford, marketing management, strategy, environmental sustainability
Alan A. Stephens, corporate finance and investments

Assistant Professors
Haiyan Hu, retailing and consumer behavior, international retailing, visual merchandising and promotion
Seung-Woog Kwag, investments and corporate finance

Instructors
Stacey B. Hills, marketing research, strategy, and product management
Janet P. Lyons, operations and marketing

Course Descriptions

Business Administration (BA), pages 346-347
Master of Business Administration (MBA)

Director of Business Graduate Programs: Mary Jo Blahna
Location: Business 302B
Phone: (435) 797-2274
FAX: (435) 797-2399
E-mail: maryjo.blahna@usu.edu
WWW: http://www.usu.edu/cob/

Degree Offered: Master of Business Administration (MBA)


Graduate Program

Objectives

The MBA program is an interdepartmental program administered by the College of Business. The MBA program is designed to provide students with an understanding and analytical tools necessary for effective and efficient management in today’s complex business world. The curriculum prepares students with a working knowledge of the fundamental business functions and a sensitivity to the legal, ethical, social, technological, and international forces in the business environment. The MBA program’s focus is the development of the analytical, communication, interpersonal, and leadership skills needed for a successful career in a variety of organizations. The MBA program is accredited by AACSB International—The Association to Advance Collegiate Schools of Business.

Admission Requirements

For consideration for admission to the MBA program, applicants must submit an application form and fee, all undergraduate transcripts, Graduate Management Admissions Test (GMAT) scores (the GRE is also accepted), and three letters of recommendation from qualified professionals, at least two of whom must be academicians. TOEFL scores are required for candidates from abroad, with a minimum of 550 deemed acceptable. International students with a prior degree from an English-speaking university are exempted from the TOEFL exam.

Application Deadline for Fall Semester. No applications will be considered until all required information arrives in the School of Graduate Studies at Utah State University. In addition, the student desiring to pursue the MBA degree must have been accepted as a matriculated student before he or she will be permitted to register for 6000-level courses that will be part of the student’s advanced program. Full-time business experience is also preferred. Students who wish to be considered for financial aid must submit applications by February 15 for the coming academic year.

Students with or without an undergraduate degree in business may enter the MBA program. However, before taking advanced core or elective courses, basic competencies in business that have not been acquired through prior courses or experience must be developed by completing prerequisite courses as outlined in the business core described below under Degree Requirements. Applicants not meeting minimum requirements may be allowed to correct deficiencies concurrently with graduate coursework. Before entering the program, each student must meet with an advisor to plan his or her course of study.

Degree Requirements

Business Core. The MBA Business Core curriculum provides skills and knowledge in statistics, written communication, computer literacy, mathematics, information systems, economics, accounting, finance, marketing, management, and organizational behavior. Students who have completed a bachelor’s degree must have coursework equivalent to the core subject matter areas of the AACSB for direct entry into the advanced program.

Accelerated Business Core. Students who have not completed a bachelor’s degree accredited by the AACSB may choose to gain the necessary basic business competencies by attending the 18-credit Accelerated Business Core (ABC), which is offered during the summer semester only. The ABC is a uniquely efficient and effective way of delivering the basic program curriculum. It is a single, team-taught course covering the topics and functions, which form the context and offer perspectives in business. The ABC enables students from nonbusiness backgrounds to prepare quickly and similarly for the Advanced Program Courses.

Alternatively, students may acquire the necessary basic competencies by completing courses satisfying the common body of knowledge requirement: ACCT 2010, 2020; BA 3400, 3500, 3700; BIS 2450; ECON 1500, 2010; MHR 2990, 3110; MATH 1100; and STAT 2300. Students may not be required to take courses which duplicate prior academic or industrial training and are required to meet with the director of the MBA program to plan their course of study.

The advanced required courses, along with electives, consist of 30 credits. Students must complete the advanced course requirements listed below. In addition, students may choose to complete the course of study for an MBA or select among several specializations, which are also described below.

Advanced Required Courses (21 credits). Students must complete MHR 6890 to fulfill the integrative component of the MBA. Students must also successfully complete the following courses to fulfill advanced course requirements: ACCT 6350; BA 6420, 6520, 6720; ACCT 6500 or BIS 6700; MHR 6500.

Course of Study for MBA (9 credits). Working with the MBA director, students select a minimum of three electives (9 credits). One approved 5000-level course may be used. In addition, students must complete an approved College of Business graduate course (3 credits) which meets the Graduate School’s research requirement. Electives taken outside of the College of Business may require the completion of prerequisite courses.
Specializations (12 credits)

Students may select a specialization in one of several areas listed below. Classes taken as part of the MBA advanced required courses cannot be used as part of a specialization. One course in each specialization will be designated as research intensive to meet the University’s research requirement.

Accounting. Students admitted to the USU MBA Program may earn an Accounting Specialization by completing the MBA curriculum, 21 credits, and at least 12 approved credits in accounting. To qualify for this specialization, students must complete, or have previously completed, the equivalent of ACCT 3110, 3120, 3310, 3410, 5210 (or 6210), 5220 (or 6220), 5400 (or 6400), and 6510. At least 9 credits must be taken in accounting courses numbered above 6010. The USU Graduate School research requirement may be satisfied by completing ACCT 6410 or 6610.

Agribusiness Management. This specialization consists of ECON 6030, 6040, 6300; and either ECON 6500 or 6700. ECON 6330 should be taken to satisfy the quantitative methods requirement.

Business Information Systems. This specialization requires students to complete BIS 6700 and three of the following courses: BIS 6200, 6330, 6410, 6500, and 6750.

Entrepreneurship. This specialization consists of MHR 6410, 6430, 6470, and an approved elective.

Human Resource Management. This specialization requires students to complete MHR 6690 and to select any three of the following courses: MHR 6510, 6550, 6630, 6670, and 6750.

Manufacturing Management. This specialization includes BA 5730, 6740; and MHR 6350, 6370.

Personal Financial Planning. This specialization consists of PFP 6060, 6070, 6080, and an approved elective. Students must have completed (or complete as part of their graduate work): BA 3460 or 4460, and ACCT 3410. This specialization satisfies requirements to sit for the national Certified Financial Planner (CFP) examination.

Financial Assistance

Graduate assistantships, scholarships, and fellowships are available to outstanding on-campus students. Graduate assistantships and scholarships generally range between $1,000 and $3,000 for nine months. Application for assistantships must be made by February 15. A recipient of a graduate appointment is usually eligible for a waiver of the out-of-state portion of his or her tuition.

Master of Business Administration Faculty

Professors
Kenneth R. Bartkus, promotion management
Caryn L. Beck-Dudley, business law and social responsibility
Basudeb Biswas, international trade and economic development
Gaylen N. Chandler, human resources, management, and entrepreneurship
Drew Dahl, financial institutions
Peter M. Ellis, production and operations research
Christopher Fawson, public finance and econometrics
L. Dwight Israelson, comparative systems and economic history
Paul M. Jakus, economics
Richard L. Jenson, information systems and managerial accounting
J. Richard Johnson, financial, managerial, advanced, and agency accounting
J. Robert Malko, corporate and energy utility finance
Glenn M. McEvoy, organizational behavior, human resources, and management
C. R. Michael Parent, marketing research and strategy
Richard L. Ratliff, auditing, financial, internal audit, and principles
Clifford R. Skousen, international and managerial accounting
David B. Stephens, business strategy and labor relations
Philip R. Swensen, finance

Associate Professors
J. Brian Atwater, “theory of constraints,” quality manufacturing, lean manufacturing
Ronda B. Callister, organization behavior, management
Steven H. Hanks, business strategy, management, and entrepreneurship
Cathy L. Hartman, consumer behavior and environmental sustainability
Jeffrey J. Johnson, information systems
Vijay R. Kannan, supply chain and quality management, cellular manufacturing
Irvin T. Nelson, accounting
David H. Olsen, database manager
David J. Paper, web development
Edwin R. Stafford, marketing
Alan A. Stephens, corporate finance and investments

Assistant Professors
Dawn DeTienne, entrepreneurship
David L. Dickinson, labor and employee relations, labor economics
E. Vance Grange, accounting
James Hayton, human resources
Haiyan Hu, retailing and consumer behavior, international retailing, visual merchandising and promotion
Yong Seog Kim, e-commerce, information systems strategies
Seung-Woog Kwag, finance
Robert J. Mills, visual basic
Troy V. Mumford, organizational behavior, human resource management, compensation
Jean A. Pratt, e-commerce/web design

Instructor
Stacy B. Hills, marketing research, strategy, and product management

Senior Lecturer
Alan P. Warnick, human resources

MBA Courses

Descriptions of MBA courses can be found listed alphabetically by prefix in the Course Descriptions section of this catalog.
Department Head: Karen A. Forcht
Location: Business 711
Phone: (435) 797-2342
FAX: (435) 797-2351
E-mail: karen.forcht@usu.edu
WWW: http://www.usu.edu/cob/bis/

Undergraduate Advisor: Peggy Buttars, Business 310, (435) 797-2352, peggy.buttars@usu.edu

Degrees offered: Associate of Applied Science (AAS) in Office Systems Support (two-year degree); Bachelor of Science (BS), Bachelor of Arts (BA), and Master of Science (MS) in Business Information Systems; BS and BA in Business Information Technology and Education; BS and BA in Marketing Education; Master of Education (MEd) in Secondary Education with specialization in Business Education; participates in the Interdepartmental Doctor of Philosophy (PhD) in Education and Doctor of Education (EdD) with a specialization in Business Information Systems

Undergraduate emphases: Business Information Systems BS, BA—Management Information Systems, Electronic Commerce, Office Systems Management; Business Information Technology and Education BS, BA—Business Teacher License, Training and Development; Marketing Education BS, BA—Marketing Teacher License, Training and Development


Distance Learning: The Bachelor of Science (BS) and Bachelor of Arts (BA) in Business Information Systems are offered throughout the State of Utah through the USU satellite Distance Learning Program. The MS in Business Information Systems is also offered through Distance Learning. For more information, contact the nearest USU Extension Center.

Undergraduate Programs

Objectives

The Department of Business Information Systems offers two major educational thrusts in undergraduate as well as graduate programs. The Business Information Systems major is designed to prepare individuals for positions as managers in business information systems, including information managers, information supervisors, network managers, worldwide web designers, electronic commerce developers, systems analysts, applications programmers, systems trainers, and office systems managers by pursuing a bachelor’s degree program in Business Information Systems.

The second major thrust is designed to prepare individuals as teachers and supervisors of business and marketing subjects at the secondary and postsecondary grade levels in the educational system or as teacher-trainers in private industry. Students may earn a bachelor’s degree in Business Information Technology and Education or Marketing Education.

A comprehensive two-year Associate of Applied Science Degree in office systems support subjects is also available. In addition, the department provides service courses for many other groups of students.

The department has a modern microcomputer laboratory in seven separate rooms with more than 200 microcomputers. Students take microcomputer classes as part of their College of Business requirements, Computer and Information Literacy (CIL) examination preparation, and elective programs.

Requirements

College of Business Requirements. All bachelor’s degree students majoring in Business Information Systems programs must satisfy the College of Business entrance requirements provided on pages 101-102. Academic advising about these requirements is provided by the College of Business Career and Education Opportunities Center, Business 310A. Business Information Systems majors must also follow College of Business presubmission course requirements for admission to a major, detailed on page 102.

Teacher Licensure. Persons planning to teach must also be admitted to the teacher licensure program in the College of Education and Human Services. A cumulative college grade point average of 2.75 is required to be admitted to the College of Education and Human Services, to student teach, and to graduate in Business Information Technology and Education or Marketing Education with a teaching license. Detailed information may be obtained from the Department of Secondary Education and/or the College of Education and Human Services.

Two-year Associate of Applied Science Degree. Students indicating an interest in the Office Systems Support Associate of Applied Science Degree can be accepted directly into the program upon admission to the University. Students who desire to transfer to a four-year program offered by the College of Business must meet the requirements specified for bachelor’s degree programs.

Competency-based Placement Program. Students who have acquired knowledge and skills that are not represented on their collegiate transcripts of credit are allowed to demonstrate competency by challenging related courses. Placement in a skills-oriented sequence can be accomplished by discussion with an advisor. Challenge of courses is done by successfully completing an examination similar to a final course test.

Students with potential for demonstrating competence have two options, one of which must be chosen prior to examination. One option is to challenge for credit (P/D+, D, F option) according to University established procedures; results of the test are recorded on the student’s transcript. A second option is to waive without credit required classes, if competence at the B level is demonstrated. Students will be assessed a fee for choosing one of these options.
Program Requirements

Bachelor’s Degree in Business Information Systems. The Information Systems program at Utah State University offers a common core of courses through two departmental majors: Business Information Systems and Computer Science. The curricula of the individual departments differ substantially in emphasis.

The Business Information Systems major, Management Information Systems (MIS) emphasis, is offered in the Business Information Systems Department, College of Business. The Bachelor of Science or Bachelor of Arts program is designed for students interested in business careers as information specialists, systems analysts, network managers, applications programmers, and information systems managers in business and industry. BIS majors take required courses in analysis and design, Internet management, telecommunications, decision support systems, spreadsheet and database applications, and information systems projects. All graduates are required to complete a common core of business subjects. The College of Business is accredited by the American Assembly of Collegiate Schools of Business. The department also offers a Master of Science in Business Information Systems with an area of emphasis in Management Information Systems.

The Computer Science major with an Information Systems emphasis is located in the College of Science and is designed for students interested in a career as a Computer Scientist with a background in Information Sciences and Systems. Majors in this emphasis are trained in all phases of the analysis, design, and implementation of Information Systems. As part of this emphasis, students also receive training in the theory and application of information. Students select an application area such as Business, Accounting, or Economics. Other application areas can be developed by working closely with an advisor. This program of study leads to a Bachelor of Science, Bachelor of Arts, or Master of Science degree in Computer Science. See page 175 for additional details.

General requirements for all Business Information Systems majors are: ACCT 2010, 2020; BA 3400, 3500, 3700; BIS 1400 (or Computer and Information Literacy Examination), 2450, 2550; BUS 3250, 4250, ECON 1500, 2010, 3400; MHR 2990, 3110; MHR 4880 (or 4890); Math 1050, 1100; STAT 2300; PSY 1010 (or SOC 1010); and University Studies requirements.

Students must choose a management information systems emphasis, an electronic commerce emphasis, or an office systems management emphasis.

The management information systems emphasis provides knowledge and skills for business systems analysts, applications programmers, information managers, web masters, and other business information systems positions.

Required classes for the management information systems emphasis are: BIS 2300 (or 3100), 3330, 3500, 4330, 5100, 5110, 5300, 5400, 5800; BIS 5050 (or 5650 or 5700); CS 1700, 1710, 1720 (or 3410); plus 6 credits outside the College of Business related to the major. It is strongly recommended that students take BIS 5050, 5450, and 5650. See advisor for current checklist of requirements.

The electronic commerce emphasis provides knowledge and skills for students who wish to work in the electronic economy using high-speed Internet networks and applications, while providing competitive tools for all Internet-driven electronic commerce. This expertise includes business-to-business electronic commerce, as well as business-to-consumer electronic commerce. Students gain expertise in establishing and designing websites from the technical point of view, as well as expertise in electronic commerce from a strategic business point of view.

Required classes for the electronic commerce emphasis are: BIS 3330, 3500, 4330, 5050, 5100, 5110, 5300, 5450, 5650, 5700, 5800; CS 1700, 1710, 1720 (or 3410).

The office systems management emphasis provides knowledge and skills for office managers, administrative assistants, and other practitioners who assist with analysis, design, and use of computerized information from a user’s perspective.

Required classes for the office systems management emphasis are: BIS 1420, 2300, 2400, 2520, 2600, 3100, 3450 (or 3500), 5450, and 5700, plus 13 credits of approved upper-division classes outside the College of Business related to the major. BIS 3330, 4350, 5300, and 5400 are strongly recommended. See advisor for current checklist of requirements.

Bachelor’s Degree in Business Information Technology and Education. A composite major in Business Information Technology and Education is designed for students desiring to qualify for a license to teach business subjects in grades 7-12 or to teach in business and industry. Required courses include: ACCT 2010, 2020; BA 3500; BIS 1400 (or Computer and Information Literacy Examination); BIS 2300 (or 3100), 2400, 2450, 2520, 2550, 3140, 4550, 5400; BIS 5300 (or 5450 or 5700); BUS 2250; ECON 1500; ECON 2010 (or MHR 2990); MHR 3110; PSY 1010; MATH 1100; STAT 2300; and other University Studies courses required by the University. Required English classes are ENGL 1010 and 2010. Students must also complete at least one of the following emphases:

1. Business Teacher License Emphasis: BIS 3000, 3300, 3400, 4300, 4400, 5500, 5630; SCED 3100, 3210, 4200, 4210; and SPED 4000.

2. Training and Development Emphasis: BIS 3450, 4350, 5450; BUS 4250; and 15 additional credits chosen from the following: MHR 3710; INST 5210, 5230, 5240, 5250, 5260, 5300, 5400, 5900.

Those who do not wish to receive a license to teach in the public schools may select an emphasis in Training and Development for business and industry.

Bachelor’s Degree in Marketing Education. A composite major in marketing education is designed for students desiring to qualify for a license to teach marketing and distributive education subjects in the public secondary schools or in business and industry. Required courses for students wishing to receive a license to teach include: ACCT 2010, 2020; BA 3500, 4510; BA 4540 (or 4550); BIS 1400 (or Computer and Information Literacy Examination), 1420, 2300, 2400, 2450, 2520, 3140, 4550; BUS 2250; ECON 1500; ECON 2010 (or MHR 2990); MHR 3710; PSY 1010; MATH 1100; STAT 2300. Students must also complete at least one of the following emphases:

1. Marketing Teacher License Emphasis: BIS 3000, 3300, 3400, 4300, 4400, 5500, 5630; SCED 3100, 3210, 4200, 4210; and SPED 4000.

2. Training and Development Emphasis: BIS 3450, 4350, 5450; BUS 4250; and 15 additional credits chosen from the following: MHR 3710; INST 5210, 5230, 5240, 5250, 5260, 5300, 5400, 5900.
Those who do not wish to receive a license to teach in the public schools may select an emphasis in Training and Development for business and industry.

Students must also complete ENGL 1010 and 2010, as well as ECON 1500 and BIS 3140, which may be counted toward their University Studies requirements.

Graduation Requirements. To be recommended by the department for graduation with a bachelor’s degree, BIS majors must have a minimum GPA of 2.67 in courses required for their major. Business Information Systems majors must have an overall GPA of 2.5. Business Information Technology and Education and Marketing Education majors must have an overall GPA of 2.75. This includes transfer credit. At least 50 percent of the business credits required for a business degree must be taken on the Utah State University campus or at a designated residence center.

Communications Literacy requirements are ENGL 1010 and 2010 plus two Communications Intensive courses.

Office Systems Support Associate of Applied Science Degree. This program is designed for students desiring two years (a minimum of 65 semester credits) of college to prepare for positions as office supervisors and other office and information system support personnel. Emphasis is placed on job skills. Requirements are: ACCT 2010; BIS 1400, 1420, 1550, 2300, 2400, 2450, 2520, 2550, 2600; BUS 2250. In addition, students are required to complete a minimum of 9 credits in business-related areas as approved by their advisor.

A minimum of 18 credits of University Studies must be taken. Required University Studies classes are: 6 credits of communications literacy (ENGL 1010 and 2010), 3 credits of quantitative literacy (MATH 1050 or 1100), and 9 credits of breadth requirements.

Students who initially enroll for the two-year Associate of Applied Science degree may readily change to a four-year bachelor’s degree program and complete the requirements for the business information systems major, business information technology and education major, or another major in the College of Business.

Minors. The Department of Business Information Systems is authorized to award teaching minors in Business Information Technology and Education, Marketing Education, and Business Computer and Information Systems. A minor in Business Information Systems and a minor in Electronic Commerce are also authorized.

Requirements for the Business Information Technology and Education teaching minor are ACCT 2010; BIS 1400 (or Computer and Information Literacy Examination), 1420, 2300, 2450, 3000, 3300 (or 4300), 3400, 4400, 5400; BIS 5300 (or 5450 or 5700); and ECON 1500.

A teaching minor in Marketing Education consists of the following courses: ACCT 2010; BA 3500; BIS 1400 (or Computer and Information Literacy Examination), 1420, 2300, 3000, 3300 (or 4300), 3400, 2400 (or 3550), 4400; ECON 1500; BA 4510 (or 4550).

Requirements for the Business Computer and Information Systems teaching minor are: BIS 1400 (or Computer and Information Literacy Examination), 1420, 2300, 2400, 2450, 3000, 3100, 3300 (or 4300), 3400, 3450 (or 3500), 5300, 5400.

The minors listed above are teaching minors and are available only to those working toward a teaching license.

Students wishing to minor in Business Information Systems must complete the following courses: BIS 2300, 2450, 3100, 3330, 3450 (or 3500); CS 1700 (or 3410 or 3510). In addition, they must choose one course from the following: ACCT 4500; BIS 4350, 5100/5110 (take both), 5150, 5300, 5400, 5700; CS 1700 (or 3410, if not taken in required section). The following courses are also required for nonbusiness majors: ACCT 2010, 2020; BIS 1400.

Requirements for the Electronic Commerce minor are: BIS 2400, 3330, 3450 (or 3500), 5100, 5110, 5300, 5700. Students whose majors are not in the College of Business must take the following courses, in addition to those listed above, in order to complete an Electronic Commerce minor: ACCT 2010, BIS 2450, and BA 3500.

Student Organizations

The Department of Business Information Systems sponsors or co-sponsors three student organizations. Each group provides unique experiences that can complement and enrich formal coursework. Leadership development and human relations skills are among the personal attributes enhanced by involvement in the various organization activities.

Association for Computing Machinery (ACM). ACM, a professional society for the information systems industry, sponsors a student chapter at USU. The goals of ACM are to: (1) provide leadership experiences for undergraduate and graduate business information systems majors; (2) help student members plan their careers and find employment by introducing them to practicing systems professionals; and (3) foster a professional attitude among business information systems majors so that they will contribute to their field.

Delta Epsilon Chi (DEX) is a cocurricular organization designed for marketing education and marketing majors. The major goal of DEX is to help students prepare for careers in marketing or marketing education. DEX provides students with opportunities to compete in marketing events at the state and national levels. Membership is open to all students interested in business and marketing.

Delta Pi Epsilon (DPE) is a national honorary fraternity for graduate students. Purposes of the organization include enhancement of research, scholarship, service, and cooperation in the profession. Election to membership requires review by members and faculty of the Department of Business Information Systems.

Graduate Programs

Master of Science

Students applying for admission to the Master of Science program in Business Information Systems must take the GMAT test. A score at the 40th percentile or better on the GMAT is required for admission. Undergraduate GPA should be 3.0 or above. Meeting minimum requirements does not guarantee admission.

The MS requires a minimum of 33 credits. A minimum of 24 credits of academic work must be in classes numbered 6000 and above. Twelve or more credits should be in the area of specialization. Students with bachelor’s degrees outside of business may be required to complete additional coursework.
Students in the master’s program pursue the Plan C option, where a research paper is completed in a special research class. Those who wish to pursue the Plan A thesis option must have permission from their committee to do so.

All MS degrees in the BIS Department require the following core: BIS 6150, 6440, 6810.

The specialization in Management Information Systems (MIS) is for students who wish to work as systems analysts, application programmers, network managers, information managers, information center managers, and trainers in business information systems.

Students are expected to have a background in business information systems. Required courses are BIS 6120, 6200, 6330, 6400 (or 6700), in addition to the departmental core. Students who choose the Plan A option must complete 6 credits of BIS 6970. Students may take credits in Business Information Systems, Computer Science, Instructional Technology, Business Administration, Accounting, Economics, or other approved electives to complete the 9 credits of electives required.

The specializations in Business Education, Marketing Education, and Training and Development are designed for those who are teaching in an area of business or who wish to work in training and development in business and industry. Required courses for the Business Education or Marketing Education specialization are BIS 6350, 6450, 6700, 6720, 6730, and 6770. Students must complete 15 credits of electives chosen from the following list (or select others with committee approval): BIS 6350, 6400, 6600, 6720, 6730, 6770, BUS 6250;

Required courses for the Training and Development specialization are BIS 6350, 6450; and BUS 6250. Students must complete 15 credits of electives chosen from the following list (or select others with committee approval): BIS 6120, 6330, 6410.

For a current checklist of requirements, students should contact their departmental graduate advisor.

The USU MS in Business Information Systems is the only master’s program in Business Information Systems in the state of Utah. Graduates are placed in the West and throughout the nation.

**Master of Education**

Students desiring admission to the MEd program must also meet the requirements of the Secondary Education Department.

The MEd degree in secondary education with specialization in business education has a master’s project requirement as part of the program. The program is devised specifically for the practicing secondary school teacher of business or marketing education. Students complete a core area in secondary education, as well as requirements in business education and subject-matter-oriented courses. The program is also designed to prepare people to teach in public secondary schools.

**Doctor of Philosophy and Doctor of Education**

Applicants for admission to the College of Education and Human Services PhD or EdD programs with a specialization in Business Information Systems must take the GRE. Scores on the verbal and quantitative test must be at or above the 40th percentile. No minimum score is required on the analytical section (required by the Educational Testing Service).

The Department of Business Information Systems cooperates with other departments (offering the interdepartmental Doctor of Philosophy (PhD) and Doctor of Education (EdD)). Within the Business Information Systems specialization, emphases can be pursued in business education, marketing education, business information systems, and business communications. Other subject-matter emphases are also available. The PhD is a research-based degree. The EdD degree is a practitioner’s degree. Both degrees require dissertations. Graduates secure positions teaching business subjects or business-teacher education in colleges and universities or in business and industry. Former graduates are currently in various positions in higher education, including higher education administration; in teacher education instruction; and in business and industry.

**Additional Information**

Specific details about each of the foregoing degree programs are outlined in policy and procedure documents available through the department. All requirements are subject to change; check with the department for current requirements.

The business and marketing teacher education programs, at the undergraduate and graduate levels, are ranked highly and respected throughout the nation, with faculty who are nationally and internationally recognized.

All students must meet admission requirements as specified by the School of Graduate Studies (see pages 90-91).

**Research**

Faculty in the Department of Business Information Systems are active in research and scholarly endeavors. Current and published research topics include business communications; international communications; improvement of instruction in teaching; business information systems as related to business and industry; curriculum for business schools; business reengineering; electronic commerce; group decision support systems; microcomputer applications; use of microcomputers in various subjects, including accounting and business communications; cooperative education; issues in higher education; and other areas related to business information systems, marketing education, and business education.

**Financial Assistance and Assistantships**

Funds for scholarships are provided through the School of Graduate Studies and administered in the department. Those interested in scholarships should contact the graduate director or the department head.

Each year several high-quality graduate teaching assistants are needed. These assistants generally teach classes in keyboarding, word processing, business communications, and microcomputer applications. Those who are interested in teaching assistantships must apply through the department head. They must have had teaching experience or be willing to take teaching methods classes, as well as the School of Graduate Studies-sponsored teaching assistant workshop, prior to receiving an assistantship.
Career Opportunities

Business Information Systems is one of the fastest growing fields in business and industry. Follow-up studies show that information systems positions pay excellent salaries, and the placement rate of students is almost 100 percent. Currently, there is also a great demand for business teachers in public education.

Business Information Systems Faculty

Professors
Karen A. Forcht, business information systems, business communication, data management
Dennis J. LaBonty, business information systems
James Calvert Scott, business education, business communications
John F. Vinsonhaler, business information systems

Professors Emeritus
Charles M. Lutz
H. Robert Stocker
William A. Stull

Associate Professors
Jeffrey J. Johnson, business information systems
David H. Olsen, business information systems
David J. Paper, business information systems

Assistant Professors
Karen Biers, clothing and textiles, home-based entrepreneurship, extension
Karina Hauser, lean manufacturing, artificial intelligence
Yong Seog Kim, data mining
Robert J. Mills, business information systems
Jean A. Pratt, business information systems
Zsolt Ugray, business information systems, electrical commerce and optimization

Principal Lecturers
Marianna Larsen, office systems support, business communications
Craig J. Peterson, business information systems
Dana H. Swensen, business information systems, business communications

Senior Lecturers
Susan M. Jones, business information systems, business communications
Ralph B. “Bernie” Lantz, computer technology, networks security, business information systems, computer literacy

Lecturer
Malia L. Young, marketing education, business communication, information systems

Course Descriptions

Business Information Systems (BIS), pages 354-357
Chemistry and Biochemistry

Department Head: Steve Scheiner  
Location: Maeser Laboratory 140  
Phone: (435) 797-1619  
FAX: (435) 797-3390  
E-mail: chemist@cc.usu.edu  
WWW: http://www.chem.usu.edu

Undergraduate Programs

Objectives

Chemistry is a subject that addresses the properties of materials and the transformations that they undergo. Especially important are aspects of energy and structure related to chemical reactivity. Consequently, students of many disciplines take courses in chemistry to learn about the behavior of the substances they will use or reference. The Department of Chemistry and Biochemistry offers a wide variety of courses for those whose majors and/or anticipated careers require a knowledge of chemistry. These areas of study include nutrition, engineering, biology, agriculture, natural resources, medicine, law, and education, to name a few. Many students also choose chemistry as an elective course to better prepare themselves as citizens in a technological world.

The Bachelor of Science Degree entails considerable specialization in chemistry and related areas. The BS emphases require a common core of courses, but allow for a different concentration of advanced work according to the interests and career objectives of the student. The BS with Professional Chemistry Emphasis, BS with Environmental Chemistry Emphasis, and BS with Biochemistry Emphasis degrees meet the requirements for certification by the American Chemical Society (ACS). The certified degree emphases provide excellent preparation for immediate entry into the job market or for graduate school in chemistry, biochemistry, chemical engineering, molecular biology, nutrition, food science, materials science, and a wide variety of other fields. ACS certification in Chemical Education is available to students who complete an ACS-certified program, together with the Professional Education program in secondary education. The BS with Life Science Emphasis degree is popular for students wishing to go on to medical or dental graduate programs. The life science emphasis is particularly appropriate for premedical and predental students who want a strong base for understanding the nature of chemical reactions in the body and the behavior of the drugs they will prescribe, or who want an attractive alternative should they decide ultimately not to pursue medical or dental school. The Chemistry Teaching Major or the Composite Teaching Major in Physical Science are available to those who want a career in secondary education. The BA degree is an excellent choice for students with an interest in studying law or business and who have an interest in science.

The core of the program utilizes year-long sequences of classes. The first-year sequence introduces the basic principles of chemistry, as well as most of the major concepts of the science. The second year explores in greater depth the characteristics of carbon-based compounds that serve as the backbone for the chemistry of life; for most drugs and medicines; for petroleum; for most fibers, paints, and plastics; and for many other commercial products. The third year examines in greater depth the models, theories, and mathematical interpretation of the structures, rates of change, energetics, and other properties of chemicals. In addition, one-semester courses examining the chemistry of life processes, the behavior of inorganic substances, and the analysis of the composition of substances are required. Many of the sequences have associated laboratory courses where students get hands-on practice. Here they synthesize compounds, measure physical properties, analyze samples, and determine structural features of compounds, using modern techniques and instrumentation. The requirements of the BS and BA degrees in chemistry, along with University and University Studies requirements, are summarized here. The specific requirements for the teaching major and for the composite teaching major in physical science are also included.

Students are also urged to study these requirements and to visit with their advisor on a regular basis about progress toward the completion of their degrees or for any questions regarding complementary courses and career goals.

General Requirements

Admission Requirements. First-year students admitted to USU in good standing qualify for admission to this major. Transfer students from other institutions need a 2.2 transfer GPA, and students transferring from other USU programs need a 2.0 total GPA for admission to this major in good standing.

Degrees Offered: Bachelor of Science (BS), Bachelor of Arts (BA), Master of Science (MS), Doctor of Philosophy (PhD) in Chemistry; MS and PhD in Biochemistry; BS and BA in Chemistry Teaching; BS and BA in Composite Teaching—Physical Science (Chem)

Undergraduate emphases: BS—Professional Chemistry, Biochemistry, Environmental Chemistry, Chemical Education, Life Science

Students interested in studying chemistry should take high school mathematics courses that will enable them to start calculus during their first semester at USU. High school coursework in chemistry and physics is also desirable. AP credit in chemistry may be counted toward the degree. For details, contact the departmental advising faculty.

No CHEM prefix course may be applied toward graduation with any major or minor in chemistry with an earned grade of less than C-. Except for CHEM 4800 and 4990, no CHEM prefix course may be taken on a Pass/Fail basis. No CHEM prefix course may be repeated more than one time to improve the grade to a C- or better. A student dropped from the chemistry program for failure to meet this standard may appeal to the departmental Curriculum Committee for readmission.

Chemistry Core Curriculum

In addition to the University Studies requirements for graduation, chemistry majors take a series of core courses spread across a traditional four-year period. The completion of the chemistry core also covers the College of Science requirements for graduation.

First Year: CHEM 1210, 1220, 1230, 1240; MATH 1210, 1220.

Second Year: CHEM 2310, 2320, 2330, 2340, 3510, 3520, 3600, 3610; PHYX 2210, 2220; MATH 2210.

Third Year: CHEM 3060, 3070, 3080, 3090, 5640, 5650, 5700; MATH 2250 or STAT 3000 (optional for Chemistry Teaching Major).

Fourth Year: CHEM 4990.

Chemistry Requirements

Professional Chemistry Emphasis (ACS Certified). In addition to the chemistry core, CHEM 5520, 5530; and 6 advanced electives, as approved by the department, are required.

Biochemistry Emphasis (ACS Certified). In addition to the chemistry core, CHEM 5710, 5720; BIOL 1210 and four advanced Biology elective courses, as approved by the department, are required.

Environmental Chemistry Emphasis (ACS Certified). In addition to the chemistry core, CHEM 5670, 5680; and 9 credits of approved environmental courses from outside the department are required.

Chemical Education Emphasis (ACS Certified). In addition to the chemistry core, teaching licensure courses as specified by the Department of Secondary Education (35 cr.); and teaching minor from outside the Department of Chemistry and Biochemistry (12-16 cr.) are required.

BS Degree with Honors. This option can be met by completing any ACS certified program and by meeting the following requirements: Minimum GPA of 3.50 in chemistry courses; overall GPA of 3.30; 13 credits of honors work as follows: 3-6 credits of CHEM 4800H (Research Problems), 3 credits chosen from CHEM 2320H, 3070H, 5640H, or 5700H, 1 credit of CHEM 4990H (Undergraduate Seminar), and 3-6 credits selected from Honors courses numbered 3000 or above in chemistry or related subjects, as appropriate. Three credits may be selected from chemistry courses numbered 6010 or above. Students must be admitted to Honors through the Honors Program Office.

BS in Chemistry, Life Science Emphasis. In addition to the chemistry core (with the exception of CHEM 5640, 5650), BIOL 1210; BIOL 1220 or 2000; BIOL 3200 or 3300; and CHEM 5710, 5720 are required.

BA in Chemistry: In addition to the chemistry core (with the exception of CHEM 5640, 5650), CHEM 5520 or 5640; and two years of foreign language are required.

Chemistry Teaching Major: In addition to the chemistry core (minus the MATH 2250 or STAT 3000 courses), SCI 4300, teacher licensure courses offered by Secondary Education (35 cr.), and a teaching minor from outside the Department of Chemistry and Biochemistry (12-16 cr.) are required. An overall 2.75 GPA in a minimum of 60 semester credits of approved University coursework is required for admission into the Secondary Teacher Education Program (STEP). A minimum overall GPA of 2.75 is required for graduation. Specific for admission to this program, a student must have at least a 2.75 GPA in CHEM 1210, 1220, 1230, and 1240.

Composite Teaching Major in the Physical Sciences. This degree is available through the Chemistry and Biochemistry or Physics departments. Students with a Composite Teaching Major in Physical Sciences should plan their programs carefully in order to meet the upper-division requirement for graduation. An overall 2.75 GPA in a minimum of 60 semester credits of approved University coursework is required for admission into the Secondary Teacher Education Program (STEP). A minimum overall GPA of 2.75 is required for graduation.

Specific for admission to this program, a student must have at least a 2.75 GPA in the following chemistry and physics courses: CHEM 1210, 1220, 1230, 1240; PHYX 2110, 2120, or PHYX 2210, 2220 (preferred). This program does not include many aspects of the Chemistry Core.

Required Courses: CHEM 1210, 1220, 1230, 1240; CHEM 2300 or 2310; CHEM 2330; PHYX 1000; PHYX 1030 or 3030; PHYX 2110 and 2120, or PHYX 2210 and 2220; MATH 1210, 1220; STAT 3000; SCI 4300; BIOL 1010; GEOL 1150; BMET 2000; and teacher licensure courses from Secondary Education (35 cr.). A teaching minor is optional for the Composite Teaching Major in the Physical Sciences.

Chemistry Minor. In addition to CHEM 1210, 1220, 1230, and 1240, 10 additional credits in Chemistry prefix courses at the 2000 level or higher are required (either CHEM 2300 or 2310 may be included).

Chemistry Teaching Minor. In addition to CHEM 1210, 1220, 1230, 1240, CHEM 2300 or 2310, and CHEM 2330, 3 additional credits selected from the following are required: CHEM 2320 (if CHEM 2310 has been previously selected), CHEM 3060, both CHEM 3510 and 3520, CHEM 3600, CHEM 3650, or CHEM 3700.

Career Opportunities

Chemistry degree holders work in a wide variety of professions, from physicians, lawyers, and professors to research/development, sales, or production in the chemical, oil, pharmaceutical, metals, electronic, and biochemical industries. Government at all levels employs chemists, including the federal Departments of Defense, Health and Human Services, Agriculture, and Interior. A graduate with a bachelor’s degree often begins work in chemical
analysis or sales or may assist senior chemists in research and development. A graduate with a teaching major or chemistry education emphasis may teach in public schools. A graduate degree is usually needed to direct research or teach at the university level. Degree holders from the Department of Chemistry and Biochemistry have had excellent success in obtaining support for graduate studies, often at very prestigious institutions, and in obtaining employment directly following graduation. For further information, students should contact their advisor.

Graduate Programs

Admissions Requirements

See the general admission requirements for the School of Graduate Studies (pages 90-91). All applicants should have a bachelor’s degree or master’s degree in chemistry or biochemistry from an accredited institution. Appropriate undergraduate preparation is expected; applicants not fully prepared may be admitted with the condition that appropriate undergraduate courses are taken as necessary.

Applications are especially encouraged during the spring semester for expected admission in the following fall semester. However, the Graduate Recruiting and Admissions Committee screens applications throughout the year. Detailed information about the graduate programs and faculty research activities can be found on the Internet at http://www.chem.usu.edu.

Degree Programs

Master of Science.

To earn an MS in chemistry or biochemistry, a student must meet the general requirements of the School of Graduate Studies (see pages 94-95), conduct research under the direction of a major professor and write a thesis acceptable to a supervisory committee (Plan A) or write a review-of-literature paper (Plan B), and pass an oral examination that is principally a defense of the thesis or the Plan B paper.

Qualified undergraduate chemistry majors at USU may apply in the third year for admission to the MS program. Students may be admitted to this MS program if they have a B average in chemistry, physics, and mathematics courses, and have completed the one-year sequences in general, organic, and physical chemistry (including labs), two courses in analytical or inorganic chemistry, two semesters of physics, math through MATH 2210, and at least 15 credits of their University Studies requirements.

Students should consult with the chairman of the Graduate Recruiting and Admissions Committee to be certain of their eligibility for this program. The chairman will then submit an application to the department head and to the School of Graduate Studies for approval. Students must earn a satisfactory grade on the GRE exam before the completion of the MS degree. All requirements for the BS degree must be completed within two semesters of admission. The MS coursework cannot include coursework counted toward the BS degree.

Doctor of Philosophy.

To earn the PhD in chemistry or biochemistry, a student must successfully complete a core curriculum of courses and other courses as approved by a supervisory committee. In addition, preliminary examinations (both oral and written) must be passed and research in a field of specialization must be conducted. The final requirement is the writing and defense of a dissertation before the student’s supervisory committee.

Biochemistry Course Requirements. Every MS and PhD student in the biochemistry program must complete CHEM 6730, 6740, 6750, and 6760. In addition, all students must register for at least 2 credits of CHEM 6720 in the first semester of residence to participate in research training. Both MS and PhD students must complete a total of at least 15 credits in coursework, exclusive of seminar and research credit. The Program of Study is approved by the student’s supervisory committee. A total of 30 credits is required for the MS degree, and a total of 90 credits is required for the PhD. Beginning students who already hold an MS degree need 60 credits to complete the PhD program.

Chemistry Course Requirements. Every MS and PhD student in the chemistry program must complete the courses required for their specialization: Analytical—CHEM 7600, 7610; Inorganic—CHEM 6500, 6510; Organic—CHEM 6300, 7300, 7310; or Physical Chemistry—CHEM 6010, 6020, 7020. Both MS and PhD students must complete a total of at least 15 credits in coursework, exclusive of seminar and research credit. The Program of Study is approved by the student’s supervisory committee. A total of 30 credits is required for the MS degree and a total of 90 credits is required for the PhD. Beginning students who already hold an MS degree need 60 credits to complete the PhD program.

Financial Assistance

The department offers financial support to students in the form of teaching assistantships, research assistantships, and fellowships. All applications for admission to the School of Graduate Studies constitute an application for financial assistance; it is not necessary to file a separate request. Teaching assistantships are the principal means of support for first-year students. Inquiries about current support levels should be directed to the department main office. The department is responsible for the first nine months of stipend and tuition, with the remaining summer stipend and tuition usually being paid from faculty research funds. Teaching assistants devote no more than 12 contact hours per week directing undergraduate laboratories, leading recitation sections, and assisting students with questions during the regular fall and spring semesters. Research assistantships, funded from individual faculty research grants, support students conducting research related to the grant projects. Although first-year students are not normally supported as research assistants, well-prepared students may be eligible for research support at the discretion of their major professor.

Fellowships are awarded by the University to outstanding students solely on the basis of merit. The department encourages students with strong academic records to apply for the University fellowships and national awards, and will provide assistance in obtaining and submitting the appropriate forms. Additionally, several graduate awards are given each year to honor exemplary performance in research and teaching.

The College of Science recently established the Willard L. Eccles Foundation Science Fellowship. The $15,000 per year, three-year stipend is competitively awarded to highly qualified science applicants. Students applying to the graduate program will be considered for this fellowship, and will be sent the necessary information. Application deadline for this fellowship is March 1.
Chemistry and Biochemistry Faculty

Trustee Professor
Ann E. Aust, biochemistry

Professors
Steven D. Aust, biochemistry
Stephen E. Bialkowski, analytical chemistry
Scott A. Ensign, biochemistry
David Farrelly, physical chemistry
Richard C. Holz, bioinorganic chemistry
Vernon D. Parker, physical organic chemistry
Steve Scheiner, computational chemistry
Lance C. Seefeldt, biochemistry

Professors Emeritus
William M. Moore, physical chemistry
Richard K. Olsen, organic chemistry
Grant G. Smith, organic chemistry
Jack T. Spence, inorganic chemistry

Associate Professors
Alexander I. Boldyrev, physical chemistry
Robert S. Brown, analytical chemistry
Bradley S. Davidson, organic chemistry
Alvan C. Hengge, organic chemistry
John L. Hubbard, inorganic chemistry

Assistant Professors
Lisa M. Berreau, inorganic chemistry
Cheng-Wei Tom Chang, organic chemistry
Joan M. Hevel, biochemistry
Philip J. Silva, analytical chemistry

Research Assistant Professors
Tapas Kar, physical chemistry
Yun Lu, organic chemistry

Lecturer
Douglas G. Harris

Course Descriptions
Chemistry and Biochemistry (CHEM), pages 365-367
Civil and Environmental Engineering

Undergraduate Programs

Objectives

Civil and Environmental Engineering is concerned with planning, designing, constructing, and operating various physical works; developing and utilizing natural resources in an environmentally sound manner; providing the infrastructure which supports the highest quality of life in the history of the world; and protecting public health and renovating impacted terrestrial and aquatic systems from the mismanagement of toxic and hazardous wastes. The Department of Civil and Environmental Engineering offers Bachelor of Science degrees in Civil Engineering and in Environmental Engineering. Both degrees are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC/ABET).

The objectives of the undergraduate programs in Civil Engineering and Environmental Engineering are to graduate engineers who have a broad educational background and experiences in engineering, the sciences, and the humanities; who have passed the Fundamentals of Engineering examination; and who are prepared to enter graduate school, other professional training, or the workplace as effective professionals. These graduates will understand the significance of life-long learning and will be qualified to become professional engineers and contribute significantly to the engineering profession and society as a whole.

Outcomes

Graduates with a BS degree in Civil Engineering from Utah State University will have:

1. Proven themselves proficient in mathematics; the sciences; and the structures, geotechnical, hydraulics, and transportation areas of civil engineering.

2. Demonstrated the ability to solve engineering problems, utilizing fundamental engineering principles, as well as the latest technologies and engineering tools, in the process of engineering analysis and design. They will have done this as individuals and as members of multidisciplinary teams.

3. Shown a capacity for investigation and experimentation into physical (engineering) phenomena, along with the ability to analyze and interpret engineering data in at least two of the following areas of civil engineering: structures, geotechnical, hydraulics, and transportation.

4. Demonstrated the capability to communicate verbally, in writing, and through the use of engineering communication media. They will also have shown the capacity to present the outcomes of their problem solving and design projects for groups of engineers and lay persons.

5. Exhibited an understanding of the role civil engineering plays in our modern global society, that much is to be learned from the past and applied to the present, and that a responsible engineer is ethical and will continue to increase his or her knowledge throughout his or her lifetime.
Graduates with a BS degree in Environmental Engineering from Utah State University will have:

1. Knowledge of basic science and engineering principles fundamental to the practice of environmental engineering including: mathematics, biology, chemistry, soil science, physics, fluid and solid mechanics, hydrology, and engineering economics.

2. Knowledge of environmental engineering practice in the areas of water supply and treatment; environmental systems dynamics; environmental chemistry and analysis; wastewater, air quality, and solid and hazardous waste management; and public health and industrial hygiene.

3. Advanced knowledge of science and engineering principles in two of the following program emphasis areas: water, solids, natural systems, and public health.

4. Integration of advanced science and engineering principles in a multidisciplinary team environment for the solution of a comprehensive design problem in one of the program emphasis areas incorporating: applicable design standards; state-of-the-practice design tools; real-life economic, social, regulatory, political, ethical, and business design constraints; and applicable considerations for contemporary issues, such as product manufacturability, process sustainability, health and safety concerns, and system constructability.

5. Experience in written and oral communication using state-of-the-practice presentation methods throughout the course of their Professional Program in Environmental Engineering which include: laboratory reports and presentations, research paper presentations, design proposal and progress reports and presentations, and final design project presentations to both technical and lay audiences.

6. Experience in one of the environmental engineering practice areas in the design and conduct of experiments; collection, analysis, and interpretation of data; and modeling and representation of experimental results and presentation of experimental findings.

Assessment

The Civil and Environmental Engineering Department employs several methods to assess the quality of the two BS programs offered by the department. Assessments are made prior to graduation by measuring the performance of students in each class. In addition, the results of the FE exam, senior exit interviews, and faculty reviews of student portfolios are used. Postgraduate assessment of Civil and Environmental Engineering graduates is also conducted up to six years after graduation. Assistance from outside reviewers is also obtained in making the assessment.

Requirements

Admission Requirements. Admission requirements for the Department of Civil and Environmental Engineering are the same as those described for the University on pages 15-18. Students in good standing may apply for admission to the department. In addition, students must maintain the academic requirements outlined for the College of Engineering on pages 107-109.

Bachelor of Science Degrees. The Department of Civil and Environmental Engineering offers two Bachelor of Science degrees: one in Civil Engineering and one in Environmental Engineering. The four-year programs leading to these two degrees are listed below. During the first two years, students are in a pre-engineering program. Students must successfully complete the pre-engineering program or, in the case of transfer students, substantially equivalent coursework in another institution before they are accepted into the professional program. Transfer students may apply for permission to take upper-division courses in cases where postponement of these courses will prolong the student’s time to graduate.

Design is a cornerstone of engineering that requires creative thinking, technical knowledge, the ability to organize and solve complex problems, and teamwork. Engineering design activities begin during the first two years and progress in-depth as each student’s proficiency increases. These design activities culminate in a major senior design course, which integrates past engineering coursework into a focused, realistic design project. An important feature of the senior design experience is that students work in teams to complete the project.

The student who is majoring in or planning to major in Civil Engineering or Environmental Engineering needs to be aware of the College of Engineering requirements concerning admission to the college, pre-engineering program, admission to professional engineering programs, University Studies, and other academic requirements. Additional information concerning these items is given in the College of Engineering write-up on pages 107-109. It is the responsibility of the student to be aware of these rules and regulations. Passing the Fundamentals of Engineering Exam is required for graduation.

The Civil and Environmental Engineering Department strongly recommends that students have a high-end calculator, such as an HP calculator, that has the capabilities to do units, matrices, and programs in BASIC. Although not a requirement at this time, CEE students are strongly encouraged to have a modern desktop or laptop personal computer. Since computer technology is changing rapidly, students should seek advice from a knowledgeable professional on hardware and software requirements before purchasing a computer.

Students in the Civil Engineering program must establish proficiency in at least four areas of Civil Engineering. Proficiency is established through a combination of material covered in required courses, as well as by establishing depth through the selection of technical electives. Proficiency must be established in four of the following areas: Environmental Engineering, Fluid Mechanics/ Hydraulics, Geotechnical, Structures, Transportation, or Water Resources. The courses must be selected from the approved Technical Elective courses.

Undergraduate Course Requirements for Civil Engineering

Preengineering Program (freshmen and sophomore years):
CEE 1880, 2240, 2870; ENGR 2000, 2020, 2040, 2200, 2210; ITE 2270; BIOL 1010; CHEM 1210, 1230; ENGL 1010, 2010; GEOL 1150; MATH 1210, 1220, 2250; PHYX 2200 (or High School AP Physics with passing score), 2220.
Professional Engineering Program (junior and senior years): CEE 3010, 3020, 3030, 3080, 3210, 3430, 3500, 3510, 3610, 3640, 3870, 4200, 4300; Civil Engineering Design Elective, one course chosen from: CEE 3780, 5070, 5230, 5350, 5460, 5540, 5470; one course chosen from CEE 5190, 5220, 5230, 5240, 5350, 5380, 5450, 5460, 5470; Design project consisting of CEE 3880, 4870, and 4880; Technical electives (15 credits) chosen from: CEE 3670, 3780, 5010, 5050, 5070, 5080, 5100, 5190, 5220, 5230, 5240, 5350, 5380, 5430, 5450, 5460, 5470, 5500, 5540, 5550, 5690, 5700, 5860, 5870, 5880, 5900, MAE 2060, 2400; University Studies courses (see College of Engineering University Studies requirements).

Undergraduate Course Requirements for Environmental Engineering

Preengineering Program (freshman and sophomore years): CEE 1880, 2240, 2890; ENGR 2000, 2020, 2040, 2200; ITE 2270; MAE 2400; BIOL 1210, 3300; CHEM 1210, 1230, 2300; ENGL 2010; MATH 1210, 1220, 2250; PHYSX 2200 (or High School AP Physics), 2220.

Professional Engineering Program (junior and senior years): CEE 3030, 3430, 3500, 3510, 3640, 3670, 3870, 3890, 4200, 5610, 5860; PUBH 3310; Environmental Engineering Design Elective, one class chosen from: CEE 5690, 5740, 5810, 5880; Design project consisting of CEE 3890, 4790, 4890. Technical Electives (5 credits), with one course chosen from Area 1, 2, or 3, and one course chosen from Area 4 or 5: 1—Solids: CEE 5670, 5680, 5730, 5830, 5870, 5880; 2—Water: CEE 5430, 5620, 5730, 5810; 3—Air: BMET 4300, CEE 5710, 5750, 5790, 5870; 4—Natural Systems: AWER 4500, 4530, CEE 5690, 5700, 5740; 5—Occupational Safety and Health: PUBH 5310, 5320, 5330, CEE 5670, 5710, 5790. University Studies courses (see College of Engineering University Studies requirements).

Additional Information

For more information about Bachelor of Science requirements and the sequence in which courses should be taken, see major requirement sheet, available from the Civil and Environmental Engineering Department.

Departmental honors can be earned by completing 20 credits of upper-division honors engineering courses. Students should work with the department in selecting appropriate courses.

Concurrent BS/Master’s Program

The concurrent BS/Master’s program allows engineering students to begin taking graduate-level classes during their senior year. This permits them to complete requirements for both the BS degree and the master’s degree concurrently during two years. Students in this program have a greater selection of graduate courses, since many graduate courses are taught during alternate years. In addition, the student’s senior design project could be a start for a graduate design project or thesis. After completing their BS degree, students in the program can earn a master’s degree in only one additional year. Both the BS and the master’s degree can generally be earned with 150 total credits, although students should note that a Plan C MS requires 3 extra credits. Finally, students with a master’s degree can expect a much higher starting salary following graduation. (For more information, see College of Engineering section of this catalog, page 109.)

Graduate Programs

The ME degree emphasizes practical experience and coursework. A minimum of 30 credits of technical and scientific coursework is required. The MS degree emphasizes research and the preparation of a significant publication. A minimum of 30 credits, 6 to 9 of which shall be thesis research, is required for an MS. In special cases, as decided by the student’s supervisory committee, a second MS is available with a Plan B option, which requires 30 credits, including 3 credits of CEE 6970, Thesis Research. The CE degree, which prepares students for professional engineering careers, requires 60 credits beyond the bachelor’s degree, or 30 credits beyond the master’s degree, including a technical engineering report. The PhD degree represents high scholarly achievement demonstrated by independent research and competence in a area of specialization approved by the student’s supervisory committee.

Admission Requirements

See general admission requirements, pages 90-91. Admission committees consider GRE scores and experience, undergraduate record and curriculum, and formal recommendations. A student without an undergraduate civil and environmental engineering background may be required to complete selected undergraduate courses prior to admission as a fully matriculated graduate student.

Graduate Program Divisions

The graduate program in the Department of Civil and Environmental Engineering is administered through five academic divisions, as described below.

Structural Engineering. The structural engineer is involved in the design, construction, repair, and retrofit of all types of structures: buildings, bridges, dams, and many others. The safety of the structures we occupy and utilize every day is the responsibility of structural engineers. They must be able to evaluate the loads placed on a structure, determine their effects on the structure, and select the appropriate materials and structural elements, or repair strategy, to withstand these loads. Today’s structural engineer is using new space materials in the design of new structures or the retrofit of older structures.

Mathematics, physics, and materials science constitute a foundation for structural engineering. Structural analysis and design are added to this foundation and become the focus of the structural engineering program. Graduate students in the structures program also engage in structural mechanics, numerical methods, structural dynamics, geotechnical engineering, and the study of new structural materials. Current research in the structures area is focusing on the dynamic characteristics of structures, their potential response to earthquakes, and new seismic retrofit measures, using advanced composite materials, for older structures. Materials research is focusing on cementious materials and constitutive modeling.

Geotechnical Engineering. Engineering studies of soils are concerned with the physical and engineering properties of soils and how these are related to engineering projects.

Traditional geotechnical engineering includes the application of engineering principles to the analysis and/or design of building foundations, earth embankments, retaining walls, drainage sys-
tems, earthquake motion, buried structures, and other systems involving soil and rock. Engineers and architects cannot ignore the problems of investigating properties of soils in connection with engineering construction. Undergraduate and graduate courses offered by the department provide the basic knowledge necessary for the design of foundations and various types of earth structures. Fundamental concepts and their application are emphasized so that the student will be properly trained for his or her initial job, as well as being prepared to understand future development in this field.

The Geotechnical Engineering Division, in cooperation with the Environmental Engineering Division, is offering a new program in Geoenvironmental Engineering. This new program uses the strengths of both divisions to provide a program involving the geotechnical aspects of hazardous waste management, the investigation of hazardous waste sites, and the design of hazardous waste containment systems.

The geotechnical division has a strong research program. Current research projects in this division include studies on liquefaction, seismic slope stability, pile foundations, landslides, mechanically stabilized embankments, risk analysis of dams, finite element analysis of soil-structure systems, and the long-term properties of clay soils used in hazardous waste containment systems.

**Water Engineering.** The water engineering program is a multidisciplinary graduate program in the College of Engineering and is intended to enable engineers and scientists interested in water to obtain graduate degrees in the areas of fluid mechanics and hydraulics, hydrology, groundwater, and water resources engineering. Core courses and departmental offerings cover these fundamental areas, as well as essential numerical and statistical methods. The water engineering faculty are committed to a strong academic program. The curriculum offered is one of the most comprehensive offered in the U.S. Elements of ongoing research projects are routinely and effectively incorporated into the classes. The program combines training, research, and experience to understand the water issues and water resources management challenges in the United States and internationally. Graduate students can supplement departmental offerings by selecting courses in Mathematics and Statistics; Computer Science; Aquatic, Watershed, and Earth Resources; Environment and Society; Forest, Range, and Wildlife Sciences; Economics; Political Science; Geology; Biological and Irrigation Engineering; Mechanical and Aerospace Engineering; Plants, Soils, and Biometeorology; Biology; Chemistry and Biochemistry; and Physics. This ensures that graduates are well-grounded in the fundamentals, but have a breadth of training and are prepared to contribute professionally to the solution of multidisciplinary local, national, and international water problems. Graduate students in the water program have the opportunity for research support through the Utah Water Research Laboratory (UWRL) while working on theses or dissertations. Excellent laboratory and computing facilities are available. Strong, continuous state and federal research funding keeps the research topics and facilities current. Specialty areas within the program comprise fluid mechanics and hydraulics, hydrology, groundwater, and water resources engineering.

**Fluid mechanics and hydraulic engineering** covers both fundamental principles and theory and their applications in a variety of engineering fields. Elementary fluid mechanics, based on fundamental principles of conservation of mass, energy, and momentum, is the logical core for all water-related engineering programs. Consequently, other specialties in water engineering study fluid mechanics. Students specializing in fluid mechanics and hydraulics emphasize theoretical fluid mechanics, hydraulic design, numerical methods, and laboratory hydraulic techniques. A good variety and balance of courses supporting research in theoretical fluid mechanics, open channel hydraulics, hydraulic design, transients, sedimentation, municipal water system design, and cavitation are available at the graduate level. Graduates in fluid mechanics and hydraulics find employment in a broad range of professional engineering fields, including consulting, university teaching and research, and state and federal government agencies.

**Hydrology** is a branch of geoscience concerned with the origin, distribution, movement, and properties of waters of the earth. The hydrologic cycle encompasses the atmosphere, the land surface, lakes and oceans, and the subsurface. Complex, interacting processes at varied time and space scales describe the hydrologic cycle. The concepts and practice of hydrology derive from an integration of field observations, laboratory investigations, and conceptual, mathematical, chemical, statistical, and probabilistic models.

The hydrology program at USU has strength in both theoretical and applied aspects of modern hydrology. Past and present research focuses on a broad spectrum of hydrologic problems. These range from climate modeling, rainfall processes, floods, droughts, terminal lake analyses, soil erosion, and stream water quality models to groundwater contamination characterization and remediation and watershed analyses. A particular emphasis of the program is on an understanding of the global water and energy cycles at nested scales from the hemisphere to the continent to the watershed from a holistic perspective that recognizes the two-way linkages between water reservoirs and fluxes through oceans, atmosphere, land surface and subsurface, and biota.

**Groundwater engineering** is concerned with the transport of fluids in the subsurface environment. It encompasses the theory of flow in porous media; groundwater hydrology and hydraulics; fate and transport of contaminants in subsurface; and analytical, numerical, and stochastic modeling of such processes. Emphasis is placed on the quantitative analysis of physical and chemical principles governing these processes and on the application of these principles to practical field problems, with all their difficulties related to the complex structure of subsurface formations. Examples of such problems include groundwater supply and management, subsurface cleanup technologies, and analysis and remediation of groundwater contamination. These problems are of a multidisciplinary nature, and their solutions require a multidisciplinary approach, involving, among others, soil and water chemistry, chemical engineering, and economics. The groundwater professional is an important team player in solving such problems.

The groundwater emphasis has a strong research component. Current research activities cover a well-balanced variety of topics, from theoretical (e.g., stochastic analysis of transport of contaminants in groundwater) to practical problems (e.g., design of cleanup technologies for gasoline-contaminated sites).

**Water Resources Engineering** prepares engineers to be lead members in water resources planning teams, often charged with coordinating the information and concepts supplied from other disciplines. This need for breadth requires considerable flexibility in the training and arrangement of degree programs.

Water resources engineers draw principles from hydrology, fluid mechanics, hydraulics, environmental engineering, economics, ecology, political science, and other disciplines in the design
and operation of projects and nonstructural methods for water resources planning and management. They need a sound understanding of how water storage, delivery, and other management systems function; of criteria used in evaluating and selecting among alternatives; of the techniques of operations research that can be used in systems design; and of the institutional aspects of decision-making in the public sector. A focus area of the program is to develop decision support systems for sustainable water quantity and quality management in the United States and in developing regions of the world. Evolving information sources and tools, such as spatial data sets encoded in geographical information systems, climate forecasts, and cognitive models of the human decision process and societal group dynamics, are being integrated in representational institutional contexts.

An internationally-recognized specialized program has been developed in dam safety risk assessment. Students take classes in dam engineering; hydrology and hydraulics; geotechnical engineering; geology; decision analysis; risk assessment; probability and statistics; and natural resources economics, planning, and management. Students work on practical applications, as well as research projects, for improving the state-of-the-art.

Environmental Engineering. The Division of Environmental Engineering is a multidisciplinary graduate program in the College of Engineering and provides coursework and research experience to enable engineers and scientists interested in the environment to obtain graduate degrees relating to potable water and waste treatment, toxic and hazardous wastes management, air quality management, natural systems engineering, and environmental impact assessment. The program provides an interdisciplinary educational approach to fundamental principles that can be applied to environmental phenomena. Research and training projects are a part of the program and provide the student with appropriate research experience leading to a thesis or dissertation.

Hazardous Waste Management. This specialization has been developed within the broader scope of the environmental engineering program to provide an integrated approach for students with a BS in engineering or natural sciences to deal with the complex issues of toxic and hazardous waste. Aspects of toxic/hazardous waste management, including characterization, treatment, disposal, control, monitoring, and environmental impacts, are dealt with in this program.

Natural Systems Engineering is the study of the interaction of engineered systems with nature, emphasizing impacts to aquatic ecosystems. Techniques include assessment of aquatic habitat through computer simulation and model verification, quantification of aquatic habitat using remote sensing systems, and data analysis and display through integrated statistical and GIS approaches. These tools are used to evaluate impacts on threatened and endangered species, habitat enhancement, instream flow assessments, fish habitat, stream sediment, and hydraulic features.

A bioprocess engineering program has been developed as a cooperative effort between the Division of Environmental Engineering and the Biological and Irrigation Engineering Department. This program provides students with specialized coursework and research experience in areas of bioreactor processing of environmental materials and engineering scale-up of biologically-based environmental reactions. Areas of specialization include waste to energy, fermentation, composting, and industrial waste (agricultural and chemical) reuse, recycling, and technologies based on biological processes, as well as engineering optimization of aquatic habitats.

Transportation Systems Engineering. The graduate program in Transportation Systems Engineering offers education and research opportunities in transportation systems planning, design, and management. It is designed to enable aspiring planners, engineers, and managers to obtain advanced degrees while specializing in infrastructure management, traffic network analysis, facility design, traffic operations, transportation economics and finance, and project appraisal. Up-to-date computer and laboratory facilities, as well as the Transportation Division’s close links with local and state transportation agencies, enable students to gain hands-on experience and practical perspectives.

Past and present research undertaken by the Transportation Division faculty and researchers ranges from microscopic traffic flow simulation, dynamic route assignment, and network reliability to traffic accident modeling, pavement management, video image processing, and intelligent transportation systems. The focus remains on efficient and effective solutions to transportation problems.

Transportation Division course offerings expose students to the theoretical and practical aspects of goods and passenger transportation. State-of-the-art analytical tools and new research findings are introduced into the courses through periodic revision of notes, examples, problem sets, and computer software. Students are encouraged to design their own programs of study according to their personal and professional goals. Due to the multi-disciplinary nature of transportation, students are encouraged to include in their program of study course offerings from other programs in CEE, as well as from Mathematics and Statistics, Environment and Society, Economics, Business Administration, and Sociology.

Financial Assistance

Both departmental and formal grant support are available to graduate students and are awarded on a competitive basis. Students requesting financial support should apply to the department by March 15 for the coming academic year.

A number of fellowships are available through the University and the department. Teaching assistantships are available through the department and research assistantships are available through the Utah Water Research Laboratory and departmental faculty members who have ongoing projects or who hold special research grants from the University, private companies, or state and federal agencies.

Acceptance to pursue graduate studies in the Civil and Environmental Engineering Department does not guarantee the student financial assistance. Inasmuch as funds are limited, the assistantships are awarded by the department to cover specific teaching assignments and by the faculty members to provide for research as funds are available.

Civil and Environmental Engineering Faculty

Professors
Loren R. Anderson, geotechnical engineering
A. Bruce Bishop, engineering systems and planning
David S. Bowles, risk assessment, hydrology, water resources engineering
William J. Doucette, environmental analytical chemistry
R. Ryan Dupont, hazardous waste management, bioremediation
William J. Grenney, Advanced Center for Transportation Studies
Christine E. Hailey, Associate Dean of College of Engineering, fluid and thermal sciences, engineering education
Thomas B. Hardy, ecological system modeling, statistical analysis
Daniel H. Hoggan, hydrologic and hydraulic modeling
Jagath J. Kaluarachchi, surface and groundwater, flow and contaminant transport
Marian W. Kemblowski, subsurface hydrology and transport processes
Mac McKe, water resources planning and analysis
Ronald C. Sims, hazardous waste management
David G. Tarboton, hydrology and water resources
Kevin C. Womack, structural mechanics
Muzz Yener, structural engineering and mechanics

Research Professor
Darwin L. Sorensen, aquatic microbiology

Professors Emeriti
Jay M. Bagley, hydrology, water resources
W. O. Carter, structures
Calvin G. Clyde, fluid mechanics and groundwater
Irving S. Dunn, geotechnical engineering
Gordon H. Flammer, hydraulics
Trevor C. Hughes, water resources systems analysis
C. Earl Israelsen, hydrology, hydraulics, water resources, erosion control
Roland W. Jeppson, numerical modeling
Fred W. Kiefer, Jr., geotechnical engineering
Eliz Rich, structural engineering
J. Paul Riley, water resources systems, hydrology
J. Paul Tullis, hydraulics, hydraulic structures, and hydromachinery
Reynold K. Watkins, geotechnical engineering

Adjunct Professors
Lloyd H. Austin, water resources
George G. Goble, deep foundations and structural dynamics
Jeffrey R. Keaton, geotechnical engineering, engineering geology
Upmanu Lall, climate modeling, statistical hydrology, water resource systems
Neil Parrett, performance and safety of dams
Norman E. Stauffer, Jr., engineering hydrology and computer modeling
Daniel A. Stone, environmental chemistry

Associate Professors
Joseph A. Caliendo, geotechnical engineering
Marvin W. Halling, structural dynamics, earthquake engineering
Sonia S. Manuel-Dupont, technical writing

Randall S. Martin, environmental engineering (air pollution)
Michael J. McFarland, environmental engineering
Gilberto E. Urroz-Aguire, hydraulics, hydraulic structures

Research Associate Professors
Joan A. McLean, fate and behavior of metals in subsurfaces
Judy L. Sims, fate and behavior of organic chemicals

Adjunct Associate Professors
Danny Marks, snow hydrology
Eva C. Nieminski, water quality
Mufeed M. Odeh, physical and mathematical modeling of hydraulic systems
Anthony Turhollow, transportation

Associate Professor Emeritus
J. D. Thorpe, engineering materials, measurements

Assistant Professors
Paul J. Barre, reinforced concrete, bridge design
Luis Bastidas, hydrology
James A. Bay, geotechnical engineering
Anthony Chen, network analysis and logistics, transportation planning
Henry X. Liu, traffic modeling and simulation, artificial intelligence, telematics
Laurie S. McNeill, environmental engineering (drinking water)
Blake P. Tullis, hydraulics, hydraulic structures, and hydromachinery

Research Assistant Professors
Daniel P. Ames, watershed decision support systems
Sanjay Chauhan, dam safety, risk assessment, hydrologic modeling
Michael C. Johnson, hydraulics
Robert T. Pack, geomatics and engineering geology

Adjunct Assistant Professors
Steve Barfuss, hydraulics
Arnfinn J. Emdal, geotechnical
Charles H. Luce, forest hydrology

Affiliate Faculty
Robert W. Hill, professor, Biological and Irrigation Engineering
John E. Keith, professor, Economics
Jack Keller, professor emeritus, Biological and Irrigation Engineering
Wynn R. Walker, professor, Biological and Irrigation Engineering

Course Descriptions
Civil and Environmental Engineering (CEE), pages 358-365
Communicative Disorders and Deaf Education

Department Head: James C. Blair  
Location: Lillywhite 103  
Phone: (435) 797-1388  
FAX: (435) 797-0221  
E-Mail: jimb@cc.usu.edu  
WWW: http://www.coe.usu.edu/comd

Assistant Department Head and Advisor for  
Speech-Language Pathology and Audiology:  
Dee R. Child, Lillywhite 105, (435) 797-2318,  
decc@cc.usu.edu

Advisor for Deaf Education: Mindy Bergeson, Lillywhite 107,  
(435) 797-0645, bergeson@cc.usu.edu

Degrees offered: Bachelor of Science (BS), Bachelor of Arts (BA), Master of Science (MS), Master of Arts (MA), Master of Education (MEd), and Educational Specialist (EdS) in Communicative Disorders and Deaf Education; Doctorate of Audiology (AuD)

Undergraduate areas of focus: BS, BA—Clinical and Educational Audiology, Education of the Deaf and Hard of Hearing, Speech-Language Pathology. The focus in Education of the Deaf and Hard of Hearing includes an area of focus in Elementary Education.

Graduate specializations: MS, MA, MEd—Audiology, Early Childhood Communicative Disorders, Speech-Language Pathology; MEd—Education of the Deaf and Hard of Hearing; EdS—Audiology

Undergraduate Programs

Objectives

Three main objectives of the Department of Communicative Disorders and Deaf Education are (1) to train competent speech-language pathologists, educators of the deaf and hard of hearing, and clinical-educational audiologists capable of receiving state and national licensure; (2) to provide clinical services to individuals with speech-language deficits or hearing loss in the University population or in the community; and (3) to provide research opportunities for students relating to communicative problems of individuals. The programs in both Speech-Language Pathology and Clinical-Educational Audiology are accredited by the Council on Academic Accreditation of the American Speech-Language-Hearing Association (ASHA). The program in Education of the Deaf and Hard of Hearing is accredited by the Council on Education of the Deaf. All department programs hold Utah State Office of Education approval and NCATE accreditation.

Requirements

Departmental Admissions Requirements. Any accepted student at Utah State University may major in Communicative Disorders and Deaf Education (COMD-DE) during the freshman and/or sophomore years. However, during the first semester of the junior year, the student must formally apply for admission into the COMD-DE undergraduate professional preparation program. Application forms for admission into COMD-DE will be disseminated in class during the first semester of the junior year. As part of the application process, each student will complete the College of Education Writing Examination. The student will be accepted if cumulative grade point average is 3.0 or higher, University Studies credits are within 15 credits of completion, College of Education Writing Exam has been taken and passed, and all COM-DE courses taken to this point have grades higher than C+.

Students who are accepted into the undergraduate program must maintain the acceptance standards each semester in order to continue in the major.

Transfer Students or students applying for admission into the program subsequent to the fall semester of their junior year must receive approval from the department head before beginning their matriculation in major classes.

Admission into the College of Education and Human Services teacher education program is necessary before the student may take licensure courses taught in the departments of Elementary Education, Special Education and Rehabilitation, and Secondary Education, which are supportive of the major. Admission into the teacher education program is also required prior to taking the Communicative Disorders clinical practicum coursework. Application to the teacher education program typically takes place at the beginning of the graduate program.

Bachelor’s degree in Communicative Disorders and Deaf Education. There are two tracks available within the department: (1) communicative disorders, which includes emphases in audiology and speech-language pathology, and (2) education of the deaf and hard of hearing. Though the BS or BA is available in both tracks, the student should be aware that there is no professional employment licensure in either communicative disorders or education of the deaf and hard of hearing at the bachelor’s level. Majors in the communicative disorders track need to complete a core curriculum consisting of COMD 2400, 2910, 3100, 3120, 3400, 3500, 3650, 3700, 3910, 4100, 4400, 4750, 4910, 5070, 5100, 5200, and 5330. Majors in the education of the deaf and hard of hearing track need to complete a core curriculum consisting of an elementary, secondary, early childhood, or special education major, including professional breadth requirements, and deaf education requirements consisting of COMD 2500, 2910, 3910, 4630, 4750, 4760, 4770, 4780, 4790, 4910, 5620, and 6430. The undergraduate major for communicative disorders and deaf education consists of 44 semester credits of courses specified by the department, plus 4-8 semester credits of extra departmental coursework. Current national board and state educational agency licensure requirements demand more coursework than the minimum numbers required for University graduation. Students desiring supportive
courses for majors in special education, elementary or secondary education, family life, psychology, or other related departments are advised to seek counsel from the departmental advisor in determining an effective minor core.

**Education of the Deaf and Hard of Hearing.** Students wishing to obtain licensure to teach the deaf and hard of hearing will need to complete the majority of the requirements for a teaching license in early childhood education, elementary education, secondary education, or special education. In conjunction with meeting the majority of requirements for licensure, the student must complete coursework leading to a bachelor’s degree in Communicative Disorders and Deaf Education, with a focus in Education of the Deaf and Hard of Hearing. The department has an undergraduate advisor for this program.

**Course Requirements**

Each student in audiology and speech-language pathology must complete a component of professional training, which includes departmental and extra-departmental coursework. This professional training component includes the following courses: COMD 2400, 2500, 2910, 3100, 3120, 3400, 3500, 3650, 3700, 3070, 5100, 5200, 5330; ENGL 1010, 2010; SPCH 2600; BIOL 1010, 2000; CS 1010 or BIS 1400; MATH 1010, 1050; PSY 1010, 1400; STAT 1040; and SPED 4000.

**Additional Information**

For more information concerning graduation requirements and course sequencing, see the major requirement sheet, available from the Department of Communicative Disorders and Deaf Education, or visit the departmental website: [http://www.coe.usu.edu/comd](http://www.coe.usu.edu/comd).

Because many of the undergraduate COMD-DE courses are taught in sequence, students should meet with a departmental advisor prior to beginning classes in the COMD-DE major to assure that the most efficient and effective schedule is followed. Students should also confer with a departmental advisor for information about changes in requirements or scheduling.

**Graduate Programs**

**Admission Requirements**

A bachelor’s degree in Communicative Disorders or equivalent requirements must be completed before the student enters the graduate program. The time required to complete the master of science degree is determined during the first semester of study by a temporary department committee consisting of professors from the student’s direct field of study.

Students seeking the MEd with a specialization in education of the deaf and hard of hearing must have an undergraduate degree in early childhood, elementary, secondary, or special education. Students coming into the master’s degree with a degree other than deaf education will need to plan on a two-year MEd program, while those coming directly through the USU curriculum will need to plan on a one-year master’s degree program.

Applications will be considered once a year between March 1 and March 15. However, students must have completed the application process to the School of Graduate Studies by February 15. No application will be considered until all the required information is submitted to the School of Graduate Studies.

**Doctorate of Audiology**

The Department of Communicative Disorders and Deaf Education at Utah State University offers a clinical Doctorate of Audiology (AuD). The program provides students with a broad yet in-depth academic and practicum-based curriculum to prepare them for applied audiology in a variety of settings. Graduates will be skilled to function at a high level of expertise in such environments as clinics, hospitals, private practice, research laboratories, hearing conservation programs, schools, the military, etc.

The program is a four-year post-baccalaureate residency program, the first of its kind in the Intermountain West and Pacific states. Utah State University is the birthplace of educational audiology. In addition, USU is in the forefront of research in telehealth applications in audiology. The AuD will enable graduates to enter the field at a professional level and begin a rewarding career of service in this evolving allied healthcare discipline.

**Master’s Degrees**

Generally, all students will complete the requirements as specified below. In some instances students will have had some of the coursework required in the graduate curriculum as part of the undergraduate training at another institution. In those cases, the program will be individualized to meet national licensure through the American Speech-Language-Hearing Association (ASHA) and state educational licensure from the State of Utah. In no instance will students amass fewer than 36 graduate credits.

At the end of their programs, all graduate students, except for those in education of the deaf and hard of hearing, must take the NTE examination in their area of specialty. This must be done before a letter of completion will be sent to the School of Graduate Studies. Students are required to list USU as a recipient of NTE test scores.

**Speech-Language Pathology.** The program in speech-language pathology is accredited by the Council on Academic Accreditation of the American Speech-Language-Hearing Association (ASHA). The Utah State Office of Education has also approved the program. Students completing the master’s curriculum are eligible for licensure from ASHA and the State of Utah Board of Education and additionally have met the academic and practicum requirements for licensure from the State of Utah. As a consequence of preparation and licensure, students are prepared for employment in any setting where the services of a qualified provider of speech and language services are provided. The following courses are required for all students seeking the MS degree in speech-language pathology: COMD 6020, 6030, 6040, 6050, 6100, 6120, 6130, 6140, 6200, 6210, 6220, 6230, 6300, 6370, 6810, and 6970.

**Doctorate of Audiology**

The program in Education of the Deaf and Hard of Hearing is accredited by the Council on Education of the Deaf (CED) and is also approved by the Utah State Office of Education. Students completing this program may be licensed by the Utah State Board of Education as teachers of the deaf and hard of hearing and they also meet the requirements for licensure by CED. Students who complete the curriculum are prepared to provide services as teachers of the deaf and hard of hearing in any setting in which such services are furnished. The following courses or their equivalent are required for
all students seeking the MEd in education of the deaf and hard of hearing: COMD 2500, 2910, 3050, 3080, 3910, 4630, 4750, 4760, 4770, 4780, 4790, 4910, 4920, 5610, 5620, 6430, 6640, 6650, 6700, 6800, 6820, 6830, and 6850.

Educational Specialist Degree

The department offers an Educational Specialist (EdS) program that can be individualized to suit a candidate’s need within a basic structure of educational audiology and with focus on research, supervision, and evaluation. The program is designed for those individuals who have completed the master’s degree and who are practicing in educational settings. The degree requires a minimum of 30 credits beyond the master’s degree and may be completed in part through coursework in the summer and extension study and research in conjunction with the individual’s workplace.

Course Requirements

Graduate Courses in Speech-Language Pathology: Year One—First Semester: COMD 6020, 6030, 6040, 6050, 6100, 6120, 6130; Second Semester: COMD 6040, 6100, 6140, 6220, 6810; Summer: COMD 6370, EDUC 6570; Year Two—First Semester: COMD 6050, 6120, 6200, 6210; Second Semester: COMD 6300.

Graduate Courses in Audiology: Year One—Fall Semester: COMD 7200, 7310, 7380, 7390, 7820; Spring Semester: COMD 5330 or EDUC 6570, COMD 7200, 7320, 7340, 7490; Summer Semester: EDUC 6570; Year Two—Fall Semester: COMD 7300, 7420, 7430, EDUC 6600; Spring Semester: COMD 6370, 7300, 7460, 7530, 7820; Summer Semester: COMD 7300 (optional).

Graduate Courses in Education of the Deaf and Hard of Hearing: Students entering the program in Education of the Deaf and Hard of Hearing may choose one of three tracks. Track one is followed by students who have obtained their bachelor’s degree in Communicative Disorders and Deaf Education with a focus in Education of the Deaf and Hard of Hearing; track two is followed by those who come into the program without the required background in Education of the Deaf; and track three will follow the program outlined for those who wish to focus on Early Childhood Deaf Education only. Track 1—Fall Semester: ELED 5150, 5250, COMD 6430, 6640, 6650, 6700, 6920; Spring Semester: COMD 6800, 6820, 6830, 6850; Track 2—Fall Semester (Year 1): COMD 2500, 5620, 5740/6740, 6430, 6700, 6790, Spring Semester (Year 1): COMD 5610, 6630, 6750, 6770, 6780; Fall Semester (Year 2): COMD 6640, 6650, 6700, 6920; Spring Semester (Year 2): COMD 6800, 6820, 6830, 6850; Track 3—Fall Semester: COMD 6760, 6770, 6780, 6910.

Clinical Doctorate Program in Audiology

The Doctorate of Audiology (AuD) program at Utah State University meets the mandate of the American Speech-Language-Hearing Association (ASHA) to have audiology students move from master’s-level to doctoral-level training as the entry-level requirement within the profession of audiology. Specifically, the AuD requires three years of coursework, one year of intensive clinical practicum, and a doctoral-level clinically-related project to meet the requirements currently recommended for the AuD by ASHA and the American Academy of Audiology (AAA). Students at USU will participate in didactic and experiential learning in clinical, educational, telehealth, and rehabilitative audiology.

Course Requirements. All requirements for the undergraduate major in Communicative Disorders and Deaf Education must be taken in addition to the following graduate courses:

Year 1—Fall Semester: Com D 7400, 7410, 7470, 7480; Spring Semester: COMD 6780, 7400, 7860, 7870; Year 2—Fall Semester: COMD 7800 and 7850; Spring Semester: COMD 7800 and 7850; Summer Semester: COMD 7800 (optional).

Research Requirements

Several options are available for graduate students to complete the research or special project required for the MS or MEd. These options are specified in the list of requirements available in the department office, and include for the MS the traditional Plan A experimental thesis option, as well as the Plan B integrative review option or creative project option. Declaration of an option must be made at the time the student files an Application for Candidacy form with the School of Graduate Studies. Changes in the option will necessitate a complete revision and review of the Application for Candidacy by the student’s supervisory committee.

Licensure. Each undergraduate and graduate is advised on which classes will meet Utah State Office of Education and American Speech-Language-Hearing Association licensure requirements, as well as Utah State Professional Licensure requirements. State Office of Education licensure credentials within Utah include approval for audiology, speech-language pathology, and education of the deaf and hard of hearing. Graduation from any of these programs ensures the student may be licensed in Utah. Such licensure facilitates meeting other requirements for other states because of reciprocal agreements that exist among some state educational agencies throughout the country.

Practicum Opportunities

Practicum experience at the graduate level is available in a variety of settings. The department maintains a Speech-Language-Hearing Center offering a full range of diagnostic and remedial services to individuals with speech-language or hearing disabilities. Additionally, students are assigned to off-campus practicum sites such as hospitals, schools for the deaf, long-term and rehabilitation care centers, clinics, physician’s offices, and public schools. Placement in out-of-state practicum sites is available for those students who request it. Students may also be placed at the Center for Persons with Disabilities for experience in birth to three services. Students must be enrolled in clinical practicum each semester of their graduate program.

Financial Assistance

Limited departmental and federal grant support is available to graduate students and is awarded on a competitive basis. The application form for financial support must be submitted to the department no later than March 1 for consideration for the coming year.

Career Opportunities

Audiology graduates are prepared to work as clinical, educational, and rehabilitative audiologists. Speech-Language Pathology graduates are prepared to work in a variety of medical and school settings. Graduates in the area of Education of the Deaf are trained to work in total communication, bilingual/bicultural, and auditory-aural settings.
Additional Information

Specific details about each of the foregoing degree programs are outlined in policy and procedure documents available through the department. All requirements are subject to change; check with the department for current requirements. Additional information may be obtained by contacting the Department of Communicative Disorders and Deaf Education.

Communicative Disorders and Deaf Education Faculty

Trustee Professor
Carol J. Strong, language development, language assessment and intervention, language disorders in school-age students, research methodology in communicative disorders, narrative assessment and literature-based language intervention

Professors
James C. Blair, educational audiology, education of the deaf and hard of hearing
J. Freeman King, American Sign Language, linguistics, teacher preparation

Adjunct Clinical Professors
Bryan R. Larsen, MD, gastroenterologist
Gordon S. Wood, MD, otolaryngologist

Associate Professors
Kim Corbin-Lewis, diagnosis and management of voice disorders, laryngeal imaging, disorders of motor speech, dysphagia, anatomy and physiology of speech and swallow
Beth E. Foley, neuropathologies of speech and language, augmentative/alternative communication, language and literacy
Sonia S. Manuel-Dupont, nondiscriminatory educational assessment of non-English-language background children, Native American language assessment, emergent literacy, ethnic literacy, developmental phonology, syntax, professional and scientific discourse analysis
John E. Ribera, medical audiology, amplification, hearing science, telemedicine
Carmel Yarger, American Sign Language, curriculum for students who are deaf and hard of hearing, deaf education

Adjunct Associate Professor
Douglas W. Laws, clinical audiology

Assistant Professors
Donald G. Barringer, early interventions, sensory impairments, head-start research and training
Mark Krumm, pediatric audiology, telemedicine, aural rehabilitation
Shirley V. Leew, early childhood and prelinguistic development
Jaclyn Littledike, orofacial anomalies, professional practice issues, and clinical supervision
Vicki Simonsmeeier, pediatric neurogenic disorders, oral-motor/dysphagia, early intervention programs, audiology, auditory processing, clinical supervision
Susan Watkins, early intervention programs, sensory impaired infants and toddlers

Clinical Assistant Professor
Kenneth M. Curtis, electronystagmography, aural rehabilitation, hearing aids, noise and hearing conservation, clinical supervision

Clinical Instructors
Chad Bingham, pediatric brain injury, limited English proficiency, augmentative-assistive technology, clinical supervision
Dee R. Child, disorders of phonation, articulation, fluency
Anne Elsweiler, fluency, preschool language and articulation, clinical supervision
Kathryn S. Gantz, speech-language pathology
Jan Kelley-King, American Sign Language, deaf education
Elizabeth Parker, education of the deaf and hard of hearing
Heather Jo Jensen, clinical supervision, amplification, medical audiology
Susie Yoakum, speech-language pathology, clinical supervision

Advisor
Mindy Bergeson, deaf education

Course Descriptions

Communicative Disorders and Deaf Education (COMD), pages 368-372
Computer Science

Department Head: Donald H. Cooley
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Associate Head and Coordinator for Graduate Programs in Computer Science: Gregory W. Jones, Main 420, (435) 797-3267, greg.jones@usu.edu

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Degrees offered: Bachelor of Science (BS), Bachelor of Arts (BA), Master of Science (MS), and Doctor of Philosophy (PhD) in Computer Science; Master of Computer Science (MCS)

Undergraduate emphases: BS, BA—Science, Digital Systems, Information Systems, Bioinformatics, Information Technology

Graduate specializations: MS—Artificial Intelligence, Parallel Systems, Software Engineering

Accreditation: The Computer Science undergraduate program is accredited by the Computing Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012; telephone (410) 347-7700.

Undergraduate Programs

Objectives
The core objective of the department is to fulfill its mission, as defined in its mission statement. A detailed description of all department objectives is given under the department’s web site: http://www.cs.usu.edu/. The outcome objectives for undergraduates are as follows:

Undergraduate Outcomes
All students graduating with a Bachelor of Science in Computer Science from Utah State University will be expected to show mastery as follows:

1. Graduates will be proficient in programming in at least two programming languages which have significance in industry.

2. Graduates will master the core curriculum in:
   a. Data Structures and Algorithms
   b. Computer Architecture and Organization
   c. Programming Languages
   d. Operating Systems
   e. Software Engineering

3. Graduates will understand the practices and dynamics required to develop software, whether it be a single program or a major software product developed in a team environment.

4. Graduates will gain proficiency in the use of mathematical tools, including calculus, elementary statistics, and probability.

5. Graduates will have sufficient mastery of fundamental knowledge to be lifelong learners in computer science.

6. Graduates will understand the social and ethical issues which face computer scientists, and thus be able to contribute in a positive and productive manner to society.

7. Graduates will be able to communicate information effectively, both in writing and orally.

The course of study offered by the Department of Computer Science is directed primarily toward developing the problem solving skills of its students. This, in conjunction with the understanding of computers and computer systems provided by coursework, will enable a graduate of the program to apply his or her knowledge to finding solutions to problems that arise in the science, business, industry, government, and education sectors.

Students who have the ability to think analytically and creatively will find a challenging and exciting future in computer science.

Opportunities for practical applications of computer science skills are available with members of the computer science faculty who are engaged in research and consultation work both on and off campus.

Computer Science
Computer Science deals with information structures and processes as they are represented and implemented in modern high-speed digital computers, and with information processing systems designed to implement useful applications of computing.

The program in computer science attempts to provide a solid foundation of knowledge about computers and to teach a mode of thinking which will permit continuing growth on the part of graduates. Prospective students should have an aptitude for mathematics and logic and an interest in analysis and deduction.

Computer science is one of the fastest growing fields of study in our society. Excellent employment opportunities are available to computer science graduates. All of the major corporations hire computer science graduates. Graduates in Computer Science work for numerous Utah-based corporations, as well as Microsoft, IBM, Hewlett-Packard, etc.

The Computer Science bachelor’s degree is a four-year degree with areas of emphasis in Science, Digital Systems, Information Systems, Bioinformatics, and Information Technology. In addition, by working with a departmental advisor, students may develop a plan of study tailored to their own unique career objectives.
Science Emphasis

The Science Emphasis is designed for those who plan to pursue scientific or technical careers, research, or graduate education in computer science. Students choosing the science emphasis will take courses in programming languages, advanced algorithms, and math courses in calculus, linear analysis, and multi-variable calculus. Additional courses include a variety of upper-division computer science courses, chosen in consultation with an advisor.

Digital Systems Emphasis

The Digital Systems Emphasis is available for those interested in both the hardware and software aspects of computer systems. In addition to computer science and mathematics courses, students in this emphasis will take electrical engineering courses in electronics, circuits, digital fundamentals, microcomputer systems, and digital system design. The curriculum for students in this emphasis is similar to that for students in the computer engineering major in the Electrical and Computer Engineering Department.

Information Systems Emphasis

The Information Systems program at Utah State University offers a common core of courses through two department majors: (1) Computer Science and (2) Business Information Systems. The curricula of the individual departments differ substantially in emphasis.

The Computer Science major with an Information Systems emphasis is designed for students interested in a career as a Computer Scientist with a background in Information Sciences and Systems. Majors in this emphasis are trained in all phases of the analysis, design, and implementation of information systems. As part of this emphasis, students also receive training in the theory and application of information. Students select an application area such as business, accounting, or economics. Other application areas can be developed by working closely with an advisor. This program of study, offered within the College of Science, leads to a Bachelor of Science, Bachelor of Arts, or Master of Science degree in Computer Science.

The Business Information Systems major, Management Information Systems emphasis, is offered in the Business Information Systems Department, College of Business (see page 156). The Bachelor of Science or Bachelor of Arts program is designed for students interested in business careers as information specialists, systems analysts, network managers, application programmers, and information systems managers in business and industry. BIS majors take required courses in analysis and design, Internet management, telecommunications, decision support systems, spreadsheet and database applications, and information systems projects. All graduates are required to complete a common core of business subjects. The College of Business is accredited by the American Assembly of Collegiate Schools of Business. The department also offers a Master of Science in Business Information Systems with a specialization in Management Information Systems. See page 158 for additional details.

Bioinformatics Emphasis

The Bioinformatics Emphasis is designed for students who wish to pursue careers in the computer science aspects of bioinformatics. Students in this emphasis gain a strong background in core computer science areas, such as programming, theory of computing, and software development. In addition, they follow a course of study in biology, chemistry, and statistics. Through this background and course of study, students are provided with the computational skills and the scientific understanding necessary for work in bioinformatics.

Information Technology Emphasis

The Information Technology Emphasis trains students in all phases of analysis, design, and implementation of information technology. It also gives students expertise in the theory and application of information technology. At the same time, this emphasis provides students with a strong background in business principles, including accounting, finance, marketing, and human resource management. Students in the Information Technology emphasis are prepared for careers which straddle information technology and business, in both the private and public sectors.

Department and General
College of Science Requirements

To fulfill the University Studies requirements, majors in computer science must complete a total of at least 30 semester credits in writing, languages, humanities, arts, and/or social sciences. Courses taken to meet the University Studies requirements, if applicable, may also be counted to meet this departmental requirement. Students must work closely with their advisor to meet both these requirements.

Bachelor of Science Core Requirements. Students working toward the Bachelor of Science degree in Computer Science must complete the following:

1. One year of calculus, including MATH 1210 and 1220. Students in the Information Technology Emphasis must substitute MATH 1100.


3. One of the following year-long science sequences: (1) BIOL 1210, 1220 (required for Bioinformatics Emphasis); (2) CHEM 1210, 1220, 1230, 1240; (3) PHYX 2210, 2220; (4) PHYX 2110, 2120 (available for Information Technology Emphasis only); or (5) GEOL 1150, 3200. The sequence chosen must be outside the student’s department.

Except for students enrolled in the Information Technology Emphasis, all Computer Science majors must complete at least 12 science credits.

Requirements

Summary of Departmental Admission and Retention Requirements

Admission requirements of the Department of Computer Science for freshmen are the same as those described for the University on pages 15-18. Transfer students with a 2.5 GPA may apply for admission to the department.

Before a student can register for a Computer Science course, he or she must earn a grade of C- or better in all prerequisite courses. All required courses for the major must be completed with a grade of C- or better. Required courses, regardless of department, may not be taken pass-fail, and a Computer Science major must have advanced standing or written permission to register for a Computer Science course at the 3000-level or above.
For a more complete statement of requirements, please contact the department directly. Requirements may change from time to time.

**Bachelor of Science Degree**

The department offers a degree program with emphases in Science, Digital Systems, Information Systems, Bioinformatics, and Information Technology. The objectives are to train computer scientists who can relate to science, computer design, or information-based business disciplines. Other areas of emphasis will be considered on an individual basis.

**COMPUTER SCIENCE REQUIRED COURSES**

**Science Emphasis**

CS 1700, 1710, 1720, 2200, 2370, 2550, 3000, 3100, 3550, 4700, 5050; STAT 3000 or MATH 5710; MATH 1210, 1220, 2210, 2250, 3310; MATH 4630 or 5610; PHIL 2400 or 2500 or 3520 or 4530 or 4540; SPCH 1050; at least 13 credits of advisor-approved computer science classes numbered 5000 or above. In addition, students must complete 6 credits at the 3000 level or higher, appropriate to the degree.

**Digital Systems Emphasis**

CS 1700, 1710, 1720, 2200, 2370, 3000, 3100, 4700, 5050; STAT 3000; MATH 1210, 1220, 2250, 3310; ECE 2410, 2420, 2530, 2540, 3710, 3720; PHIL 2400 or 2500 or 3520 or 4530 or 4540; SPCH 1050; at least 13 credits of advisor-approved computer science classes numbered 5000 and above. In addition, students must complete 3 credits at the 3000 level or higher, appropriate to the degree.

**Information Systems Emphasis**

CS 1700, 1710, 1720, 2200, 2370, 2550, 3000, 3100, 3550, 4700, 5050; STAT 3000; MATH 1210, 1220, 3310; ACCT 2010, 2020; ECON 1500; MHR 2310; BA 3080; PHIL 2400 or 2500 or 3520 or 4530 or 4540; SPCH 1050; at least 13 credits of advisor-approved computer science classes numbered 5000 and above. In addition, students must complete 6 credits at the 3000 level or higher, appropriate to the degree.

**Bioinformatics Emphasis**

CS 1700, 1710, 1720, 2200, 2370, 2550, 3000, 3100, 3550, 4700, 5050, 5620, 5630, 5800; STAT 3000; MATH 1210, 1220, 2250 or 2270, 3310; BIOL 3100, 3200; CHEM 1110 or 1210; SPCH 1050; PHIL 2400 or 2500 or 3520 or 4530 or 4540; Statistical Methods in Bioinformatics course (currently being developed); at least 3 credits of advisor-approved computer science classes numbered 5000 or above. In addition, students must complete 6 credits at the 3000 level or higher, appropriate to the degree.

**Minor**

Requirements for a minor in computer science are listed below. Before beginning any minor, a student must meet with a departmental advisor and file an approved minor application form with the Computer Science Department.

**Computer Science Minor**

CS 1700, 1710, 1720, 2200; two additional CS classes selected from the following list: CS 2370, 2550, 3100, 3550, 4700, or any CS class numbered 5000 or above.

**Graduate Programs**

Computer science deals with the programming, use, management, and organization of computers. Graduate students specialize in many different areas, several of which have strong ties to other disciplines such as mathematics, computer engineering, statistics, accounting, and business administration.

**Admission Requirements**

Applicants for admission to the graduate program should have a bachelor’s degree in computer science or extensive experience in computing. Normally, a score of at least 640 on the quantitative test of the general GRE is required for admission to the MS, and a score of at least 700 is required for admission to the PhD or MCS. For scores less than these, applicants must show other strengths in their backgrounds to be considered for admission. The GRE computer science subject exam is not required for admission. Those who do take the GRE computer science subject exam will have preference in consideration for the award of financial aid. Decisions on financial aid are made on or near March 15 for the following fall semester.

**Course Requirements**

In addition to the specific departmental admission and degree requirements described in this section, students are advised that they must also meet all Graduate School requirements as described in the Graduate School section of this catalog. Please note that departmental requirements change from time to time, so students should work closely with their advisor in designing their graduate program. Graduate-level courses outside the department may be acceptable for the graduate degree. In all cases, approval of the candidate’s graduate committee should be obtained before registering for such courses.

Graduate students who have not taken or passed at the 50th percentile the computer science GRE subject exam are required to meet departmental placement requirements before completion of their first year. Students who have not met this requirement after the first year, as a minimum, will not be eligible for department-funded financial aid and cannot submit their program of study. In some circumstances, students will be terminated in the program. The department placement requirement is met in one or a combination of the following three ways:


2. Complete with a grade of at least B- three of the following departmental placement courses: CS 3550 or ECE 5750 (architecture); CS 2200 (algorithms and data structures); CS 3100 or 5200 (operating systems); CS 4700 or 5300 (programming languages); and CS 2370, 5370, or 6370 (software engineering).

3. Show on an official transcript from an accredited college or university the completion of three courses deemed by the department to be equivalent to its placement courses. These must be semester-based courses of at least 3 credits, and the corresponding grade must be at least a B-.
Master of Science (MS). Whether Plan A, Plan B, or Plan C (see School of Graduate Studies general requirements), all MS/CS students must meet the following general requirements:

1. Complete four Computer Science courses numbered between 6000 and 6950. CS 6250 and 6900 are not accepted for these four courses. CS 6950 can count as only one of these four courses, and in that case must be taken for at least 3 credits in a single semester.

2. Complete 1 credit of CS 6900.

No more than 3 total credits in both CS 5950 and 6950 and 1 credit of CS 6900 may be used to satisfy the MS degree requirements. CS 6250 cannot be used to meet MS coursework requirements. A maximum of 15 credits of committee-approved coursework below the 6000-level may be used for the MS degree.

Students completing a Plan A MS degree must fulfill the following requirements:

1. Complete at least 24 credits of graduate coursework. The total GPA must be at least 3.0, and no more than two class grades below B- and none below C may be included.

2. Successfully meet the departmental placement requirement.

3. Successfully complete and submit a graduate proposal.

4. Successfully complete and defend a graduate thesis, based on original work (CS 6970, 6 credits).

Students completing a Plan B MS degree must fulfill the following requirements:

1. Complete at least 32 credits of graduate coursework. The total GPA must be at least 3.0, and no more than two class grades below B- and none below C may be included.

2. Successfully meet the departmental placement requirement.

3. Successfully complete and submit a graduate report proposal.

4. Successfully complete and defend a graduate report (CS 6970, 2 credits).

Students completing a Plan C MS degree must fulfill the following requirements:

1. Complete at least 37 credits of graduate coursework. The total GPA must be at least 3.0, and no more than two class grades below B- and none below C may be included.

2. Successfully meet the departmental placement requirement.

3. In addition to the four 6000-level courses required of all MS/CS students, successfully complete one pair of courses representing a sequence offered by the department: CS 5200 and 6200; CS 5300 and 6300; CS 5600 and 6600; CS 5650 and 6650; CS 5700 and 6700.

Master of Computer Science (MCS). The Master of Computer Science (MCS) is a terminal degree with coursework requirements similar to the PhD, but lacking the PhD’s requirement for original research. Students completing an MCS degree must fulfill the following requirements:

1. Complete at least 60 credits of graduate coursework beyond the BS/CS or 30 credits of graduate coursework beyond the MS/CS with a minimum class grade of B- and a minimum cumulative GPA of 3.2.

2. No more than 15 credits of coursework numbered below 6000 may be used for the MCS.

3. Complete at least 12 credits of 7000-level computer science coursework.

4. Successfully meet the departmental placement requirement.

5. Successfully complete and submit a research report proposal.

6. Successfully complete and defend a research report, based on original work (CS 7970, 6 credits).

7. Complete 1 credit of CS 6900.

Doctor of Philosophy (PhD). The Doctor of Philosophy in Computer Science is, above all else, a degree of quality. Simply completing a number of graduate courses or years of study is not sufficient to receive the degree. The successful candidate must demonstrate a breadth of understanding in computer science, as well as a depth of understanding in his or her chosen area(s) of emphasis. Also, students must show an ability to do creative research. This research should be carried out over a significant period of time (i.e., at least one year or three semesters). Thus, each successful PhD candidate will produce a significant piece of original research, presented in a written dissertation and defended in an oral examination. This work should be of such quality that one or more journal or conference articles can be derived from it.

Students completing a PhD/CS must fulfill the following requirements:

1. Complete at least 90 credits of graduate coursework (including at least 27 credits of dissertation/research) beyond a BS/CS or at least 60 credits beyond an MS/CS with a minimum class grade of B and a minimum cumulative GPA of 3.5.

2. Successfully meet the departmental placement requirement.

3. If an MS/CS is completed first, then no more than 15 credits of the 60 credits required for the PhD may be taken in coursework numbered below the 6000 level. If an MS/CS is not completed first, then no more than 21 credits of the 90 credits required for the PhD may be taken in coursework numbered below the 6000 level.

4. Complete at least 12 credits of 7000-level computer science coursework.

5. Complete 2 credits of PhD Seminar (CS 7900).

6. Complete 9 credits of department-approved business administration or business management courses.

7. Pass a set of comprehensive written examinations and an oral examination showing depth and breadth of knowledge in computer science and the student’s area(s) of emphasis.

8. Successfully complete and defend a research proposal.

9. Successfully complete and defend a dissertation (CS 7970, for at least 27 credits).

10. Complete 1 credit of CS 6900.
**Financial Assistance**

Applicants for admission will automatically be considered for financial aid, with no need for additional application procedures. Continuing students will be requested to apply for aid during the spring semester. Acceptance into the program does not guarantee financial assistance.

**Computer Science Faculty**

**Professors**

Scott B. Cannon, parallel processing, real-time systems, biomedical applications

Heng-Da Cheng, image processing, artificial intelligence, parallel processing, computer vision, fuzzy logic, VLSI algorithms and architectures, neural networks

Donald H. Cooley, fuzzy logic, evolutionary algorithms, neural networks, multimedia systems

**Professors Emeritus**

Rex L. Hurst, statistical computation, information systems

Wendell L. Pope, data structures, automatic software generation, programming languages

**Associate Professors**

Stephen J. Allan, parallel processing, parallel programming, recognition of parallelism, program optimization

Vicki H. Allan, instruction-level parallelism, register allocation, software pipelining, program optimization

Stephen W. Clyde, software engineering, object orientation, distributed systems, database theory, multimedia systems

Hugo de Garis, artificial intelligence, neural networks, genetic algorithms

**Associate Professor Emeritus**

Larre N. Egbert, scientific computing, computer graphics

**Assistant Professors**

Robert F. Erbacher, computer graphics, visualization, computer security, bioinformatics, GUIs, systems

Vladimir Kulyukin, cognitive robotics, speech and language processing

Seungjin Lim, data mining, semi-structured databases, bioinformatics

Xiaojun Qi, image processing, data mining

**Lecturers**

Kendra S. Dinerstein, introductory programming

Linda Duhadway, computer science education

Mary Veronica Kolesar, introductory computing

**Temporary Lecturer**

Dean Mathias, computer graphics

**Course Descriptions**

Computer Science (CS), pages 372-375
Ecology

Director: Martyn M. Caldwell
Location: Natural Resources 314
Phone: (435) 797-2555
FAX: (435) 797-3872
E-mail: mmc@cc.usu.edu
WWW: http://www.usu.edu/ecology/

Assistant Director for Administrative Affairs:
Marvin C. Bennett, Natural Resources 314B, (435) 797-2090,
marvb@cc.usu.edu

Degrees offered: Master of Science (MS) and Doctor of Philosophy (PhD) in the following departments: Aquatic, Watershed, and Earth Resources; Biology; Forest, Range, and Wildlife Sciences; and Plants, Soils, and Biometeorology

Graduate Program

The ecology program at Utah State University is administered by the interdepartmental Ecology Center. Its goals are to promote research and graduate education in the science of ecology and to provide expert, professional information and advice for decision makers considering actions that affect the environment. The research carried out by the center’s associates covers the full spectrum of ecology on several continents, but most of it is centered in the montane and desert regions of the western United States.

Students earn their degrees in ecology while maintaining residence in one of the participating departments; the center itself does not grant degrees. The candidate selects and is assigned a major professor from the department appropriate to his or her interests.

Degree Requirements

Requirements for graduate degrees in ecology include the University and departmental degree requirements, as well as the Ecology Center requirements outlined below, which are formulated by the Ecology Center Faculty Advisory Committee. This committee is comprised of faculty representatives, designated by the respective department heads, from the departments of Aquatic, Watershed, and Earth Resources; Biology; Environment and Society; Forest, Range, and Wildlife Sciences; Geology; and Plants, Soils, and Biometeorology. The Ecology Center director chairs the committee.

The ecology MS and PhD are research degrees requiring a research thesis or dissertation. The following course requirements for each of these degrees fall into two categories. The first is a general science category. Students receiving graduate degrees in ecology are expected to have some breadth and sophistication in modern science. The second category includes ecology course requirements. These are for the most part general requirements, with the specific courses taken by each student selected by his or her graduate committee and tailored to his or her needs and professional goals.

Ecology MS and PhD Degrees

General Science Requirements

(For further details, see the USU Ecology Center website: http://www.usu.edu/ecology/.)

Mathematics, Chemistry, Physics, and Computer Science

By its very nature, ecology must draw upon knowledge from most branches of science. As a result, at least a reasonable facility with fundamental mathematics and physical sciences must be attained by students, since these concepts have expression throughout the sciences. In order to assure a minimal comprehension in these areas, students receiving graduate degrees in ecology are required to have had the following at some point in their university careers:

1. Equivalent of mathematics through one semester of calculus.
2. Equivalent of at least a one-semester overview course in physics.
3. Chemistry through organic.
4. One year of introductory statistics and one graduate-level statistics course.

These courses are the minimum requirements for the MS and PhD degrees. The committee strongly recommends developing greater facility by taking at least a full year of calculus; one or more courses from the set of three including linear algebra, differential equations, and multi-variable calculus; and a full year of professional-level physics.

Biology

The following are required of all ecology graduate students, and must be taken at some point during their university career:

1. Genetics or evolution, one course.
2. One course in animal physiology for students emphasizing animal ecology.
3. One course each in plant physiology and soils for students emphasizing plant ecology.

Ecology Course Requirements

Master of Science

1. Attendance in Ecology Seminar (AWER/BIOL/ENVS/FRWS 6870) is required each semester in residence.
2. A one-semester course in Graduate General Ecology (AWER/BIOL/ENVS/FRWS 6960) is also required.
3. One course must be taken in each of two functional (core) blocks. The three available blocks are shown on the following page.
Doctor of Philosophy

1. Attendance in Ecology Seminar (AWER/BIOL/ENVS/FRWS 6870) is required each semester in residence.

2. A one-semester course in Graduate General Ecology (AWER/BIOL/ENVS/FRWS 6960) is also required.

3. One course must be taken from each functional (core) block. Students continuing from the MS to the PhD degree can apply block courses taken for the MS degree to the PhD requirement. The three available blocks are shown below.

Functional (Core) Blocks

1. Biophysical and Physiological Ecology
   (AWER/GEOL 6150, AWER/GEOL/BMEN/DEOL 6680, BMET 6500, 6800, BIOL 7750 (Topics in Biology: Comparative Animal Physiology), FRWS/SOIL 6350, FRWS 7200, SOIL 6130)

2. Organismic, Population, and Evolutionary Ecology
   (AWER 6230/7230, BIOL 6170, 6260, 6270, 6280, FRWS 6400, 6720/7720, 7400)

3. Community, Ecosystem, and Landscape Ecology
   (AWER 6120/7120, 6820/7820, BIOL/FRWS/SOIL 6200, BIOL 6010, 6590, FRWS 6610, 6710/7710, 6770)
Economics

Department Head: Keith R. Criddle
Location: Business 615
Phone: (435) 797-2310
FAX: (435) 797-2701
E-mail: econinfo@econ.usu.edu
WWW: http://www.econ.usu.edu

Undergraduate Advisor: Tyler J. Bowles, Business 602, (435) 797-2378, tbowles@econ.usu.edu

Graduate Program Director: Paul M. Jakus, Business 508, (435) 797-2309, pjakus@econ.usu.edu

Degrees offered: Bachelor of Science (BS) in Agribusiness; Bachelor of Arts (BA) in International Agribusiness; BS in Agricultural Economics; Master of Science (MS) in Applied Economics; BS, BA, MS, Master of Arts (MA), and Doctor of Philosophy (PhD) in Economics; participates in Master of Business Administration (MBA); participates in International MBA in Food and Agribusiness (offered through the Royal Agricultural College in Cirencester, England). The Agribusiness and Economics majors are structured to facilitate a dual major with companion majors within or outside the College of Business.

Undergraduate emphases: BS in Agribusiness—Business, Agricultural Systems; BS, BA in Economics—Economic Theory, Managerial Economics, Prelaw Economics

Graduate specializations: MS in Applied Economics—Agricultural Economics, Natural Resource Economics, and Regional Economic Development

The Department of Economics is jointly administered by the College of Agriculture and the College of Business. Programs in both the College of Agriculture and the College of Business are offered.

Undergraduate Programs

Objectives

Undergraduate economics provides students with the basic intellectual framework to understand and analyze economic problems and to make informed decisions. A basic understanding of economics is essential to becoming a well-informed citizen, as well as a successful business or public leader.

Admission Requirements

Freshmen who meet the admission requirements and are accepted in good standing by the University are eligible for admission to the College of Agriculture, the College of Business, and the Department of Economics. All transfer students, whether transferring from within Utah State University or from other colleges and universities, must have an overall minimum GPA of 2.2 to be accepted as majors in the department. Additional requirements may apply for students who seek to be admitted to a dual major.

New students wishing to major in the Department of Economics may do so by listing one of the departmental majors on their application when they apply for admission to USU. Students enrolled at USU may change to a departmental major by applying directly to the College of Agriculture, the College of Business, or the Department of Economics.

Graduation Requirements

To receive a bachelor’s degree in Agribusiness, Agricultural Economics, Economics, or International Agribusiness, students must complete all University requirements and the college and departmental requirements for their specific major as noted below.

Agribusiness Major

The Agribusiness major provides a foundation for employment in the agricultural sectors and rural regions and in businesses serving agriculture and rural regions, such as banks and financial institutions, production, marketing and buying cooperatives, value-added food producers, real estate and land management, agricultural chemical production and sales, and farms and ranches. Graduates of this program are employed in a variety of agribusiness operations throughout the United States. Agribusiness graduates have achieved prominence in positions in wholesale and retail sales and service, stock and commodity brokerage, real estate appraisal, banking and farm credit, insurance, and in farm and ranch operations. Classwork provides training in basic business and economics, as well as the specific management tools required for agricultural enterprises.

To graduate with a bachelor’s degree in Agribusiness, a student must have a major GPA of 2.5 or higher, as well as a grade of C or better in each course required for the major. A C grade or better in ECON 1500, MATH 1100, STAT 2300, and PSY 1010 or SOC 1010 and an overall GPA of 2.67 or higher is required for admission into some required BA and MHR courses. Agribusiness majors with a dual major must satisfy the admission and graduation requirements of both majors. All required courses must be taken for a letter grade. ECON 3900, 4950, 4990, and 5950 cannot be used to meet economics elective requirements.

Agribusiness Major: ECON 1500, 1550 (or 2010), 3030, 3050, 4010, 4030, 5030, 5050, 5350; ACCT 2010, 2020; MATH 1050, 1100; MHR 2990; STAT 2300; ASTE 3090 (or BIS 2450), 3050 (or BIS 2550); and 12 credits of College of Agriculture electives. These 12 credits must be from courses offered by departments in the College of Agriculture other than the Department of Economics. Six of the 12 credits must be upper division.

Agribusiness Major (Business Emphasis): ECON 3030, 3050, 4010, 4030, 5030, 5050, 5350; MHR 4880 (or 4890); Complete the Business Core: ACCT 2010, 2020; BA 3400, 3500, 3700; BIS 2450, 2550; ECON 1500, 2010, 3400; MATH 1050, 1100; MHR 2990, 3110; STAT 2300. Students who complete the core requirements with a 2.67 or higher GPA may earn a dual major in Business in addition to a major in Agribusiness.
Agribusiness Major (Agricultural Systems Emphasis): AS/TE 1010, 2200, 3050, 3090, 3600, 5260; ECON 1500, 1550 (or 2010, 3030, 3050, 4010, 4030, 5030, 5050, 5350; ACCT 2010, 2020; MATH 1050, 1100; MHR 2990; STAT 2300.

Agricultural Economics Major

The Agricultural Economics major emphasizes the development of quantitative skills in and a deeper understanding of economic theory. While this program provides a solid base for individuals desiring careers in agricultural businesses, it is also an excellent preparation for graduate studies in economics, agricultural economics, natural resources, business, or law. The Agricultural Economics degree provides an excellent background for work in federal, state, and local government, as well as in the private sector. Graduates of this program are now working in positions involving the analysis of prices and markets, preparation of economic feasibility studies, and preparing economic forecasts.

To graduate with a bachelor’s degree in Agricultural Economics, a student must have a major GPA of 2.5 or higher, as well as a grade of C or better in each course required for the major. All required courses must be taken for a letter grade. ECON 3900, 4950, 4990, and 5950 cannot be used to meet economics elective requirements.

Agricultural Economics Major: ECON 1500, 2010, 3030, 3050, 3400, 4030, 5000, 5010, 5030, 5310, 5330, and three of the following: ECON 5020, 5050, 5350, 5560, 5950; ACCT 2010, 2020; AS/TE 3050 (or BS 2550) 3090 (or BS 2450); MATH 1050, 1100; STAT 2300.

International Agribusiness Major

The International Agribusiness major combines training in business, language skills, and economics courses that emphasize the role of the trade and development issues that are critical to operating in the increasingly internationalized agribusiness sector. The program provides a foundation for employment in agricultural and agribusiness sectors and in banks and financial institutions, production, marketing and buying cooperatives, value-added food producers, agricultural chemical production and sales, and farms and ranches in domestic and international settings. Classwork provides training in basic business and economics, as well as the specific management tools required for agricultural enterprises.

To graduate with a bachelor’s degree in International Agribusiness, a student must have a major GPA of 2.5 or higher, as well as a grade of C or better in each course required for the major. All required courses must be taken for a letter grade. ECON 3900, 4950, 4990, and 5950 cannot be used to meet economics elective requirements.

International Agribusiness Major: ECON 1500, 2010, 3030, 3050, 3400, 4010, 4020, 4030, 5030, 5050 (or 5950), 5120, 5350, 5400; ACCT 2010; AS/TE 6140; BS 2450; MATH 1050, 1100; NFS 5510; PLSC 4300; STAT 2300; and a score of 3 or better on the Federal FSI Test or completion of a language minor.

Economics Major

Because the Economics major provides a strong grounding in economic theory, it helps open career opportunities that involve policy analysis. The Economics major has been a very popular dual major for Finance and Accounting majors because of the added theoretical and analytical dimension that advanced studies in economics can contribute to Finance and Accounting majors. This combination is excellent preparation for students interested in advanced studies in Accounting or Finance.

The Economics major also provides students in the humanities, and social and natural sciences with an opportunity to learn policy analysis tools. Whether the students are directly interested in policy or simply interested in the impact of policy within their chosen primary major, economics introduces a robust and empirically verified paradigm for explaining the behavior of social systems and their interaction with cultural, biological, and physical resources.

To graduate with a bachelor’s degree in Economics, a student must have a minimum GPA of 2.5 in courses required for the major and a grade of C or better in each course required for the major. A C grade or better in ECON 1500, MATH 1100, STAT 2300, and PSY 1010 or SOC 1010 and an overall GPA of 2.67 or higher is required for admission into some BA and MHR courses required for the managerial emphasis. Economics majors with a dual major must satisfy the admission and graduation requirements of both majors. All required courses must be taken for a letter grade. ECON 3900, 4950, 4990, and 5950 cannot be used to meet economics elective requirements.

Economics Major: ECON 1500, 2010, 3400, 4010 (or 5010), 4020 (or 5000); MATH 1050, 1100; STAT 2300; and 6 credits of upper-division ECON electives.

The Economic Theory Emphasis is designed for students who are interested in preparing for graduate studies in economics or agricultural economics and for students who are preparing for a career that requires training in quantitative economic analysis. Graduates have employment opportunities in business and government, as well as opportunities for continuing their education in graduate economics programs or in professional schools. Economists are often involved in policy analysis for government agencies and nongovernmental organizations.


The Managerial Economics Emphasis is for students who are planning for careers in business. The program can serve as a terminal program for those planning to enter the job market on graduation or as excellent preparation for students who intend to pursue an MBA or MPA.

Economics Major (Managerial Economics Emphasis): ECON 1500, 2010, 3400, 4010, 4020, 5310, 5330, 5950; ACCT 2010, 2020; BA 3400, 3500, 3700; BS 2450, 2550; BUS 1000; MATH 1050, 1100; MHR 2990, 3110; PSY 1010 (or SOC 1010); STAT 2300; and 6 credits of upper-division ECON electives.

The Prelaw Economics Emphasis is for students who plan to attend law school or pursue a career related to political science, and who want to obtain a strong foundation in economics. The large number of elective credits included in this emphasis area provides enough flexibility for students to custom design their program of study to meet individual interests and educational goals. Several students have taken advantage of this flexibility to design a dual major with Economics and Political Science.
Economics Major (Prelaw Economics Emphasis): ECON 1500, 2010 (or 1550), 4010 (or 5010), 4020 (or 5000), 5950; MATH 1050, 1100; POLS 1100; STAT 2300; 6 credits of upper-division ECON electives; and 3 credits of upper-division POLS electives.

Minor Requirements

Economics Minor: ECON 1500, 2010 (or 1550), 4010 (or 5010), and 6 credits of upper-division ECON electives. ECON 3900 cannot be used to meet economics elective requirements.

Economics Teaching Minor: ECON 1500, 2010 (or 1550), 3400 (or 5400), 5100, 5110; BIS 3000, 3300 (or 4300), 4400.


Agricultural Economics Minor: ECON 1500, 2010 (or 1550), 4010 (or 5010), 4030, 5030.

Additional Information

For more information about bachelor’s degree requirements, see the major requirement sheets available from the Department of Economics.

Financial Support

The Department of Economics, the College of Agriculture, and the College of Business award scholarships in addition to those available through the University Financial Aid Office. Information and application forms may be obtained from the college or departmental offices.

Graduate Programs

The MA, MS, and PhD in Economics, along with the MS in Applied Economics, are offered jointly through the College of Agriculture and College of Business. The MBA is offered through the College of Business. The International MBA in Food and Agribusiness is offered through the Royal Agricultural College (RAC), Cirencester, England.

Objectives

Economics graduate training emphasizes economic theory, critical thinking, and quantitative analysis. This foundation is a means to an end, not an end in itself; theory and quantitative methods are tools used in applied courses, in theses and dissertations, and in other research and extension activities carried out in the department.

The Master of Science and Master of Arts in Economics are intended to prepare students for doctoral studies in economics. Consequently, students are required to take the same first-year core theory and econometrics courses as the PhD students, with specialization courses in the second year. The MS in Applied Economics is a terminal degree that prepares students for positions in industry; private consulting firms; local, regional, and national policy-making agencies; private not-for-profit organizations; and community/regional economic planning and development agencies. The Doctor of Philosophy in Economics is intended to prepare students for faculty and research positions with dual fields in Trade and Development and Natural Resource and Environmental Economics. All PhD students are required to complete these “field” sequences. Students interested in other specialties are discouraged from applying.

Admission Requirements

Applicants must have earned a bachelor’s degree from an accredited college or university, maintained a grade point average of at least 3.0 for the last 60 semester credits earned, and score in at least the 40th percentile on either the Graduate Record Exam (GRE) or Graduate Management Admission Test (GMAT). In addition, international applicants from non-English-speaking countries must score at least 550 on the Test of English as a Foreign Language (TOEFL). Satisfaction of these minimum admission requirements does not guarantee admission. Applications for graduate study from students trained in disciplines other than economics are welcomed. However, all applicants are expected to have: (1) an understanding of intermediate microeconomic and macroeconomic theory, (2) preparation in mathematical economics, and (3) preparation in probability and statistics. In addition, applicants are expected to have strong written and oral communications skills.

Degree Requirements

Doctor of Philosophy in Economics. PhD students are required to: (1) complete the first-year core (ECON 7060, 7130, 7140, 7230, 7240, 7310, 7350, 7360); (2) perform successfully on a written qualifying examination based on the first-year core; (3) complete the advanced core (ECON 7150, 7250, 7320, 7330); (4) complete the International Trade and Development and Natural Resource and Environmental Economics field sequences (ECON 7400, 7500, 7510, 7800); (5) complete a research dissertation and give an oral defense of the dissertation; and (6) meet University requirements for dissertation research and total credit hours.

Master of Science in Applied Economics. To complete an MS degree in Applied Economics, students are required to: (1) complete the applied core (ECON 6000, 6060, 6100, 6300, 6330); (2) complete a specialization in: (a) agricultural economics (ECON 6030 and 6040), (b) natural resource economics (ECON 6500 and 6510), or (c) regional economic development (ECON 6700 and 6710); (3) submit and orally defend a thesis (Plan A) or research report (Plan B); and (4) complete elective class or thesis research credits to meet Plan A, B, or C graduation requirements. Plan A requires at least 30 credits and must include at least 6 thesis research credits. Plan B requires at least 30 credits and must include 2 to 3 thesis research credits. Plan C has no research component and requires at least 33 credits. (No more than 6 undergraduate credits may be used in meeting degree requirements.)

Master of Science and Master of Arts in Economics. Students are required to complete the first-year core (ECON 6000, 6060, 6100, 7130, 7140, 7240, 7310, 7350, 7360) and to submit and orally defend a thesis (Plan A) or research report (Plan B). The department also accepts Plan C, which has no research component. MA students must satisfy the foreign language requirement. Plan A requires at least 30 credits and must include at least 6 thesis research credits. Plan B requires at least 30 credits and must include 2 to 3 thesis research credits. Plan C requires at least 33 credits. (No more than 6 undergraduate credits may be used in meeting degree requirements.)
Master of Business Administration (Agribusiness Management, International Economics, or Quantitative Economic Analysis Specialization). A student may receive a College of Business Master of Business Administration degree with a specialization in Agribusiness Management, International Economics, or Quantitative Economic Analysis by completing the MBA advanced core (see the MBA program description on pages 153-154) and 12 specialization credits. ECON 6330 should be taken to satisfy the quantitative methods requirement. The Agribusiness Management specialization requires: ECON 6030, 6040, 6300; and either ECON 6500 or 6700. The International Economics specialization requires ECON 5150, 5400, 6000; and POLS 6220. The Quantitative Economic Analysis specialization requires ECON 5310, 6300, 6330; and STAT 5100.

International MBA in Food and Agribusiness. The Department of Economics participates with the Royal Agricultural College (RAC) in Cirencester, England to offer this degree. The degree is awarded by the RAC. Students study at USU during fall semester, and then study spring semester at the RAC. Students complete a team project and a thesis. The degree is designed to prepare students to be agribusiness managers in an international environment. Applicants for admission to the International MBA are expected to have completed a common body of knowledge core at an AACSB accredited program. The common body of knowledge includes: ACCT 2010, 2020; BA 3400, 3500, and 3080 or 3700; BIS 2450; ECON 1500, 2010; MATH 1100; STAT 2300; and MHR 2990 and 3110. Alternatively, students may choose to gain the necessary competencies by attending the 18-credit Accelerated Business Core (BUS 6160), which is offered during summer semester. Required courses to be completed at USU include: ACCT 6350; ECON 5030 or 6030, ECON 6040; BA 6520 or 4590; and MHR 2990. During spring semester, courses in finance, marketing and advertising, human resource management, macroeconomics, and business strategy are taught at the RAC. Participating students pay USU tuition and are expected to complete the program in 12-15 months.

Research

The department maintains an active and productive research program. The results of this research are published in professional journals, books, and technical reports. Financial support for the departmental research program is provided by the Utah Agricultural Experiment Station, the colleges of Agriculture and Business, the Office of the Vice President for Research, and by a combination of public and private extramural sources. The Economics Research Institute provides support and coordination for some of the department’s research activities. Graduate students are an integral part of departmental research programs.

Financial Assistance and Assistantships

The department offers teaching and research assistantships to qualified graduate students. These are awarded on a competitive basis, and all accepted students are considered eligible. However, while the department makes every effort to assist students in obtaining financial assistance, acceptance into department programs does not guarantee financial assistance.

Financial assistance is not provided to PhD students who fail to pass the written qualifying exam nor to graduate students who fail to make satisfactory progress toward completion of their degrees.

Economics Faculty

Professors

Dee Von Bailey, agricultural economics
Basudev Biswas, international trade and economic development
Keith R. Criddle, resource economics and quantitative methods
Christopher Fawson, public finance and econometrics, Vice Provost for Academic and International Affairs
Terrence F. Glover, production economics and policy
E. Bruce Godfrey, agricultural and resource economics
L. Dwight Israelsen, comparative systems and economic history
Paul M. Jakus, natural resource and environmental economics, nonmarket valuation
John E. Keith, agricultural and resource economics
W. Cris Lewis, regional-urban and managerial economics
Kenneth S. Lyon, economic theory
H. Craig Petersen, regulation and antitrust and managerial economics; Director of Analysis, Assessment, and Accreditation
Donald L. Snyder, agricultural and resource economics, Associate Dean for Academic Programs

Professors Emeriti

Roice H. Anderson
Larry E. Bond
Rondo A. Christensen
Lynn H. Davis
Reed R. Duttschi
Herbert H. Fullerton
Gary B. Hansen
Allen D. LeBaron
Darwin B. Nielsen
Morris D. Whitaker

Associate Professors

Tyler J. Bowles, econometrics and international economics
Steven S. Vickner, agribusiness, food marketing

Associate Professor Emeritus

Glenn F. Marston

Assistant Professors

Arthur J. Caplan, environmental economics and applied microeconomic theory
David L. Dickinson, labor and experimental economics
John P. Gilbert, international trade theory and policy, applied general equilibrium modeling, development economics
Rimma Shiptsova, international trade, food safety, econometrics
Ruby A. Ward, agribusiness management and operations research

Human Resources Specialist

Marion T. Bentley, manpower economics

Course Descriptions

Economics (ECON), pages 379-382


Education (EdD, PhD)

**Chairman:** Gerard R. Giordano, Dean of College of Education and Human Services  
**Location:** Emma Eccles Jones Education 109  
**Phone:** (435) 797-1437  
**FAX:** (435) 797-3939  
**E-mail:** idphelp@usu.edu  
**WWW:** http://www.coe.usu.edu/coe/idp/index.htm

**Faculty:** Faculty are listed with participating departments.  
**Degrees offered:** Doctorate of Education (EdD) and Doctorate of Philosophy (PhD)

**Graduate specializations:**  
*PhD*—Business Information Systems, Curriculum and Instruction, and Research and Evaluation;  
*EdD*—Special Education

**Admission Requirements**

For admission information, contact: Dean, School of Graduate Studies, Utah State University, 0900 Old Main Hill, Logan UT 84322-0900; telephone (435) 797-1189; FAX (435) 797-1192; gradsch@cc.usu.edu.

To be evaluated against established criteria, students must submit to the School of Graduate Studies at Utah State University an Application for Admission along with the following:

1. Two official transcripts of both undergraduate and graduate credits from all colleges or universities attended. An average grade of *B* (3.0) or better is required during the last two years of undergraduate work and for all graduate work.
2. Three letters of recommendation (required). At least two of these letters should come from individuals who can evaluate the student’s academic abilities. All letters should address the student’s potential for successful graduate study.
3. Documentation of a master’s degree or equivalent coursework related to an area of specialization, or a statement of why admission is sought without a master’s degree.
4. An official report of the Graduate Record Examination (GRE), including both the Verbal and the Quantitative subtests.
5. Evidence of writing competency as determined by the department of specialization.
6. A statement of specific reasons for wanting to enroll in the doctoral program in education, including the area of specialization student desires to pursue.

Applicants to the Curriculum and Instruction specialization of the PhD and EdD degrees must have appropriate teaching experience.

**Specializations**

*Business Information Systems.* The BIS specialization prepares graduates for careers as teachers or educational leaders in the public schools and/or faculty members in higher education. Areas of emphasis include business information systems, communication, business and/or marketing education, and training and development.

*Curriculum and Instruction.* The C & I specialization prepares graduates to serve as curriculum specialists and instructional leaders in school districts and state educational agencies, professors in colleges of education, and subject area instructors in four-year or community colleges. Areas of emphasis include early childhood; engineering and technology education; instructional leadership; reading/writing; schooling, culture, and society; and teaching and learning in higher education.

*Research and Evaluation.* The R & E specialization prepares graduates to evaluate the quality of educational programs, including the comparison of strengths and weaknesses of alternative programs; the revision, updating, and/or redirection of existing programs; and the analysis of related educational issues.

**Planned Program**

To complete a doctorate degree, a minimum of 60 total credits are required for students with a master’s degree, and a minimum of 90 total credits are required for students without a master’s degree. A student must:

1. Complete a Unifying Program of Studies Core (6 semester credits) and a Research and Statistics Core (12 semester credits), required of all doctoral students.
2. Complete a planned program of supporting electives, as designated by the specialization or by a department and approved by the student’s supervisory committee.
3. Pass a written comprehensive examination. This exam must be satisfactorily completed before the student advances to candidacy. Advancement to candidacy also requires an approved dissertation proposal.
4. Present at a professional conference.
5. Submit for publication an approved manuscript.
6. Complete and satisfactorily defend a doctoral research study directed and judged by a supervisory committee of faculty.
7. Complete all final requirements, as specified by an area of specialization, the College of Education and Human Services, and the School of Graduate Studies.

**Resident Coursework**

The **Doctorate of Philosophy degree (PhD)** requires three semesters of full-time registration in residency with a minimum of two semesters of consecutive residency. Completion of 33 credits in residence on the Logan campus is required.

The **Doctorate of Education degree (EdD)** requires at least three semesters in full-time residency, but they need not be consecutive. At least two semesters must be spent on campus prior to registering for dissertation credit. Completion of 39 credits must be completed in residence.

It is strongly recommended that the applicant enroll on campus the first semester after admission, so that appropriate program planning can be completed.

**Research**

Each student must complete a significant research study; present at a professional conference; and prepare an article for publication in an appropriate journal, based on the completed research and/or program of study.

**Financial Assistance**

Students should contact department heads for all inquiries regarding assistantships and tuition waivers. Applications for University assistantships, fellowships, and all financial aid go through department offices. For a listing of fellowships and scholarships, see the *Graduate Financial Assistance* section of this catalog (pages 89-90).

**Career Opportunities**

The doctoral specialization prepares educational leaders for positions as college and university researchers and teachers in education and education-related fields. Recipients of the doctorate degree are also prepared to conduct and direct research and development activities in public or private educational agencies or in the corporate section; teach in community colleges, four-year colleges, and universities; serve as supervisors and curriculum specialists in public or private educational institutions and settings; and serve in a variety of other careers.

**Administrative/Supervisory Certificate Program**

A doctorate in education is separate from the Administrative/Supervisory Certificate (A/SC) Program; however, a student may obtain the A/SC while pursuing the doctorate degree. Completion of the A/SC program qualifies a person for the certificate required of administrators and/or supervisors at any level in the public school systems of Utah. Students desiring an Administrative/Supervisory Certificate may need to take courses in addition to those required for the PhD and EdD degree.

**College of Education and Human Services Courses**

Education courses are listed under the EDUC prefix on pages 382-383.
Electrical and Computer Engineering

Department Head: Tamal Bose
Location: Engineering Laboratory 149
Phone: (435) 797-2840
FAX: (435) 797-3054
E-mail: info@ece.usu.edu
WWW: http://www.ece.usu.edu

Undergraduate Advisor: Kathleen E. Bayn, Engineering 310, (435) 797-2705, kathy.bayn@usu.edu

Graduate Program Coordinator: Scott E. Budge, Engineering Laboratory 113, (435) 797-3433, scott.budge@ece.usu.edu

Degrees offered: Bachelor of Science (BS), Master of Engineering (ME), Master of Science (MS), Electrical Engineer (EE), and Doctor of Philosophy (PhD) in Electrical Engineering; BS in Computer Engineering

Graduate specializations: Communications, Microelectronics (VLSI), Microwaves, and Signal Processing

Undergraduate Programs

Department Mission Statement
The mission of the Electrical and Computer Engineering (ECE) Department is to develop students into outstanding electrical and computer engineers. The department is dedicated to superb teaching, research, and service.

Program Descriptions
The ECE Department offers a balanced curriculum of classwork, laboratory work, and design experiences to prepare students for careers as practicing engineers. The Bachelor of Science programs in Electrical Engineering and Computer Engineering are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC/ABET). The research program of the department, which includes undergraduates as well as graduate students, is internationally acclaimed in the fields of aerospace instrumentation and measurements, image compression, communications, electromagnetics, controls, and robotics.

Electrical Engineering
The Electrical Engineering program is dedicated to producing engineers who: (1) contribute to engineering practice, advance engineering knowledge, and contribute to the good of society; (2) are advancing their education in engineering and other professions; and (3) take a leadership role in engineering and society.

Computer Engineering
The Computer Engineering program is dedicated to producing engineers who: (1) apply fundamental principles to solve practical engineering problems; (2) are continually engaged in professional, personal, and community development; (3) are implementing well-planned, top-down designs of complex systems; and (4) function well as team members and interact well with other professionals and nonengineers.

Building on a solid curriculum in computing hardware and software, the program begins with a strong foundation in electricity, digital logic design, and computer science, then leads into advanced software engineering and microcomputer systems. Advanced courses provide experience in formal design methods, high-performance architectures, data communications, concurrent programming, and real-time and embedded systems. Students are also required to complete advanced course sequences in computer science.

Students in the BS programs in both electrical engineering and computer engineering are permitted and encouraged to take courses in the other program. Many courses, such as controls, digital signal processing, and robotics, draw heavily on skills in both areas.

Assessment
In addition to the regular national accreditation, the ECE Department employs a number of means to assess the quality of departmental programs. The primary indicator is the success of ECE graduates in obtaining professional employment. At several intervals following graduation, the department keeps track of student placement. Other major tools include annual quantitative assessment of program objectives, semi-annual reviews of the curriculum and facilities by the ECE Industrial Advisory Board, interviews of undergraduate and graduate students upon completion of their programs, regular monitoring of faculty members by peers, and periodic surveys of ECE graduates working in industry.

Requirements
Prior to entry into the upper-division classes, the student must meet the standards for entry into the Professional Engineering Program. Additional information concerning these items is given in the College of Engineering write-up (pages 107-109). It is the responsibility of students to be aware of these rules and procedures; however, advisor assistance is available.
Admission to Pre-Professional Program. Admission requirements for students desiring to major in Electrical Engineering or Computer Engineering are the same as those governing admission to the College of Engineering (see pages 107-109), except that students must also be “calculus ready.” That is, they must: (1) achieve a score of 27 or higher on the math ACT test; (2) complete MATH 1050 and 1060 or MATH 1210; or (3) achieve an AP score of at least 3 on the AB Calculus or BC Calculus test.

Bachelor of Science in Electrical Engineering. The program leading to a Bachelor of Science degree in electrical engineering is nominally a four-year program. The required program consists of a basic foundation of mathematics, science, computer science, engineering fundamentals, and laboratory and design experiences. Elective courses providing for one or more areas of technical specialization, communication skills, and University Studies complete the program and prepare students for productive and rewarding careers in the electrical engineering profession.

Bachelor of Science in Computer Engineering. The program leading to a Bachelor of Science in computer engineering is nominally a four-year program. The required program consists of a basic foundation of mathematics, science, computer science, engineering fundamentals, and laboratory and design experiences. Elective courses providing for one or more areas of technical specialization, communication skills, and University Studies complete the program and prepare students for productive and rewarding careers in the computer engineering profession.

Required Courses are shown in the accompanying paragraphs; however, because of differences in high school or transfer student preparation, it is strongly recommended that students meet with the college academic advisor to plan a detailed semester-by-semester schedule for completing the preprofessional requirements. Particular attention must be paid to course prerequisites, requiring some students to take longer than four semesters to complete the preprofessional program. Students transferring into the department should consult with the college academic advisor for transfer credit evaluation and proper placement in the curriculum.

AP and CLEP credit may be used to meet some of the required technical and University Studies courses. Details concerning courses acceptable as electives are available from the Electrical and Computer Engineering Department.

Electrical Engineering

Preprofessional Program

MATH 1210, 1220, 2210, 2250; CS 1700, 1720; ECE 1010, 2410, 2420, 2530, 2540; PHYX 2210, 2220; ENGL 2010.

Professional Program

MATH 5710; CS 3410, 3420, 3620, 3640, 3710, 3720, 3820, 3860, 4740, 4840, 4850, 5530; Math/Science Elective; University Studies Breadth; Electrical Engineering Electives; Technical Electives; University Studies Depth

Computer Engineering

Preprofessional Program

MATH 1210, 1220, 2250, 3310; CS 1700, 1720, 2200, 2370; ECE 1010, 2410, 2420, 2530, 2540; PHYX 2210, 2220; ENGL 2010.

Professional Program

MATH 5710; CS 3100; ECE 3410, 3620, 3640, 3710, 3720, 3820, 3860, 4740, 4840, 4850, 5530; Math/Science Elective; University Studies Breadth; Computer Engineering Electives; Computer Science Electives; Technical Electives; University Studies Depth

Student Research Opportunities

Undergraduate students are extensively involved with research activities in the department. Electrical engineering majors and computer engineering majors have presented papers at research conferences and have won prizes. They have also designed satellites for deployment from the space shuttle. Electrical and Computer Engineering faculty members are dedicated to helping students and providing a challenging and interesting learning atmosphere. For additional information, see the Research section under Graduate Programs (page 189).

Financial Support

Scholarships, assistantships, grants-in-aid, and work-study programs are available through the University. In addition, the department employs undergraduate and graduate students to assist in engineering research and development.

Concurrent BS/Master’s Program

The concurrent BS/Master’s program allows engineering students to begin taking graduate-level classes during their senior year. This permits them to complete requirements for both the BS degree and the master’s degree concurrently during two years. Students in this program have a greater selection of graduate courses, since many graduate courses are taught during alternate years. In addition, the student’s senior design project could be a start for a graduate design project or thesis. After completing their BS degree, students in the program can earn a master’s degree in only one additional year. Both the BS and the master’s degree can generally be earned with 150 total credits, although students should note that a Plan C MS requires 3 extra credits. Finally, students with a master’s degree can expect a much higher starting salary following graduation. (For more information, see College of Engineering section of this catalog, page 109.)

Graduate Programs

Admission Requirements

See general admission requirements on pages 90-91. Applicants with a bachelor’s degree in Electrical or Computer Engineering from an ABET accredited program and having a 3.25 GPA or better can generally be admitted without restriction. Additional coursework in electrical and computer engineering fundamentals may be required in individual cases. Students must take the general GRE exam; however, the subject GRE is not required. All graduate students are expected to have a working knowledge of a computer language (preferably C).

Applications will be considered throughout the year. However, students desiring financial aid should submit application materials by December 15 to be considered for the following fall semester.

No applications will be considered until all required information arrives in the office of the School of Graduate Studies.
Degree Requirements

Specific requirements for the ME, MS, EE, and PhD degrees are outlined below; these are in addition to the general requirements of the School of Graduate Studies. All graduate degree programs in the ECE Department require a grade of B- or better in all courses applied toward the requirements listed below.

Master of Engineering (ME) and Master of Science (MS).
The ME degree is based on coursework and is designed to give graduates a strong practical foundation. The MS degree requires substantial thesis or project work in a specific area and prepares students for advanced study or advanced work in that area. The MS degree has two options. Under Plan A, the student completes a thesis. Under Plan B, the student prepares an engineering project report.

If a student chooses an MS degree, changing to the ME degree is only possible by approval of the major professor, ECE graduate committee, and the department head.

The MS and ME degrees require successful completion of 30 credits of 5000-level or above coursework in a program approved by the student’s supervisory committee, with the following stipulations:

Master of Science
1. At least 12 credits of ECE coursework must be completed at or above the 6000 level.
2. MS Plan A students must complete 6 credits of Thesis Research (ECE 6970).
3. MS Plan B students must complete 3 credits of Thesis Research (ECE 6970) and 3 credits of Design Project (ECE 6950).
4. MS students must have a one- to two-page, double-spaced thesis or project proposal approved by their committee when a project has been identified.

Master of Engineering
1. At least 18 credits of ECE coursework must be completed at or above the 6000 level.
2. At least two ECE courses with substantial lab components must be completed at or above the 5000 level.

All Master’s Students
1. At least 3 credits of ECE coursework must be completed at the 7000 level.
2. One credit of ECE 6800 (Electrical Engineering Colloquium) must be completed as soon as possible.
3. Each master’s student must form a committee and have a program of study approved by the end of his or her first semester.
4. No more than 10 credits of 5000-level coursework may be applied toward a master’s degree.
5. Any exceptions to the master’s requirements must be approved by the student’s committee and the ECE Graduate Committee.

A course in technical and professional writing, or equivalent writing experience, is required for MS students prior to beginning the thesis. MS students may, at the discretion of their supervisors, be required to hire an editor to bring the thesis or paper into acceptable form.

Electrical Engineer. The Electrical Engineer degree is awarded for the successful completion of an advanced program of 60 credits of academic work beyond the BS, or 30 credits beyond the MS, and a comprehensive engineering report earning an additional 10 credits. The degree requirements are the same as those for the PhD listed below, except that the comprehensive examination need not be taken and the engineering report is given in lieu of the original research dissertation, reducing the total credits required for the PhD. The degree differs from the PhD by preparing the student for professional engineering work, rather than for research.

Doctor of Philosophy. The PhD is awarded for the successful completion of an advanced program of academic work and original research. A flexible program is planned individually by each candidate in consultation with his or her faculty supervisory committee.

The PhD program is expected to include 60 credits of coursework beyond the BS degree or 30 credits of coursework beyond the MS degree, plus 30 credits of dissertation research. The coursework generally represents two years of study beyond the MS degree, with up to 20 credits being taken outside the Electrical and Computer Engineering Department.

Once the student has completed at least 45 and not more than 60 graduate credits, he or she must pass a comprehensive examination based on graduate-level courses. The results of the original (publishable) research work will be presented and publicly defended as a dissertation.

Research

The department conducts extensive research through the following centers:

1. Center for Self-Organizing Intelligent Systems (CSOIS)
2. National Center for the Design of Molecular Function (NCDMF)
3. Space Dynamics Laboratory (SDL)
4. Anderson Center for Wireless Teaching and Research
5. Center for High-Speed Information Processing (CHIP)
6. Center for Advanced Imaging LADAR (CAIL)

Research activities include: robotics, control systems, digital system design, computer networks, concurrent systems, antennas, space systems, image processing, digital signal processing, wireless communications, acoustics, electromagnetic compatibility, and LADAR systems.

Financial Assistance

All applicants who are accepted academically are automatically considered for financial aid. Virtually all successful graduate students in the department do receive some level of financial aid during their degree program.
Electrical and Computer Engineering Faculty

Professors
Doran J. Baker, electromagnetics, infrared measurements, engineering systems in space
Tamal Bose, digital signal processing, communications
Joe R. Doupnik, communications, computers
H. Scott Hinton, photonic switching, Dean of College of Engineering
Todd K. Moon, communications and signal processing
Kevin L. Moore, controls
Linda S. Powers, biophysics, molecular engineering
Gardiner S. "Dyke" Stiles, concurrent systems

Adjunct Professor
Heng-Da Cheng, pattern recognition, image processing

Trustee Professor Emeritus
Kay D. Baker, electronics, space science

Professors Emeritus
Robert W. Gunderson, control systems, pattern recognition, robotics
Ronney D. Harris, microwaves, transmission line circuits, atmospheric modeling
William L. Jones, integrated circuits
Alan W. Shaw, electromagnetics, controls, microcomputers
Allan J. Steed, electro-optics, aerospace measurement systems
Ronald L. Thurgood, computers, database systems
Clair L. Wyatt, infrared, electro-optical systems

Associate Professors
Scott E. Budge, signal processing, image processing
Charles M. Swenson, space science and space engineering
Paul A. Wheeler, microprocessors, acoustics

Research Associate Professor
Paul D. Israelsen, integrative services, digital systems design

Adjunct Associate Professors
John C. Kemp, robotics, electro-optics
Tsung-Cheng Shen, physics
Gene A. Ware, computer systems

Associate Professor Emeritus
Duane G. Chadwick, remote sensors, instrumentation

Assistant Professors
Matthew D. Berkemeier, computers, robotics, controls
Annette Bunker, computer engineering
Yangquan Chen, control systems
Jacob H. Gunther, communications and signal processing
Randy J. Jost, electromagnetics, microwave engineering, solid state electronics
George K. Liang, electromagnetics
Michael W. Tompkins, space engineering

Research Assistant Professor
Hui Fang Dou, precision instruments, mechatronics

Adjunct Research Assistant Professor
Steven R. Wassom, controls

Adjunct Assistant Professor
Charles R. Tolle, controls

Course Descriptions

Electrical and Computer Engineering (ECE), pages 375-379
Elementary Education

Department Head: Bernard L. Hayes  
Location: Emma Eccles Jones Education 385A  
Phone: (435) 797-0385  
FAX: (435) 797-0372  
E-mail: elemeduc@cc.usu.edu  
WWW: http://www.coe.usu.edu/eled/  
Student Teaching Director: Katy Johnson,  
Education 371, (435) 797-0371, katy.johnson@usu.edu  

Undergraduate Advisors:  
Scheri N. Noble, Education 383, (435) 797-0383, sherii.noble@usu.edu  
Susie Maughan, Education 375, (435) 797-0375, susie.maughan@usu.edu  
Sylvia Robinson, Education 377, (435) 797-0377, sylvia.robinson@usu.edu  

Degrees offered: Bachelor of Science (BS), Bachelor of Arts (BA), Master of Science (MS), Master of Arts (MA), and Master of Education (MEd) in Elementary Education; BS and BA in Early Childhood Education; the Elementary Education Department participates in the Interdepartmental Doctoral Program in Education, including Doctor of Education (EdD) and Doctor of Philosophy (PhD) with Curriculum and Instruction Specialization

Graduate specializations: MA, MS, MEd—Early Childhood Education; Educational Leadership; ESL Education; Gifted and Talented Education; Math and Science Education; Middle Education; Reading, Writing, and Language Arts; and Social Studies Education

Undergraduate Programs

Objectives

The purposes of the Department of Elementary Education are:

1. To develop professional educators;
2. To advance knowledge in the field of education.

These purposes are realized through teaching, scholarly activities, and service. The department provides leadership in the preparation of teachers, supervisors, curriculum specialists, and other professional personnel for careers in elementary education, early childhood education, and middle education.

The Department of Elementary Education at Utah State University offers three programs leading to licensure as a teacher: (1) Elementary Education: Offers licensure to teach in grades one through eight in the public schools; (2) Early Childhood Education: Offers licensure to teach prekindergarten, kindergarten, and grades one through three in the elementary school; and (3) Middle Education: Offers an endorsement to teach in grades five through eight.

Requirements

Provisional Admission Process and Requirements. Since more students major in Elementary Education at USU than in any other major, competition for admission into the program is very keen. Due to increased demands for admission coupled with limited resources, a ceiling of 175 students has been placed on admissions each year. Thus, admission to USU does not necessarily guarantee admission into the Elementary Education program.

Provisional admission to the Elementary and Early Childhood Teacher Education Program is determined by (1) the student’s GPA in a set of core courses, (2) ACT scores and Writing Diagnostic Test or PPST test results, (3) the number of credits a student has taken, (4) successful completion of a group assessment interview, and (5) a speech and hearing test. (Additional factors to be weighted may be gender and/or minority status consistent with applicable law.) Applications are accepted each semester. Because there are typically more applicants than there is space available, the number accepted is limited. Students who are not accepted may reapply. Provisional admission requires formal action by the Office of the Dean of the College of Education and Human Services, as well as by the student’s department.

Admission to the Teacher Education Program is a prerequisite for enrollment in the major, starting with Level II. A student desiring admission to the Teacher Education Program should file an application in the Elementary Education Office, located in room 373 of the Emma Eccles Jones Education Building.

Elementary Education SODIA Program. The acronym SODIA represents the elementary teacher education program. The name is derived from the initial letter of descriptive words (Self, Others, Discipline, Implementation, and Application) which represent emphasis placed at each level of the program.

The elementary education SODIA program is performance-based and field-centered. It utilizes public schools as partners in each phase of the teacher education program. SODIA is an interdisciplinary and interdepartmental program utilizing staff members from the Departments of Psychology; Special Education and Rehabilitation; Family, Consumer, and Human Development; Health, Physical Education and Recreation; Music; Art; Theatre Arts; and Instructional Technology who work in conjunction with the Department of Elementary Education. These University faculty members work with teachers and principals of cooperating public schools and the Edith Bowen Laboratory School on the USU campus in an integrated program.

Level I, Self, is represented by the “S” in the acronym SODIA. This is the first-level course (ELED 1000) introducing the field of education and emphasizing the student’s self-assessment in relation to ability and desire to teach. A minimum of 15 hours are spent observing in an elementary or middle school classroom, completing volunteer service in other community settings, and viewing a variety of selected professional videos. In addition, a human growth and development course is required. The two courses in Level I are prerequisites to applying to the Teacher Education Program.

Level II, Others, is represented by the “O” in the acronym SODIA. This stands for the many “others” who make up the education community. In this bloc, each student receives 15 credits.
and is assigned as a teacher assistant in one of the public schools. The remainder of the time is spent in seminars and classwork offered on the USU campus. The classwork is interdisciplinary and interrelated, including courses in elementary education, psychology, special education, and technology. Entrance to Level II requires prior admission to the Teacher Education Program.

Level III, Disciplines, is represented by the “D” in the acronym SODIA. Students in this bloc complete 15 credits of methods coursework and practica at the Edith Bowen Laboratory School or public schools. The “methods” courses in reading, social studies, language arts, mathematics, and science are included in this bloc. A preliminary course in reading is required as a transition from Level II to Level III.

Level IV, Implementation, is represented by the “I” in the acronym SODIA. This is the student teaching or internship phase of the program. Student teaching constitutes full days of actual teaching experience for the entire semester. Internships are for the entire academic year.

Level V, Application, is represented by the “A” in the acronym SODIA. At this level, graduates of the program make a transition into the profession of teaching.

National INTASC Standards also receive major emphasis through SODIA’s levels of progression. These standards are: Content Pedagogy, Student Development, Diverse Learners, Critical Thinking, Motivation and Management, Communication, Planning, Assessment, Professional Development, and School/Community Development. A student performance portfolio process (based around the INTASC Standards) is also included.

Continuing Status Requirements. A minimum GPA of 2.75 is required to remain in good standing and to graduate from the program.

All students majoring in elementary education must be registered in the College of Education and Human Services. An advisor will be assigned from the Department of Elementary Education. Programs of professional education courses, as well as teaching support courses and an area of emphasis, have been developed by the Department of Elementary Education and approved by the Council on Teacher Education and the Utah State Office of Education. For a complete description of the program and requirements for graduation and licensure, students should obtain a copy of the Department of Elementary Education, Student Program Planning Guidebook, available from the Department of Elementary Education. This information is also available on the Elementary Education Department website: http://www.coe.usu.edu/eled/.

Each student completes a professional semester of student teaching or a year of internship. An application for student teaching/internship must be made at least one semester in advance, and credentials are reevaluated at that time. Not all student teachers/interns can be accommodated by the schools located within Cache Valley. Students should be financially prepared to spend that time off campus in the event such an arrangement is necessary. Students must be responsible for their own transportation.

Students who carefully select their elective courses may also qualify for a special endorsement to the basic professional teaching license. All students complete an area of emphasis in a subject matter field, in addition to the teaching support courses. Dual licensure programs exist in deaf education, early childhood education, special education, and middle education. Information concerning special endorsements and additional areas of specialization may be obtained from the Department of Elementary Education.

Students who have teaching licenses in areas other than elementary education may obtain the elementary license by meeting the same or equivalent requirements for licensure expected of an elementary education major. Those desiring to acquire a dual license should work with an advisor from the Department of Elementary Education.

All courses listed as major subject courses must be taken on an A-B-C-D-F basis and the grade point average for these courses must be 2.75 or better. Major subject courses passed with less than a C grade must be repeated.

Endorsements

The USU Elementary Education Department and Secondary Education Department jointly offer a K-12 English as a Second Language (ESL) Endorsement, as well as a Middle-Level Endorsement. Graduate endorsements are also available in Early Childhood Education, ESL, Reading, Gifted and Talented, and Middle-Level Education.

Additional Information

For more information concerning requirements for University graduation and for basic professional teaching licensure in elementary education, early childhood education, and middle education, see major requirement sheets available from the Elementary Education Department Advisement Center, Emma Eccles Jones Education Building, Room 373.

Financial Support

The following scholarships are available to junior and senior students: Ballam, Blair, Bowen, DeHart, Frye, Hales, Jackson, Kurzhals, McEvoy, Stewart, Taylor, Vest, and Young. To be eligible, students must have completed Level II of the Elementary Education Program and have a cumulative GPA of 3.5 or higher. Applications are available from the Elementary Education Department and are due by February 1.

Graduate Programs

Admission Requirements

Students applying for admission to master’s programs must have GRE scores at or above the 40th percentile. This same percentile is the minimum required on the MAT. For the doctorate degree, GRE scores at or above the 40th percentile are also required on the verbal and quantitative tests. Admission committees also consider experience, undergraduate record, curricula completed, and formal recommendations. One year of successful elementary school teaching experience is required for the master’s program. Two years of teaching experience or the equivalent is required for admission to the doctoral program. Students with deficient oral or written English skills will be required to complete additional coursework to improve their skills.

Admission to graduate programs is contingent upon (1) completion of an application to graduate school and (2) recommendation by the department screening committee for the master’s program or the management admissions committee for the doctoral program. In addition to the requirements of the School of Graduate Studies (see pages 90-91), letters of recommendation must be received from three professionals in education.
Degree Programs—On Campus

Three avenues exist for on-campus students wishing to pursue a master’s degree in the Department of Elementary Education at Utah State University. They are as follows:

Master of Arts/Master of Science—Plan A. Students planning to pursue a future doctoral degree or wishing to follow a traditional master’s degree should complete a Master of Arts or Master of Science (Plan A) degree. This is a 36-credit program, including 6 credits for the thesis. EDUC 6570 is required as a research course (rather than EDUC 6550). A copy of the Program of Study form listing other required core and professional option courses is available from the department office. A committee chair and two committee members will work with students pursuing the Plan A master’s degree. Plan A students should submit an Appointment for Examination form to their major professor, committee, and the Graduate School at least five working days before the final examination is to be held.

Requirements for the Master of Arts degree include two years of an acceptable foreign language or the equivalent, as determined by testing arranged by the supervisory committee and approved by the department and the graduate dean. One year each, or the equivalent, of two languages is acceptable if approved by the student’s committee.

Master of Education—Plan B. Students wishing to include a creative project as part of their master’s degree program should enroll in the Master of Education (Plan B) program. Three credits will be given for ELED 6960, Master’s Creative Project. All MEd students will complete EDUC 6550 (Research for Classroom Teachers, 3 credits) and other courses listed on the current Program of Study form. A committee chair and two committee members will work with students completing the creative project; however, the chairperson will have major responsibility in approving the proposal and primarily work as the program advisor, with the committee members being involved more directly in the presentation of the creative project.

Master of Education—Plan C. In order to provide another option for prospective off-campus elementary education master’s degree students, the Department of Elementary Education conducts a Plan C option within its Master of Education Degree. The basic elements of a Plan C option include completion of 40 credits or prior approved graduate courses, completion of an exit paper, and an oral review.

The exit paper should be a pre-planned scholarly activity. It could be a paper discussing coursework applicability to the student’s teaching assignment, or a written plan for changing curriculum and/or instruction drawing on coursework and the student’s role, etc. The intent is that the exit paper be an integral part of the planned course of study.

A notice of intent to complete the program should be filed by the student with the department and the School of Graduate Studies at the beginning of the semester the candidate is to finish the degree. A letter of completion should be filed by the committee chairperson upon successful completion of all requirements.

Degree Programs—Off Campus

Two avenues exist for students wishing to pursue a master’s degree in the Department of Elementary Education at Utah State University primarily through offerings at USU Continuing Education centers. They are as follows.

Master of Education—Plan B. Off-campus students wishing to include a creative project as part of their master’s degree program should enroll in the Master of Education Program. Three credits will be given for ELED 6960 (Master’s Creative Project). All MEd students will complete the required core and other courses listed on the current Program of Study form. A committee chair and two committee members will work with students completing the creative project; however, the chairperson will have major responsibility in approving the proposal and primarily work as the program advisor, with the committee members being involved more directly in the presentation of the creative project (oral exam).

Doctoral Programs (PhD and EdD)

The department participates in the Interdepartmental Doctoral Program in Education, which includes the Doctor of Philosophy (PhD) and the Doctor of Education (EdD). For information about areas of specialization, emphasis of study, research sponsored, admission requirements, procedures to follow, and other information, see pages 185-186 of this catalog.

Additional Information

All students completing master’s degrees in Elementary Education must enroll for a minimum of 10 credits on the USU campus, except for students completing their degrees at the following USU continuing education centers: Uintah Basin Campus (Vernal and Roosevelt), Moab Center, Price Center, and Blanding Center.

The Program of Study form for the appropriate degree and plan described above should be approved by the committee and submitted to the School of Graduate Studies at least two months prior to the oral exam, oral review, or presentation appropriate to that degree.

After matriculation into the program, a master’s degree must be completed within a six-year time period. Pass/fail grades will be accepted only for seminars, special problems, interdisciplinary workshops, thesis or dissertation research, and continuing graduate advisement. A maximum of 8 workshop credits may be included. Transfer credit accepted toward a degree is normally limited to 6 credits; however, with prior approval, 12 transfer credits may be accepted. A maximum of 15 credits taken during one summer may be counted toward the degree. A maximum of
12 credits taken before admission to the program may be counted toward the degree. All coursework in a student’s area of specialization must be taken at the 6000 level or above, in order to be applied toward a graduate degree in the Department of Elementary Education. Coursework goes out-of-date after eight years.

Admission deadlines for students applying to graduate programs are: June 15 for fall semester, October 15 for spring semester, and March 15 for summer semester.

Research
Cooperation with other departments and research centers at the University, as well as with public school and State Office of Education collaborators, permits strong graduate programs in all phases of elementary education. Research opportunities are available with the Edith Bowen Laboratory School, cooperating school districts in Utah and surrounding states, the Utah State Office of Education, and the United States Department of Education.

Financial Assistance
Both departmental and School of Graduate Studies support are available for the regular academic program and are awarded on a competitive basis. Students requesting financial support should apply to the department by March 15. To be eligible for financial assistance, a student must attend USU full-time. No financial assistance is available for summer semester.

Assistantships. Teaching assistantships are available through the department. Some research assistantships are available through faculty members who have ongoing projects with off-campus funding agencies.

Students are not eligible for assistantships or any form of financial assistance from the University until all application procedures are completed and the student is formally admitted to a program of studies.

Acceptance to pursue graduate study does not guarantee the student financial assistance. Inasmuch as funds are limited, the assistantships are awarded by the department to cover specific teaching assignments and by the faculty to provide for research.

Doctoral students desiring information about financial assistance should write to: Coordinator, Doctoral Degrees, College of Education and Human Services, 2800 Old Main Hill, Utah State University, Logan UT 84322-2800.

Career Opportunities
Positions in Higher Education—Master Teachers. Many school districts support and encourage teachers to further their education and expertise by obtaining a master’s degree. Added financial remuneration generally accompanies the completion of such a degree. Supervisors, curriculum specialists, and other professional careers are enhanced by completion of a master’s degree.

Completion of a doctorate degree qualifies the graduate for a wide variety of careers, including positions in higher education, curriculum specialist positions in school districts and state offices of education, positions in educational agencies of the United States government, and educational specialist positions in business and industry.

Elementary Education Faculty
Emma Eccles Jones Distinguished Professor
D. Ray Reutzel, reading

Professors
Deborah A. Byrnes, social studies education, early childhood education
Bernard L. Hayes, reading education

Associate Professors
James J. Barta, mathematics, early childhood education
Gary L. Carlston, instructional leadership
Martha T. Dever, foundations, early childhood education
James T. Dorward, mathematics, program evaluation, middle level education
Parker C. Fawson, reading
Scott L. Hunsaker, gifted/talented education, foundations
Francine Fukui Johnson, foundations, gifted/talented education, supervision
Rebecca M. Monhardt, science education
John A. Smith, reading education, research methods

Assistant Professors
Tricia M. Gallagher-Geurtsen, social studies, multicultural/multilingual education
Leigh C. Monhardt, science education
Lisa Pray, bilingual/English-as-a-second-language education
Sylvia Read, language arts education
Martha L. Whitaker, foundations

Temporary Lecturers
Lorilynn B. Brandt, reading education
Judy Greene, language arts/foundations

Course Descriptions
Elementary Education (ELED), pages 383-387
English

Department Head: Jeffrey Smitten
Location: Ray B. West 201
Phone: (435) 797-2733
FAX: (435) 797-3797
E-mail: info@english.usu.edu
WWW: http://websites.usu.edu/english/

Associate Department Head: Patricia M. Gantt,
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Director, Graduate Studies: Keith A. Grant-Davie,
Ray B. West 302B, (435) 797-2736, kgrant-davie@english.usu.edu

Director, Undergraduate Studies: Kathryn R. Fitzgerald,
Ray B. West 204F, (435) 797-0235, kfitzgerald@english.usu.edu

Director, Undergraduate American Studies Program
and American Studies Graduate Advisor: Jan E. Roush,
Ray B. West 312G, (435) 797-2729, jan.roush@usu.edu

English Undergraduate Advisor
and American Studies Undergraduate Advisor:
Jana Kay Lunstad, Ray B. West 204E, (435) 797-3856,
jlunstad@english.usu.edu

Director, Folklore Program: Jeannie B. Thomas,
Ray B. West 302B, (435) 797-2736, jthomas@english.usu.edu

Director, Writing Program: Lynn L. Meeks, Ray B. West 207,
(435) 797-2723, lmeeks@english.usu.edu

Degrees offered: Bachelor of Science (BS), Bachelor of Arts
(BA), Master of Science (MS), and Master of Arts (MA) in English;
BS, BA, MS, and MA in American Studies

Undergraduate emphases: BS, BA in English—Literary Studies,
Professional and Technical Writing, and English Teaching

Graduate specializations: MS, MA in English—Literature and
Writing, Technical Writing; MS, MA in American Studies—Folklore,
Public Sector Folklore

Undergraduate Programs

General Objectives

The undergraduate programs in English encourage students to
gain an appreciation of language and literature through reading,
analysis, and writing as a means of enriching their lives as individu-
als, citizens and professionals. Through a variety of courses
in literature, writing, and linguistics, students develop an aware-
ness of these subjects in their personal and cultural contexts, a
heightened sensitivity to human experience, and a capacity to
adapt to a world of continually changing values and centers of
conflict. Students majoring in English thus acquire communica-
tive, analytical, and interpretive skills that help prepare them for a
wide range of careers.

After completing a set of core requirements, students in En-
glish fulfill the requirements in one of three emphases: (1) the Lit-
erary Studies emphasis, which gives students a knowledge of the
texts and writers of American, British, and world literature and
their cultural contexts; (2) the Professional and Technical Writ-
ing emphasis, which prepares students for various writing careers
in professional organizations; and (3) the English Teaching em-
phasis, which prepares students for teaching secondary-level En-
glish in the public school system. The English Department also
offers a major in American Studies.

The English Department offers a Folklore minor and an inter-
disciplinary American Studies major and minor. It also offers an
English Teaching Minor, an English Minor (Standard Nonteach-
ing), and a minor in British and Commonwealth Studies.

The English Department also offers specific courses support-
ing other fields of specialization, courses fulfilling University
Studies requirements, and enriching educational experiences
through opportunities for creativity and expression enhancing life-
time activities.

Admission and Graduation Requirements

The requirements for admission and graduation are commen-
surate with those described on pages 15-18 and 50-52 of this cata-
log. To remain in good standing and to obtain approval for
graduation as English majors or minors, students must maintain a
minimum grade point average of 2.75 in their major and minor
courses. All courses listed as major or minor subject courses must
be taken on an
basis, and major or minor subject
courses passed with less than a
grade must be repeated. Trans-
fer students are required to complete at least 15 semester credits of
major subject courses and 10 semester credits of minor subject
courses in residence at USU.

Students in the English Teaching major and minor may also
apply to the Secondary Teacher Education Program (STEP). See
pages 306-307 for procedures and requirements pertaining to
teacher licensure and admission requirements. See also the current
edition of the Guide to the Undergraduate Program in Secondary
Education at USU, available at the USU Bookstore.

Course Requirements

Core and Survey Requirements. All English majors are re-
quired to complete the following courses as soon as possible be-
fore enrolling in upper-division courses: ENGL 1110 (an ori-
tnation course); and three of the 2000-level literature survey
courses. Exceptions are noted below under emphasis require-
ments.

Literary Studies Emphasis. This 49-credit emphasis is de-
vo ted to the study of literature. Its fundamental premise is that lit-
erature is a field of diverse representations that gives shape and
meaning to human experience.

Students first complete three of the 2000-level survey courses,
ENGL 2140, 2150, 2160, and 2170, that provide a traditional
overview of the major periods, authors, and genres of American
and British literature. At the same time, students take an introductory course on literary theory, ENGL 2100, which, in addition to introducing them to the methodologies of literary criticism, challenges received notions about the canon and literary history.

At the 3000 and 4000 levels, students closely examine the conventions and principles forming the more traditional survey courses. Students select 9 credits from ENGL 3300, 3310, and 3320; complete ENGL 4300 (Shakespeare); select 3 credits from ENGL 4310, 4320, and 4330; and select 6 credits from ENGL 4340, 4350, 4360, and 4370. Focusing on specific literary periods, authors, and genres, these courses invite students to think critically about how literature is constructed and organized as a field of knowledge. They also take a linguistics course (ENGL 4200 or 4210), in which they study the structure and history of the English language.

At the 5000 level, students pursue advanced study of literature in relation to issues of gender and sexuality, regional and national boundaries, and cultural differences. These courses provide the advanced theoretical tools necessary to analyze the relationship between literature and culture (6 credits from ENGL 5300, 5320, and 5340). These courses insist that literary texts both exist within and depend upon a complex network of other cultural representations. Students also select one elective course in authors or genres from ENGL courses numbered 4300 through 4370.

The final course, a senior capstone seminar (ENGL 5350), encourages graduating students to both synthesize and critique their differing educational experiences within the program.

**Professional and Technical Writing Emphasis.** This 49-credit emphasis prepares students for career opportunities in various writing-related careers in professional organizations. The emphasis consists of: (1) a theoretical foundation in rhetoric and linguistics, enabling students to assess any writing situation and adapt their writing to the context as audience-aware writers; and (2) writing practice in a variety of contexts using the most up-to-date tools of technology, so that students know how to write and why they are writing, thus preparing them for the ever-changing job markets of the twenty-first century.

Students begin their studies by completing one literature survey course (ENGL 2140, 2150, 2160, or 2170) and two introductory professional writing courses (ENGL 3400 and 3410) introducing students to the profession of writing and the current technologies used in all levels of text production. At the same time, students also take two courses (chosen from ENGL 3450, 3460, and 5490) addressing rhetorical issues and strategies in the perception, reading, and writing of texts, and two courses in linguistics (chosen from ENGL 4200, 4210, 4230, and 5210) acquainting students with the structure and diversity of the English language.

In addition, all Professional and Technical Writing students must take ENGL 1120, Elements of Grammar, or pass the challenge exam offered by the Writing Center. Prerequisites for applications courses and internships must be passed with a grade of B- or higher.

Students then take courses in professional editing (ENGL 4400), document design and graphics (ENGL 4410), interactive media (ENGL 5410), and publication production and management (ENGL 5420). Along with these, students may also take courses in creative writing (ENGL 3420, 3430, and 3440), as well as those with more specific forms of writing, such as proposals, newsletters, and computer documentation (ENGL 5400). Internships (ENGL 4900) provide students with an opportunity to learn through hands-on experiences in a variety of organizations. Students complete the program by taking a capstone course (ENGL 5430), in which they prepare portfolios, explore professional opportunities, and prepare to begin their careers.

**English Teaching Emphasis.** This 52-credit emphasis, leading to professional licensure in the teaching of secondary-level English, prepares prospective English teachers to participate actively in the many communities related to the profession. Students become well-versed in their academic subject matter (language, writing, literature, and multimedia), skilled in the methods of teaching the various components of the English curriculum and in classroom management techniques, and committed to the achievement of students regardless of gender, race, ethnic, religious, or socioeconomic background.

Students first complete 9 credits of literature survey courses selected from ENGL 2140, 2150, 2160, and 2170; and 3 credits of literary theory (ENGL 2100) to acquire a broad understanding of the traditional literary canon and the current theoretical foundations of English studies. They must also take ENGL 1120, Elements of Grammar, or pass the challenge exam offered by the Writing Center. They then take 12 credits in upper-division literature and then ENGL 3520, 4200, and 4220, which address the current understandings of the diversity of American language and culture as they impact the English classroom. Students take courses in young adult literature (ENGL 3510), Shakespeare (ENGL 4300), and 15 more credits of upper-division literature and writing courses to become familiar with the spectrum of theoretical, ideological, and scholarly issues at stake in English studies today. To become familiar with the art of teaching the many components of the English curriculum, students take two pedagogical courses (ENGL 4500 and 4510), which approach reading and writing as interdependent aspects of communication. If students wish to obtain professional licensure at graduation, they must also fulfill the requirements of the 35-credit Secondary Teacher Education Program (STEP) prescribed by the Department of Secondary Education.

**American Studies Major and Minor.** Many important issues associated with the origin, evolution, and manifestation of American culture transcend the boundaries of traditional subject areas, and are best explored from a variety of perspectives or disciplines. The American Studies major and minor provide students with the opportunity to integrate studies in various fields into a broader understanding of American culture and its antecedents. Although housed in the Department of English, the American Studies Program permits students to choose relevant courses for their cognate areas from a variety of participating departments throughout the University.

For admission and graduation, students must have and maintain a minimum grade point average of 2.75. All courses used to fulfill either the major or minor requirements must be taken on an A-B-C-D-F basis, and major or minor courses passed with less than a C grade must be repeated. However, up to 3 credits of internship credit, which is recorded as P/F, may be used to partially fulfill the major requirements. Transfer students are required to take at least 15 credits of major subject courses and 10 credits of minor subject courses in residence at USU.

**Major.** To obtain a degree in American Studies, students must complete a total of 49 credits, including 10 credits of core requirements that introduce foundations of American literature, region, and culture; 6 credits chosen from the 3000 level that expose students to the diversity of American culture; and 9 credits of upper-division work (4000 level) that allow students to approach American literature and culture through various genres.
In addition to completing the required English classes, students must complete 21 credits from two of the following cognate areas: folklore, history, nature and environment, and political science. Students will be required to meet with either the director or the undergraduate advisor to determine appropriate courses for the cognate areas.

The final course, a senior capstone, encourages graduating students to reflect on their overall coursework, synthesizing the perspectives they have gained about American culture in an extended research project reflecting their interdisciplinary academic experience.

Minor. For an American Studies minor, students must select 6 credits from the core courses. Also, a minimum of 12 credits must be selected in one of the four cognate areas.

Core Requirements (10 credits). ENGL 1110, 2160, 2170, 4610.

Cultural Diversity Required Courses (select a minimum of 6 credits). ENGL 3070, 3300, 3520, 3620.

Genre Required Courses (select a minimum of 9 credits). ENGL 4310, 4340, 4350, 4360, 4370, 4630, 4900.

Capstone (3 credits). ENGL 4690.

English Teaching Minor. English Teaching minor students must meet and maintain a 2.75 GPA for admission and graduation and complete the following 27-credit requirement: ENGL 2140 or 2150; ENGL 2160 or 2170; ENGL 3510, 3520, 4200, 4220, 4300, 4500, 4510. Any deviation from this plan must have the approval of the English Department’s Director of Undergraduate Studies (Ray B. West 204F).

English Minor (Standard Nonteaching). The standard nonteaching minor consists of 18 credits of various courses, 12 of which must be in upper-division coursework. Nine of the 18 credits must be earned in residence at USU. Advanced Placement and CLEP credit and credit from ENGL 1010 and 2010 may not be counted toward this minor. The program must be approved by the Director of Undergraduate Studies at least one year prior to graduation.

British and Commonwealth Studies Minor. The 18-credit minor in British and Commonwealth Studies is an interdisciplinary program sponsored by the departments of English and History. Students must complete ENGL/HIST 2040, then select four appropriate courses from an approved list, and conclude with ENGL 5920 or HIST 4930, in which they complete an individual project concerning Britain and/or the Commonwealth. The program selected must be approved by the chair of the British and Commonwealth Studies Program at least one year prior to graduation. Note: Courses used to fulfill requirements for the English or History majors may not be used for this minor. For further information, contact either the English Department or the History Department.

Folklore Minor. The 18-credit minor in folklore is an interdisciplinary program sponsored by the English Department and the History Department. The coursework for the minor must be approved by the Director of the Folklore Program (Ray B. West 302B) at least one year prior to graduation. Folklore minor students must maintain a 2.75 GPA admissions and graduation standard.

Additional Information and Updates

English programs are constantly being updated. Students should therefore confer with the Director of Undergraduate Studies (Ray B. West 204F) or undergraduate advisor (Ray B. West 204E), or the American Studies advisor (Ray B. West 204E) for information about changes in requirements, scheduling, and sequencing of courses. Current requirement sheets are also available from the English Department (Ray B. West 201) and in the Science/HASS Advising Center (Student Center 302). Degree program information is also available at the department’s website.

Financial Support and Scholarships

Scholarships, assistantships, grants-in-aid, and work-study programs are available through the University. In addition, the English Department employs a few students as tutors in The Writing Center and oversees various cooperative education and internship opportunities for students. Departmental scholarships are available on a competitive basis to juniors and seniors, as well as to some sophomores. Applications are accepted in January and February and are available in the college dean’s office, Main 338.

Graduate Programs

Admission Requirements

In addition to the requirements specified on pages 90-91 (Admission Procedures), applicants for admission to the English Department graduate programs should have a BS or BA degree with an undergraduate major in a subject area relevant to the graduate program they desire to enter. The English Department accepts the Miller Analogies Test in place of the GRE general test, but encourages applicants to take the GRE. The department also requires a 5-10 page writing sample appropriate to the program the applicant desires to enter. The Technical Writing specialization has additional requirements; see the following website: http://english.usu.edu/techcomm/.

International applicants from non-English-speaking countries who desire an MS or MA degree in English should have a BS or BA degree in English from an accredited, English-speaking university. Students whose command of written English is not adequate to the demands of writing a graduate thesis in English may be required to take courses in Intensive English or may be counseled to obtain a second bachelor’s degree at USU (30 credits minimum).

The annual application deadline is January 15 for those who wish to be considered for a graduate instructor position, a Moyle Q. Rice Scholarship, or other form of financial aid. The final annual deadline is June 1 for all other applicants who wish to begin their course of study fall semester.

Anyone who has not been accepted into a graduate program in the English Department must have permission from the department’s Director of Graduate Studies to enroll in English graduate courses.

Degree Programs

The Department of English offers courses of study leading to the MS and MA degrees in English and in American Studies. Applicants seeking the English degree may be admitted into the Literature and Writing specialization or the Technical Writing specialization. Applicants seeking the interdisciplinary American Studies degree may draw from almost any combination of courses
dealing with American culture: literature, history, art, government, etc. Folklore is one of the specializations in American Studies, with courses in all aspects of folklore study, including public sector folklore.

For a more complete description of the Department of English graduate programs, see the department’s website: http://websites.usu.edu/english/.

**English Program Requirements**

Applicants will be admitted to the English degree for one of two specializations: Literature and Writing (30-33 credits) or Technical Writing (33 credits).

**Literature and Writing.** This specialization results from a merger of two previous specializations within the English degree: Literary Studies and Theory and Practice of Writing. The Literature and Writing specialization is designed to help secondary-level English teachers advance their careers, to prepare students to teach English at two-year colleges, and to prepare students to pursue doctoral studies in English. Students plan their program of study with their advisor, selecting courses primarily from the ENGL 6330 to 6360 range and the ENGL 6820 to 6890 range. Students are encouraged, but not required, to take ENGL 6320 and/or ENGL 6810. In addition, ENGL 6820 is required for all students working as Graduate Instructors. With the approval of the student’s advisor, a program of study may also include courses from one of the department’s other specializations and one course from another department.

As part of a commitment to exploring the relationship between technology and the humanities, and to accommodate students living beyond commuting distance, the department offers at least one online graduate seminar per semester appropriate for students in the Literature and Writing specialization. There may also be an appropriate online course offered during the summer. These online courses are also open to on-campus students. Students can complete the degree entirely online. However, if they take only online courses, they should expect a limited selection of courses, and they should expect to take longer than two years to graduate.

Students in Literature and Writing may pursue either the MS or the MA degree, but the department recommends the MA for those planning to continue study at the doctoral level. Literature and Writing students are encouraged to choose either Plan A or Plan B, both of which require an extended project, which is completed under the supervision of the student’s Supervisory Committee and culminates in an oral defense. Plan A consists of 24 credits of coursework and 6 credits of ENGL 6970 (Thesis), leading to a thesis of 60 pages or more; Plan B consists of 27 credits of coursework and 3 credits of ENGL 6970, leading to a mini-thesis. Both Plan A and Plan B projects require the student to meet on campus at least twice with his or her Supervisory Committee. During the first meeting, the student defends a written thesis proposal. During the second meeting, the completed thesis is defended. With the approval of the Creative Writing Committee, a Plan A or Plan B project may consist of a piece of creative writing and an accompanying critical essay. Plan C, which consists of additional coursework (33 credits as opposed to 30 credits for Plan A or B) and no extended project or defense, is also available. Plan C does not require the student to come to campus for defense meetings with the Supervisory Committee, so it is geared especially to students living beyond commuting distance who are taking all or most of their courses online. Students enrolled in all three plans write a Comprehensive Exam.

**Technical Writing (online).** Technical Writing is designed for students who already have some training and/or experience as practitioners of technical writing. The program is entirely online, via the Internet. The program’s mission is to prepare students to enter or reenter nonacademic workplaces, not just as practitioners, but also as developers and managers of technical documents. When they finish the program, students will be qualified to determine and defend writing policy and practices in their workplaces.

To prepare students for these leadership roles, the program provides them with a strong theoretical understanding of their profession. In their online graduate seminars, students will read widely in research and theory relating to workplace writing practices. They will critically examine both the theories and the practices, and they will explore ways in which each can enhance the other. They will also learn how to manage teams of writers, and they will explore ethical issues in the profession. The program will balance the theoretical training with opportunities for students to improve their own practical skills as technical writers, learning how to apply theory and current technology to the production of a variety of technical documents. This practical training will include multimedia presentations and graphic design.

The program is designed primarily for nontraditional students—working professional writers who want to enhance their credentials and build a strong theoretical understanding of their profession. However, it may also accept some traditional students who have just finished their undergraduate studies.

Students in Technical Writing must complete 33 credits under the Plan C option. Courses may be taken in any sequence. Students in this program pursue the MS degree.

**American Studies Program Requirements**

Those applicants who have been admitted to the American Studies degree will work out a program of study with either the American Studies advisor or the Folklore advisor. Generally, students develop their programs with an emphasis in American literature, folklore, or history. Interdisciplinary connections with many other departments at USU are possible. Students may choose the standard program, the Folklore specialization, or the Public Sector Folklore specialization. The American Studies degree requires 30 credits, with a preference for the MA and the Plan A (thesis) options, although the MS and the Plan B options are also accepted.

Students in the standard program must take American Studies Theory and Method (ENGL 6600) early in their course of study. Students in the Folklore specialization must take Folklore Theory and Method (ENGL 6700) early in their course of study. Students selecting the Public Sector Folklore specialization will follow the same requirements as students in the Folklore specialization, with the following exception. All students in the Public Sector Folklore specialization are required to take Folklore Fieldwork (ENGL 6720), Public Folklore (ENGL 6730), and Graduate Internship (ENGL 6900).

Of special interest to students in American Studies are the Western Historical Quarterly and the Western American Literature journals published at USU, which often provide editorial and clerical positions for graduate students. Also, The Mountain West Center for Regional Studies sponsors lectures and programs and provides research assistance for students working in the field of regional studies. The Merrill Library is a regional depository for federal publications and receives 60,000 to 70,000 government titles each year. The library’s Special Collections contain thousands of historical photographs, an immense store of pioneer diaries and papers, and a strong collection of books and manuscripts relating to the west, the pioneers, the Mormons, cowboys, and cowboy po-
ery. The Fife Folklore Archives, named after Utah folklorists Austin and Alta Fife and recognized as one of the best folklore archives in the country, contains over 3,400 books on folklore and folklore-related topics. The Special Collections also serve as the national repository for the American Folklore Society’s Papers, over 50 linear feet of records and documents accumulated during the 114-year history of the organization.

**General Requirements**

All candidates for the MS and MA degrees must meet the School of Graduate Studies requirements (see pages 90-97 of this catalog). Only grades of B- or better will be accepted for credits in support of the degree programs; however, students must maintain an overall GPA of 3.0 to remain in the program.

All candidates must complete a comprehensive examination covering the material of their graduate program; however, the nature of this examination varies according to the particular specialization and the advice of the candidate’s supervisory committee.

All candidates are required to defend their Plan A thesis or Plan B papers. After successfully defending their Plan A thesis, students must submit a department-approved final draft to the thesis coordinator in the School of Graduate Studies office (Main 164). After successfully defending their Plan B papers, students must submit a department-approved copy to University Library Special Collections (Merrill Library 143).

All candidates who are first-year graduate instructors are required to take Practicum in Teaching English (ENGL 6820) during their first semester. The candidate’s supervisory committee will determine whether ENGL 6820 will be accepted as part of the candidate’s graduate program.

**Financial Assistance**

The Department of English has a limited number of graduate instructor positions and Moyle Q. Rice Scholarships available on a competitive basis for both English and American Studies graduate students. Additional financial aid is available through the journal of *Western American Literature*. All applicants whose application materials are received by January 15 will automatically be considered for possible scholarship awards. All applicants who wish to be considered for a graduate instructorship should contact the Director of Graduate Studies in the English Department. The application deadline for instructorships is January 15.

**English Faculty**

**Professors**

Jay Anderson, folklife, material culture, folk art

Melody Granlich, American Literature, American Studies, Western American literature, feminist studies

Christine Hult, composition and rhetoric, teacher education (Associate Dean, College of Humanities, Arts and Social Sciences)

Thomas L. Kent, rhetoric and composition (Dean, School of Graduate Studies)

Joyce A. Kinkead, composition and rhetoric (Vice Provost for Undergraduate Studies and Research)

**Lynn L. Meeks**, teacher education, composition and rhetoric, literature for children and young adults

**Jeffrey Smitten**, eighteenth century British literature, Scottish literature, literary theory and criticism

**Charlotte Thralls**, professional communication, workplace culture (Associate Dean, College of Humanities, Arts and Social Sciences)

**Barre Toelken**, folklore, Native American studies, medieval literature

**Professors Emeritus**

Jan Bakker, nineteenth- and early twentieth-century American literature

Kenneth W. Brewer, poetry and essay writing

**Associate Professors**

Paul J. Crumbley, American poetry, nineteenth century American women writers, American identity, the wilderness experience

Kathryn R. Fitzgerald, teacher education, composition and rhetoric, writing assessment

Evelyn I. Funda, American literature, Western American literature

Patricia Gantt, teacher education, young adult literature, American studies, women and gender studies, southern literature

Keith A. Grant-Davie, composition and rhetoric, reading theory, technical communication

David E. Hailey, Jr., technical communication, online information, CBT technology

Phebe Jensen, sixteenth- and seventeenth-century British literature, Shakespeare

Sonia Manuel-Dupont, linguistics, technical communication, teacher education

Brian W. McCuskey, nineteenth-century British literature

John E. McLaughlin, linguistics, technical communication, Native American languages

Kristine A. Miller, twentieth-century British literature

Jan E. Roush, American Studies, folklore

Anne Shifrer, twentieth-century literature, women writers, poetry, literary theory and criticism

Ronald R. Shook, technical communication, linguistics

Stephen C. Siporin, folklore, folk narrative, material culture, folk ethnicity

Jeannie B. Thomas, folklore, legend, oral narrative, humor and gender

**Associate Professors Emeritus**

Kate M. Begnal, twentieth-century literature, postmodernism, literary theory and criticism

Patricia Gardner, world literature, children’s and young adult literature, folklore

**Assistant Professors**

Christopher Cokinos, creative nonfiction, poetry writing, science and nature writing

Kelli Cargile Cook, technical communication

Brock Dethier, composition, creative writing
Jennifer Sinor, rhetoric and composition, teacher education

Michael Sowder, creative writing (poetry), American literature

Roberta S. Stearman, American literature, fiction writing

Andrea Tinnemeyer, American literature

Mark Zachry, rhetoric and professional communication

Adjunct Assistant Professor
Christie L. Fox, folklore; Program Coordinator of Honors Program

Senior Lecturer
Nancy O'Rourke, technical communication

Lecturers
Shanan L. Ballam, writing, creative writing

Star Coulbrooke, Assistant Director of Writing Center

Julie R. Foast, writing; Director of Rhetoric Associates

Marina L. Hall, American literature, composition

Charlene A. Hirschi, Director of Writing Center

Julie Robertson, writing

Paige Smitten, literature and writing

Anne H. Stark, literature and writing

Course Descriptions
English (ENGL), pages 387-391
Environment and Society

Department Head: Terry L. Sharik
Location: Natural Resources 201
Phone: (435) 797-1790
FAX: (435) 797-4048
WWW: http://www.cnr.usu.edu/envs

Undergraduate Advisors:
Maureen A. Wagner, Natural Resources 120, (435) 797-2448, maureen@cc.usu.edu
Stephanie W. Hamblin, Natural Resources 120, (435) 797-2473, stephanie.hamblin@usu.edu

Degrees offered: Bachelor of Science (BS) in Environmental Studies; BS, Master of Science (MS), and Doctor of Philosophy (PhD) in Recreation Resource Management; BS, Bachelor of Arts (BA), MS, and Master of Arts (MA) in Geography; MS in Bioregional Planning (offered jointly with Department of Landscape Architecture and Environmental Planning); MS and PhD in Human Dimensions of Ecosystem Science and Management

Vision/Mission: The vision of the Department of Environment and Society is one of bringing people and science together for healthy communities and enduring ecosystems. The mission of the department is based on three goals: (1) to promote scholarship and creativity in the discovery, synthesis, and transfer of knowledge relating to the human dimensions of natural resource and environmental management; (2) to apply social science concepts and approaches to better understand human-environment interactions at a range of spatial scales; and (3) to enhance the effectiveness of policies, planning, and administrative processes that affect sustainable use of the natural world.

To this end, the department’s academic programs provide undergraduate and graduate students with a balanced exposure to the social, physical, and biological sciences within an interdisciplinary framework. This combination has great relevance for students aspiring to careers in natural resource and environmental policy, planning, management, education, and science, as well as careers in geography. The program is designed to provide students with a working knowledge of the human aspects of ecosystems and a speaking knowledge of the biophysical aspects, as well as experience using "state of the art" tools and techniques for integrating this knowledge.

Undergraduate Programs

Objectives

The department offers the following undergraduate degree programs: Environmental Studies, Geography, and Recreation Resource Management. Each of these programs offers a balanced exposure to key ideas and principles of the social, biological, and physical sciences, placing special emphasis on the human dimensions of natural resources and environmental management. The department’s goal is to train professionals who can lead the way toward finding and keeping a sustainable balance between protecting the environment and enhancing human societies.

Departmental programs offer learning experiences in the classroom and in the field, frequent individual contacts with faculty as teachers and advisors, and opportunities to take part in student and professional organizations. Seasonal employment, internships, and other activities promoting hands-on experience in natural resource and geographic professions are strongly encouraged.

The Environmental Studies curriculum is designed for students who wish to acquire a broad understanding of natural resources and human-environment relationships, together with the technical background needed to understand environmental issues. In many ways, the curriculum provides a traditional “liberal arts education” with a strong natural resources emphasis. Moreover, it offers flexibility for the development of either specialization or breadth of content to match the student’s interests.

The Geography curriculum provides a broad background in the basic themes of geography—human (cultural), physical, and regional geography—with a particular focus on environmental and earth resources geography. In addition, students acquire technical geographic analysis skills. Students also have the opportunity to study in a systematic, regional, or technical area of geography.

The Geography Teaching curriculum offers students an opportunity to prepare for a career in secondary education with a geography emphasis.

The Recreation Resource Management curriculum prepares students for careers in managing outdoor recreation settings, such as public forests and rangelands, state and national parks, and wilderness areas. Because these jobs require an understanding of both the land and the people who visit it, the major offers courses in both the natural and social sciences, along with an emphasis on communication skills.

Requirements

Admission Requirements. Admission requirements for the Department of Environment and Society are the same as those described for the College of Natural Resources (see pages 115-116).

Graduation Requirements. All courses listed as major subject courses must be taken on an A-B-C-D-F basis. The grade point average for all courses taught by the College of Natural Resources must be 2.5 or higher.

All students in the Environmental Studies and Recreation Resource Management majors must complete a series of basic lower-division courses providing the disciplinary foundation for natural resource professions before moving on to professional coursework. Equivalents of these foundation courses may be taken at many two- and four-year colleges. Some foundation and core courses may also be used toward the University Studies requirements, as shown by the University Studies designations listed in parentheses following the course numbers. Students should consult their academic advisor if they have questions about University graduation requirements.
Environmental Studies Major

The Environmental Studies major consists of 92 credits. This total includes the disciplinary foundation, professional courses, and a specialization option of 15 or more credits.

*Lower-division Foundation:* BIOL 1010 (BLS), 1020; CHEM 1110; HIST 3950 (DHA/CI) or PHIL 3510 (DHA); MATH 1050 (QL); STAT 2000 (QI).

*Professional Coursework:* AWER 3100 (DSC/CI) or ENVS 3600 (DSC); AWER 3700; ENVS 1990, 2340 (BSS), 3000, 3330, 3500 (QI), 4000 (DSS), 4400, 4990, 5000; FRWS 2200 (BLS), 3900; GEOG 1130 (BPS) or GEOL 1150 (BPS); GEOG 3850; one of the following: BIOL 3040 (DSC), FRWS 3050 (DSC), 3600, PLSC 3500; one of the following: ANTH 3110, 4110 (DSS), or another course in cultural resource management approved by faculty advisor.

*Specialization Option:* Students work with their faculty advisor to develop a specialization option fitting their interests and career goals. The option consists of 15 or more additional credits, and may include any approved University minor or a suite of courses meeting the student’s particular needs. At least one course in the specialization area must be a natural resources policy course numbered 3000 or higher.

Geography Major

The Geography major consists of 43 credits. After meeting the University Studies, USU upper-division, and geography major requirements, students may take the remainder of their 120 required credits in any discipline from any department. Students interested in using their elective credits to develop a field of specialization should consult with their advisor to select appropriate courses.

*Disciplinary Foundation:* AWER 4930, GEOG 1030 (BSS), 1130 (BPS), 1140, 2030 (BSS), 3850, 4200 (CI), 4850; MATH 1050 (QL); STAT 2000 (QI).

*Geography Specialization:* Students work with their faculty advisor to develop a 12-credit specialization fitting their interests and career goals. The specialization may include internships, directed study, and courses offered throughout the University that complement their academic goals.

Geography Teaching Major

The teaching major in Geography consists of both the geography courses (36 credits) and the Secondary Teacher Education Program (STEP) (35 credits). For details about the STEP, students are referred to the geography major requirement sheet, or the STEP information listed in the Department of Secondary Education section (pages 306-307). A geography teaching major also requires a teaching minor in another field of study.

*Foundation:* GEOG 1030 (BSS), 1130 (BPS), 2030 (BSS), 3850, 4200 (CI) (both the Utah section and one other); one of GEOG 4850 or AWER 4930.

*Professional Coursework:* GEOG 4300, 4800, 5900.

*Geography Electives:* 6-10 credits of Geography courses numbered 2000 and above. It is recommended that students take additional regional, systematic, technology in geography education, or classroom technology practicum credits. All electives must be coordinated with a geography education advisor.

Recreation Resource Management Major

The Recreation Resource Management major consists of 82-86 credits.

*Lower-division Foundation:* BIOL 1010 (BLS), 1020; CHEM 1110; MATH 1050 (QL); STAT 2000 (QI).

*Professional Coursework:* AWER 3100 (DSC/CI) or ENVS 3600 (DSC); AWER 3700; ENVS 1990, 2340 (BSS), 3000, 3300, 3500 (QI), 4000 (DSS), 4130, 4400, 4500 (CI), 4600 or 5110, 4920 or 4950, 4990, 5000; FRWS 2200 (BLS), 3900; GEOG 1130 (BPS) or GEOL 1150 (BPS); GEOG 3850; one of the following: BIOL 3040 (DSC), FRWS 3050 (DSC), 3600, PLSC 3500; one of the following: ANTH 3110, 4110 (DSS), or similar course approved by department.

Environment and Society Minors

The department offers minors in Environmental Studies, Geography, Geography Teaching, and Recreation Resources. Students in all University majors may complete a Geography, Geography Teaching, or Recreation Resources minor. The Environmental Studies minor is open to all majors, except those in the College of Natural Resources. Because the same courses cannot be counted toward both a student’s major and minor, students must take additional courses beyond those listed here if their majors require courses that are also included in the minor. Students wishing to minor in the above areas should contact the department to meet with the designated advisor for that minor.

The Environmental Studies minor totals 15-17 credits and includes ENVS 2340 (BSS), ENVS 3000, FRWS 2200 (BLS); one of ENVS 4110, 4130, 4400, 5300, 5320, 5550; and one additional upper-division course (minimum 3 credits) that can be applied to natural resources management, chosen in consultation with faculty advisor.

The Geography minor totals 24 credits and includes AWER 4930; GEOG 1030 (BSS), 1130 (BPS), 1140, 2030 (BSS), 3850, 4200 (CI), 4850.

The Geography Teaching minor totals 26-27 credits and includes GEOG 1030 (BSS), 1130 (BPS), 2030 (BSS), 3850, 4200 (CI) (both the Utah section and one other), 4300, 4800, 4850 or AWER 4930. An approved teaching major in another subject is also required.

The Recreation Resources minor totals 15 credits and includes ENVS 3330, 4130, 4500 (CI), 4600; plus one of the following: ENVS 3330, 4000 (DSS), 4400, or 5110.

Financial Assistance

The main opportunities for undergraduates to find financial support through grants, work-study, and loans are listed on pages 22-26 in the Financial Aid and Scholarship Information section. Some students may be able to find paid internships with private or governmental organizations, or work for a faculty member on a research project. Interested persons should contact the College of Natural Resources Academic Service Center for more information on scholarships for undergraduate students.
Additional Information

For additional information about the Bachelor of Science requirements, course sequencing, and departmental specialization options and their related coursework, as well as updated information describing current programs and courses offered by the Department of Environment and Society, visit the Environment and Society main office, Natural Resources 201, or visit: http://www.cnr.usu.edu/envs.

Graduate Programs

Admission Requirements

See general admission requirements on pages 90-91. Applicants for graduate study in the Department of Environment and Society should have a bachelor’s degree from an accredited college or university, a cumulative GPA of at least 3.0 (out of 4.0), and GRE scores (quantitative and verbal) above the 40th percentile. Foreign students should submit a TOEFL score of at least 550. Exceptions to these standards will be considered on a case-by-case basis. Written statements of interest help match applicants with faculty advisors. A faculty member must agree to serve as the major professor in order for an applicant to be accepted. Prospective students are encouraged to contact faculty members early in the application process to investigate mutual interests, projects, and prospects for financial support.

The department’s graduate programs focus on providing students with a broad foundation in the social and natural sciences as they relate to the study, planning, and management of ecosystems. The curriculum is designed to enhance interdisciplinary integration by emphasizing current and future environmental issues facing humanity. Coursework and research are focused on problem solving through application of social research methods, case studies, computer mapping, and other analytical techniques.

The department values intellectual, academic, and social diversity in the applicants for graduate study. Mature professionals seeking education to augment life experiences, or practical training to pursue new career paths, are also encouraged to apply. Knowledge gaps will be identified early in a student’s program and addressed on a case-by-case basis through agreements between students and their graduate advisory committees.

Degree Programs

The department offers opportunities for graduate study through the MS, MA, PhD, and graduate certificate programs listed below. The department also offers opportunities to participate in a college-wide Master of Natural Resources (MNR) program administered through the Dean’s Office of the College of Natural Resources. This program is described more fully on page 278.

The MS degree requires a minimum of 30 credits, of which 24 must be in residence. Candidates for the MA must complete the requirements for the MS, with the addition of at least two years (approximately 16 credits) of an approved foreign language or some other demonstration of foreign language proficiency. There are two options available in both the MS and MA programs. The Plan A requires students to complete coursework, as well as a research thesis. The Plan B is a nonthesis, terminal degree, based largely on coursework and a professional paper or project.

For the PhD degree, there is a more variable amount of required coursework, as well as a research dissertation. Compared to the MS degree, the PhD degree has a greater emphasis on theory, research methods, writing research proposals, and publishing research in peer-reviewed outlets.

Bioregional Planning. Graduate education in bioregional planning recognizes the importance of how the biophysical attributes of a region influence the human dimensions of settlement and culture. The reciprocal is also addressed. The two-year Master of Science degree in Bioregional Planning, offered jointly with the Department of Landscape Architecture and Environmental Planning, presents an interdisciplinary core of courses and faculty for the purpose of addressing complex issues in the areas of environmental analysis, planning, and policy. Emphasis is placed on four problematic content areas associated with environmental planning: social/behavioral, biophysical, economic, and public policy. The spatial focus is on planning for large regional landscapes with dispersed populations with a primary economic base in agriculture, energy development, tourism/recreation, retirement communities, and natural resources. The program prepares future planners and managers to work within an interdisciplinary environment, providing better alternatives for decisions and policy implementation. Bioregional planning is practiced in both the private and public sectors, which may include offices of the National Park Service, U.S. Forest Service, Bureau of Land Management, and various state, county, and community organizations. For further information, see page 242.

Geography. Graduate education in Geography provides opportunities for students to gain advanced technical knowledge and skills in formal specializations that include: (1) Human-Environment Interactions, (2) Geographic Information Systems, (3) International Rural Development, (4) Geographic Education, and (5) Environmental Education.

Human Dimensions of Ecosystem Science and Management. Graduate education in the Human Dimensions of Ecosystem Science and Management (HDESM) was created in response to a growing demand in natural resource fields for more interdisciplin ary professionals with diverse skills and broader intellectual capabilities. Moreover, it is being recognized that social and managerial sciences are increasingly important in helping society better understand and solve environmental problems. The HDESM program will produce students who are problem solvers with an ability to integrate human and biophysical aspects of ecosystems, and to analyze policies and decisions that encourage both community and ecosystem sustainability. The HDESM degrees will train students for professional positions with local, state, national, and international resource management agencies, private consulting and environmental analysis firms, and nongovernmental environmental organizations. The MS degree will prepare students for professional practice in natural resources and environmental management and planning, policy and program analysis, public affairs, environmental education, community assessment and collaboration, conflict management, and extension/outreach positions. The PhD program puts greater emphasis on basic theory and research methods in one or more social science disciplines, depending on the student’s interests. The PhD will prepare students for university teaching, research, and extension; conducting agency and private organizational research; and for positions in formal policy and program evaluation.
Recreation Resource Management. Graduate education in Recreation Resource Management provides opportunities for students to gain advanced knowledge and skills in topics such as: (1) outdoor recreation behavior and attitudes, (2) resource-based conflict and crowding, (3) natural resource-based tourism, (4) natural history interpretation, and (5) integration of outdoor recreation with protected area management or rural development.

Graduate Certificate Programs

Faculty in the Department of Environment and Society also administer two graduate certificate programs, including Natural Resource and Environmental Education (NREE) and National Environmental Policy Act (NEPA). By meeting certain core requirements, students are able to obtain a certificate in one or both of these areas complementing their degree program. See pages 272-275 for a description of the NREE Program and pages 270-271 for a description of the NEPA Program. The Environment and Society Department is also affiliated with the Natural Resource and Environmental Policy (NREP) Program, which is described on pages 276-277.

Research

The generation of new knowledge through research is one of the key contributions that an academic department makes to professions and society at large. Research is also a major venue for the interaction of graduate students and faculty in the Department of Environment and Society. Although faculty and students work on many different issues, the research strives to be interdisciplinary and focuses on merging the relevant social and natural sciences. Work is undertaken in Utah and beyond, including several projects elsewhere in the United States and in developing nations. Funding comes from a variety of public and private sources. The department houses one institute and three programs that also collaborate on research. These include the Institute for Outdoor Recreation and Tourism, the Natural Resource and Environmental Policy Program, the Geographic Education Program, and the Environmental Education Program.

Financial Assistance

General aspects of financial support for graduate students at Utah State University are listed on pages 89-90 in the Graduate Financial Assistance section. This includes important information on the University-wide policies and terms of reference for research and teaching assistantships, graduate tuition obligations and benefits, Western Regional Graduate Programs, and competitive University-wide fellowships and scholarships.

The Department of Environment and Society intends that all graduate students be financially supported. Graduate research assistantships are available through major professors having contracts, grants, or other awards. Internships may also be created on a case-by-case basis. A student may want to author or co-author a proposal with a faculty member to fund a new initiative. There are also open competitions for graduate scholarships and fellowships through the College of Natural Resources. The department also has a few graduate teaching assistantships where graduate students typically help instructors with teaching, grading, or recitation in large courses. Interested persons should contact the department early in the application process for more information on financial assistance for graduate students. Prospective students may also visit http://www.cnr.usu.edu/envs.

Environment and Society Faculty

Professors

Clifford B. Craig, geographic education, community development, rural planning, economic geography, geography of Utah
Steven E. Daniels, natural resource policy, collaborative community processes
Leona K. Hawks, sustainability, energy efficiency, water conservation, healthy indoor environments, green consumerism in buildings and technologies
James J. Kennedy, policy and administration of natural resource and environmental management
Richard S. Kranich, natural resource policy and sociology
Jack M. Payne, Vice President and Dean for University Extension, conservation program administration, agriculture and natural resource policy
H. Charles Romesburg, natural resources research methods and natural resources ethics
Terry L. Sharik, natural resource and environmental management, institutional analysis, teaching and learning pedagogy, forest ecology
Derrick J. Thom, land use, population and settlement, rural development, remote sensing, geography of Africa
Richard E. Toth, bioregional and water resources analysis, planning, and management

Associate Professors

Ted J. Alsop, physical geography, climatology, geomorphology, photogrammetry, geography of North America
Dale J. Blahna, natural resource sociology, policy, outdoor recreation, and interpretation
Mark W. Brunson, social and psychological aspects of forest and rangeland management
Steven W. Burr, recreation resources, outdoor recreation and natural resource-based tourism, rural community development
D. Layne Coppock, rangeland ecology, management, and policy; international pastoral and agropastoral development; community-based natural resource management
Joanna L. Endter-Wada, cultural anthropology, natural resource policy and sociology
Robert J. Lilieholm, natural resource management and economics, land use planning, sustainable development
Robert H. Schmidt, wildlife policy, wildlife damage management

Assistant Professor

Nicole L. McCoy, natural resource economics

Senior Lecturer

Michael F. Butkus, recreation resources management and planning, interpretive planning

Lecturers

Judith A. Kurtzman, natural resource policy
Barbara Middleton, environmental education

Course Descriptions

Environment and Society (ENVS), pages 392-394
Geography (GEOG), pages 403-404
National Environmental Policy Act (NEPA), page 447
Family, Consumer, and Human Development

Department Head: Thomas R. Lee  
Location: Family Life 203  
Phone: (435) 797-1551  
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E-mail (undergraduate): taras@cc.usu.edu  
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Associate Department Head and Child Development Laboratory Director: Shelley L. Knudsen Lindauer, Family Life 106A, (435) 797-1532, lindauer@cc.usu.edu

Gerontology Certificate Program Coordinator:  
Jana Darrington, Family Life 218, (435) 797-7140, jdarrington@cc.usu.edu

Marriage and Family Therapy Program Director:  
Thorana S. Nelson, Family Life Center 104, (435) 797-7431, thorana.nelson@usu.edu

Undergraduate Academic Advisor: Marilyn B. Kruse, Family Life 205A, (435) 797-1530, marilynk@cc.usu.edu

Graduate Program Coordinator: Kathleen W. Piercy, Family Life 219, (435) 797-2387, kathyp@cc.usu.edu

Degrees offered: Bachelor of Science (BS), Bachelor of Arts (BA), Master of Science (MS), and Doctor of Philosophy (PhD) in Family, Consumer, and Human Development; BS and BA in Early Childhood Education; BS and BA in Family and Consumer Sciences; Master of Family and Human Development (MFHD)

Undergraduate emphases: BS, BA in Family, Consumer, and Human Development—Deaf Education, Family and Community Services, Family Finance; Human Development; BS, BA in Early Childhood Education—licensure, K-3rd grades

Graduate specializations: MS—Adolescence and Youth, Adult Development and Aging, Consumer Sciences, Infancy and Childhood, Marriage and Family Relationships, Marriage and Family Therapy

Gerontology Certificate Program: The Gerontology Certificate Program at Utah State University is administered through the Department of Family, Consumer, and Human Development, and is open to all majors. Students preparing for careers in the field of aging complete selected aging-related coursework, including a supervised field practicum in a gerontological setting. For a list of requirements for this interdisciplinary certificate, contact the department. A minimum GPA of 2.75 is required for the Gerontology Certificate.

Undergraduate Programs

Objectives

The Family, Consumer, and Human Development Department offers undergraduate programs in Family, Consumer, and Human Development; Family and Consumer Sciences; and Early Childhood Education. All programs are designed to prepare students for successful careers.

The Family, Consumer, and Human Development major prepares students for careers serving individuals and families across the life span. Through classroom study and applied experiences, majors study human development, family relationships, family economics, and consumer issues affect the individual and family.

Faculty members provide instruction and practicum supervision to prepare students to meet the needs of the people they will serve in their future careers in agencies and organizations serving individuals from infancy through later life, as well as families and consumers in many settings.

Student majors in Family, Consumer, and Human Development are required to complete a practicum experience, which is arranged with the department practicum coordinator. Types of practicum sites include state agencies, hospitals, pre-schools and child care centers, nursing homes, senior citizen centers, parenting programs, detention centers, crisis intervention programs, public schools, head start programs, and after-school programs, as well as financial institutions, credit counseling services, and housing services. Practicum experience in the Deaf Education and Human Development emphases includes the Adele and Dale Young Child Development Lab setting. Students majoring in Early Childhood Education complete a formal internship in the Adele and Dale Young Child Development Labs and in primary school grades as part of this focus.

Majors in Family, Consumer, and Human Development (FCHD), as well as in Early Childhood Education, receive the necessary preparation for graduate study in a family, consumer, and human development related field or employment. Early Childhood Education majors acquire a teaching license so they can also teach in the public schools.

In addition to preparation for advanced study or job opportunities, FCHD majors receive increased knowledge and skills in topics which will enhance their personal and family lives.

Certified Family Life Educator (CFLE). Students who complete the Family and Community Services emphasis are eligible to apply for the Certified Family Life Educator credential through the National Council on Family Relations.

Gerontology Certificate. Students pursuing the Gerontology Certificate must take additional courses and complete a gerontology practicum as required for certification. A complete list of requirements may be obtained in Family Life 214 or by calling (435) 797-7140.
Honors Program. The Department of Family, Consumer, and Human Development participates in the University Honors Program. Students can graduate with Departmental Honors. For further information, see the Honors Program section on page 226, or access the Honors Program home page at: http://www.usu.edu/honors.

Departmental Requirements for Family, Consumer, and Human Development Major

Admission Requirements. Students with less that 24 semester credits can declare a premajor in FCHD. Completion of at least 24 semester credits (including FCHD 1100, 1500, and 2400) with a cumulative GPA of 2.75 is required for admission into the major.

Departmental Program Requirements. The department has established the following regulations, which govern students’ academic progress:

1. The P/D+, D, and F option cannot be used for courses required in the FCHD major or minor.
2. An overall cumulative GPA of 2.75 is required to enter the major, and a cumulative 2.75 GPA is required for graduation. A GPA of 2.75 in FCHD major courses is also required for graduation.

Background Check. All students will be required to pass a background check prior to participation in a practicum experience (FCHD 4950, 4970, 4980, or 5950).

Emphasis Requirements. After admission to the FCHD major, students must complete the requirements for one of the following four emphases: Family and Community Services, Human Development, Deaf Education, or Family Finance. These requirements are shown below.

Family and Community Services and Human Development Emphases

Majors choosing one of these two emphases prepare for employment in a variety of occupational settings. Previous graduates have found employment in such settings as child care, Head Start programs, social services agencies, drug treatment centers, youth and adult residential care centers, foster care, youth centers, crisis centers, parent education programs, senior citizen centers, long-term care facilities, adult day care centers, and a host of related federal, state, and local agencies serving families and children. Students are prepared to work in their communities to develop and guide policies for families and children. In addition, FCHD majors receive increased knowledge and skills in topics which will enhance their personal and family lives.

Core Courses (54 credits). Core courses for the Family and Community Services and Human Development Emphases are as follows: FCHD 1100, 1500, 2400, 2610, 3100, 3110, 3130, 3210, 3510, 3520, 3530, 3540, 4220, 4230, 4240, 4900, 4980; PSY 2800 or SOC 3120. In addition to completing these core courses, all students must complete all courses listed below for either the Family and Community Services Emphasis or the Human Development Emphasis.

Family and Community Services Emphasis (7 credits). FCHD 3500 (Interdisciplinary Lab: Infancy or Middle Years; take concurrently with FCHD 3510 or 3520), 3550, 5540.

Human Development Emphasis (8 credits). FCHD 3500 (Interdisciplinary Lab: Infancy; take concurrently with FCHD 3510) 3500 (Interdisciplinary Lab: Middle Years; take concurrently with FCHD 3520), 4550, 4960.

Suggested Electives. FCHD 5550 (Workshop: Casework Training I) and FCHD 5550 (Workshop: Casework Training II).

Deaf Education Emphasis

Majors choosing this emphasis are prepared to work with infants and young children who are hearing impaired and their families. Once students have completed their undergraduate degree, they can apply to the graduate program in the Department of Communicative Disorders and Deaf Education and work toward a master’s degree with a specialization in Early Childhood Communicative Disorders. This master’s program can be completed in two semesters plus a summer session. Students completing the master’s program will have the skills necessary to work in early intervention programs called Parent-Infant Programs (or Pip programs). These programs may be found in every state of the country. Upon completion of the undergraduate FCHD major with the Deaf Education emphasis and the graduate Early Childhood Communicative Disorders specialization, students will have the coursework necessary to cover the competencies for the 0-3 Hearing Endorsement and the EI-2 credential which are necessary to be a parent advisor in Utah.

Required Courses. The following courses are required for students selecting the Deaf Education Emphasis: FCHD 1100, 1500, 2400, 2610, 3100, 3110, 3130, 3210, 3500, 3510, 3520, 4220, 4550, 4900, 4960, 4980; COMD 2500, 2910, 3080; PSY 2800 or SOC 3120; SPED 4000. In addition to these courses, students must complete the following courses during their senior year: COMD 3080, 3910, 4630, 4750, 4770, 4780, 5610; SPED 5810. Students in this emphasis must meet with their advisor each semester.

Family Finance Emphasis

Majors choosing this emphasis will be prepared for careers in financial counseling, advising, and education. Coursework focuses on the financial decisions that individuals and families face relating to insurance, investing, credit, budgeting, and home ownership. Students will complete an off-campus practicum and a Financial Counseling Practicum at the Family Life Center on campus. At the Family Life Center, students will encounter various types of financial experiences, including new home buyer counseling sessions and workshops, as well as financial problems related to credit and budgeting, mortgage defaults, and reverse mortgages. The Family Life Center is a U.S. Department of Housing and Urban Development (HUD) approved housing and financial counseling agency that provides free counseling and education to the community. Employment opportunities exist with consumer credit counseling services, credit unions, the armed forces, corporate employee assistance programs, employee benefits counseling firms, college financial aid offices, bank loan offices, hospitals, corporate credit offices, bankruptcy courts, community housing programs, Federal Home Administration, and Housing and Urban Development. A student graduating with a Family Finance emphasis may be employed as a personal banker, mortgage loan officer, credit counselor, financial counselor or educator, consumer relations coordinator, military financial educator, debt collections coordinator, credit investigator, fraud detective, insurance broker, stockbroker, or financial planner.
Admission Requirements. Students must complete at least 24 credits, including the following courses, with at least a 2.75 GPA in order to be admitted to the Family Finance emphasis: FCHD 1100, 1500, 2400, 2450.

Major Courses (46 credits). The following courses are required for students selecting the Family Finance Emphasis: FCHD 3130, 3280, 3310, 3340, 3350, 3450, 4220, 4330, 4350, 4460, 4950, 5340, 5950.

Required General Education Courses. Students in the Family Finance Emphasis must complete the following three courses, for which General Education credit will be granted: ECON 1500 (BAI), STAT 1040 (QL), and SPCH 1050 (CI).

Suggested Support Courses. The following courses are suggested (but not required) for students in the Family Finance Emphasis: PFP 5060, BIS 2450, Econ 2010.

Family and Human Development Minor

The minor in Family and Human Development (FHD) is designed to provide a knowledge base for understanding families and human development in order to enhance the training of majors in other academic disciplines. A 2.75 GPA is required for this minor. No more than 6 transfer credits may be used toward the FHD minor. Students applying for an FHD minor at USU, but transferring courses from other universities, must complete a minimum of three USU FCHD courses in order to earn an FHD minor. Courses counted toward the minor may not be taken pass-fail.

Required Courses (6 credits). The following two courses are required for the FHD minor: FCHD 1500, 2400.

Elective Courses (9 credits). Students must complete three of the following courses: FCHD 2610, 3100, 3110, 3210, 3510, 3520, 3530, 3540, 3550, 4220, 4230, 4240.

Students should be aware that the following courses cannot be used to fulfill requirements for the FHD minor: FCHD 2250, 2500, 3130, 4550, 4600, 4970, 4980; practica (FCHD 4950, 4960); and Readings and Conference (FCHD 4990).

Family Finance Minor

Required Courses (6 credits). The following two courses are required for the Family Finance minor: FCHD 2450, 3350.

Elective Courses (9 credits). Students must complete at least 9 credits in courses selected from the following: FCHD 3280, 3310, 3340, 3450, 4350.

Early Childhood Education Major

Majors in early childhood education are licensed to teach in preschool, kindergarten, and grades 1-3. Several practica and field experiences with children are provided, and a subject matter emphasis is selected. This major is a cooperative effort between the Department of Family, Consumer, and Human Development and the Department of Elementary Education. Students are required to complete a student teaching practicum in a preschool program, a kindergarten, and in the public schools grades 1, 2, or 3. Additional materials describing the ECE major in the Department of Family, Consumer, and Human Development are available from the advisors in FL 205.

Family and Consumer Sciences Major

The Family and Consumer Sciences (FCS) major is an integrative major that links the various fields within the family and consumer sciences profession and prepares the student for positions requiring interdisciplinary problem-solving skills. The Family and Consumer Sciences major prepares graduates for positions in business, local/state/federal agencies, child care centers, youth programs, job training centers, and other related agencies.

Admission Requirements. Prior to being admitted to the FCS major, students must complete at least 24 credits, including the following courses, with at least a 2.75 GPA: FCHD 1100, 1500, 2400, 2450.

Major Courses (48 credits). Students must select courses from each of the following five areas. The minimum number of credits to be selected from each area is shown in parentheses.

Human Development and Family Studies (12 credits): FCHD 2610, 3100, 3110, 3210, 3500, 3510, 3520, 3530, 3540, 4220, 4230, 4240, 4550.

Consumer and Family Finance (12 credits): FCHD 3280, 3310, 3340, 3450, 4330, 4350, 5340.

Foods and Nutrition (9 credits): NFS 1000, 1020, 1240, 1250, 2020, 2030, 3020, 3110, 4070, 4480.

Research Methods and Professional Courses (9 credits): FCHD 3130 (required); choose one of: BIS 1550, 2550, FCHD 4900, SPCH 1050, 2600; choose one of: FCHD 4900, PHIL 2400, 2500, 3520.

Practicum (6 credits): Complete a total of 6 credits from one or both of the following: FCHD 4950, 4960.

Suggested Support Courses. The following courses are suggested (but not required) for students in the FCS major: FCSE 1040, 2040, 3030, 3040, 3060; ID 1750, 1790, 3740, 3750.

Additional Information

For more detailed information about the Family, Consumer, and Human Development; Early Childhood Education; and Family and Consumer Sciences majors, see the current major requirement sheets or an advisor in the FCHD Advising Center (Family Life 205). Major requirements are also available on the department’s home page at: http://www.usu.edu/fchd.

Financial Support

In addition to the scholarships, assistantships, grants-in-aid, and work-study programs available through the University, the College of Education and Human Sciences and the Department of Family, Consumer, and Human Development also give scholarships and other types of support each year. Students should inquire at the Dean’s Office in Education 109, the departmental advising office in Family Life 205, or the Financial Aid Office in Student Center 106.

Graduate Programs

Admission Requirements

See general admission requirements on pages 90-91. Students may use either the GRE or MAT for application for all specializations in the MS degree, but the GRE is required for the PhD program. Additional assessment is required for admission to the MS marriage and family therapy specialization. An applicant’s MAT
score, or the GRE verbal and quantitative scores, should be at or above the 40th percentile. Applications are expected to be completed by January 15, but may be considered throughout the year.

Degree Programs

Graduate students receive a strong research and theoretical base in family relationships, consumer sciences, and human development. In addition to the core courses required for each of the specializations, students have the opportunity to achieve their program goals with a wide range of other graduate courses in the department, as well as designated courses in related programs at USU. Graduate students also engage in independent study, practica, and other specialized professional experiences that help them to acquire specific skills.

The department provides advanced graduate education and training for students to (1) establish the professional competency necessary for employment in research, teaching, marriage and family therapy, extension, and administration; (2) develop skills necessary for agency administration in the field of family and child care services; (3) receive clinical training in marriage and family therapy; (4) develop the skills for supervisory responsibilities in child development laboratories, child-care facilities, and adolescent programs; and (5) develop the skills and expertise to work in financial and consumer services agencies and organizations.

MS in Family, Consumer, and Human Development. Students in the MS program complete a research thesis that makes a contribution to knowledge in family studies or human development.

All students in the MS Marriage and Family Therapy specialization also complete required clinical experiences. The MS Marriage and Family Therapy specialization satisfies basic educational requirements for Utah State licensure in marriage and family therapy and clinical membership in AAMFT. The Marriage and Family Therapy specialization is accredited by the Commission on Accreditation for Marriage and Family Therapy Education.

Master of Family and Human Development (MFHD). The MFHD is a practice-oriented, but nonclinical, master’s degree especially suitable for individuals already working or planning to work in the family or social service sectors, education, corrections, or related fields. The MFHD does not require a thesis.

PhD in Family, Consumer, and Human Development. Students in the PhD program complete a major research dissertation that makes a significant contribution to the theoretical and empirical knowledge in family studies, consumer sciences, or human development.

Background Check. Students may be required to pass a background check prior to participation in a practicum experience (FCHD 6980 or 7980).

Specializations

The department offers the Master of Science (MS) degree in Family, Consumer, and Human Development and the Master of Family and Human Development (MFHD) degree. The department also offers a doctorate degree (PhD) in Family, Consumer, and Human Development. The MS degree has specializations in Adolescence and Youth, Adult Development and Aging, Consumer Sciences, Infancy and Childhood, Marriage and Family Relationships, and Marriage and Family Therapy. Further information may be obtained from the department and by accessing the department’s home page at: http://www.usu.edu/fchd.

Course Requirements

The core substantive courses for the master’s degree are FCHD 6030, 6050, 6060, and 6070. Master’s students also complete course requirements under their chosen specialization in Marriage and Family Relationships, Marriage and Family Therapy, Consumer Sciences, Infancy and Childhood, Adolescence and Youth, or Adult Development and Aging. Elective courses and thesis topics are individualized with each student by faculty supervisory committees.

Doctoral core courses are FCHD 7060, 7070, and 7080. Doctoral students also complete topical seminars, methods and statistics courses, research and teaching internships, comprehensive exams, and dissertation research. For more specific information, see the department’s Graduate Student Handbook.

Research

The department has three major child development laboratories, other research labs, marriage and family therapy facilities, and housing and financial counseling facilities that are available for research and training in the graduate program. The department enjoys a long history of research activities with preschools, public schools, extension programs, financial institutions, and other agencies throughout the state, and is building a program of gerontology research.

Recent faculty and graduate student research projects have been funded by the state Office of Child Care and the Office of Juvenile Justice, and by the national Office of Head Start, the Office of Adolescent Pregnancy Programs, Child Trends Inc., the National Institute of Child Health and Human Development, the National Institute of Health, the U.S. Department of Agriculture, the U.S. Department of Justice, and the Kellogg Foundation, among others.

Financial Assistance

Extensive teaching, research, and extension graduate assistantships are available for applicants for both the MS and PhD degrees. Attractive fellowships are available for strong PhD students with high GPA and high GRE scores. When an applicant’s folder is complete, it is reviewed by the Graduate Admissions and Finance Committee, which makes specific recommendations regarding admission and financial support. Assistantships and fellowships include waivers for out-of-state tuition. Doctoral students can also receive waivers for in-state tuition with a half-time teaching or research assistantship.

Career Opportunities

Recent recipients of advanced degrees have found employment in public schools, academic departments at colleges and universities, research centers, hospitals, Head Start, child-care programs, social services agencies, mental health agencies, private and clinical practice settings, extension services, financial institutions and agencies, and related agencies that teach about, study, or serve individuals, families, and consumers.
Additional Information and Updates

The department publishes a Graduate Student Handbook providing more detail about graduate program admission and requirements. This handbook is available online at: http://www.usu.edu/fchd.

Family, Consumer, and Human Development Faculty

Professors
Ann M. Berghout Austin, alternative child care and family life, development from birth to 12 years of age
Thomas R. Lee, parenting, family life education, family resiliency, at-risk youth, marriage education
Shelley L. Knudsen Lindauer, alternative child care, gender role development, early childhood education, curriculum administration, socialization, development in infancy and early childhood
Jean M. Lown, consumer and family economics
Brent C. Miller, marriage and family relationships, adolescent pregnancy, adoption, research methods
Lori A. Roggman, infant social development, attachment, parenting stress, play across the life span, physical attractiveness, early intervention
Barbara R. Rowe, family resource management, extension

Adjunct Professors
Frank R. Ascione, prosocial development, moral development, developmental psychopathology
Sarah Rule, methods of early intervention, applications of technology to staff development, improvement of service delivery systems

Professors Emeritus
Glen O. Jenson, marriage education, in-law and grandparent role performance, family life education, work-family challenges
Jay D. Schvaneveldt, marriage and family studies, family life education, international families, theory and methods

Associate Professors
Scot M. Allgood, family therapy process, assessment, and marital studies
Randall M. Jones, adolescent development, identity, problem behavior, prevention, research methods
Thorana S. Nelson, marriage and family therapy, gender, family therapy training and supervision

D. Kim Openshaw, marriage and family therapy, research and application, typological and intervention strategy advancement of youthful sexual offending, theoretical conceptualization of self-esteem, marital arts and mental health related syndromes
Kathleen W. Piercy, midlife, older adults and family caregiving, family policy, qualitative methodology

Assistant Professors
Troy E. Beckert, life span, human development, adolescence, research methods, parenting
Lucy Delgadillo, family and consumer sciences, housing
Yoon G. Lee, family and consumer sciences, family finance
Sylvia Niehuis, premarital relationships, transition from courtship to marriage, marriage preparation, prediction of marital outcomes, longitudinal research methods
Maria C. Norton, geriatric mental health, psychosocial and biological factors, research methodology and epidemiology
Linda M. Skoglund, families from diverse populations, transcending traumatic hardships, marriage and family education

Adjunct Assistant Professor
Carol M. Baumann, child welfare, foster care, adoption

Adjunct Research Assistant Professor
Lisa K. Boyce, infancy and early childhood, language development, parent-child interaction

Senior Lecturer
Deborah B. Ascione, marriage, human development, child abuse and neglect

Lecturers
Jana Darrington, adult development and aging, relationship development, family policy
Susan L. Ericksen, undergraduate practicum coordinator, undergraduate advisor, marriage and family therapy, professional development
Alena Johnson, family financial management, financial counseling, students and debt
Farol Ann G. Nelson, early childhood education, child development, parent education, experiences in the arts for early childhood
Kaelin Olsen, infant and toddler development, developmentally appropriate practice in early childhood education, preschool curriculum, child guidance

Course Descriptions

Family, Consumer, and Human Development (FCHD), pages 394-397
**Forest, Range, and Wildlife Sciences**

**Department Head:** To be appointed  
**Location:** Natural Resources 206  
**Phone:** (435) 797-3219  
**FAX:** (435) 797-3796  
**E-mail:** lbar@cc.usu.edu  
**WWW:** http://www.cnr.usu.edu/frws

**Undergraduate Advisors:**  
Maureen A. Wagner, Natural Resources 120, (435) 797-2448, maureen@cc.usu.edu  
Stephanie W. Hamblin, Natural Resources 120, (435) 797-2473, stephanie.hamblin@usu.edu

**Degrees offered:** Bachelor of Science (BS) in Conservation and Restoration Ecology; BS, Master of Science (MS), and Doctor of Philosophy (PhD) in Forestry; BS in Rangeland Resources; BS in Wildlife Science; MS and PhD in Ecology; MS and PhD in Range Science; and MS and PhD in Wildlife Biology

**Graduate specializations:** MS, PhD in Ecology—Conservation Biology, Wildlife Ecology; MS, PhD in Wildlife Biology—Conservation Biology, Problem Wildlife Management, Wildlife Management

**Undergraduate Programs**

**Objectives**  
The Department of Forest, Range, and Wildlife Sciences (FRWS) offers four undergraduate degrees: Conservation and Restoration Ecology, Forestry, Rangeland Resources, and Wildlife Science. These degree programs offer broad educational opportunities for students interested in the analysis and management of forest and rangeland ecosystems and their associated wildlife populations. The department’s philosophy of education is to promote a broad interdisciplinary approach to natural resources analysis, management, and science.

**Requirements**

**Admission Requirements.** Admission requirements for the Department of Forest, Range, and Wildlife Sciences are the same as those described for the College of Natural Resources on pages 115-116.

**Graduation Requirements.** All General Science Foundation Courses, Departmental Common Courses, and all courses listed as major subject courses must be taken on an A-B-C-D-F basis. A grade of C- or better is required for all Forest, Range, and Wildlife Sciences courses used to meet the requirements for a major or minor in the department. The grade point average for all courses taught by the College of Natural Resources must be 2.5 or higher.

In addition to completing the University Studies course requirements, all students earning an undergraduate degree in the Department of Forest, Range, and Wildlife Sciences must complete the General Science Foundation Courses and the Departmental Common Courses, as listed below. Some of these courses may be used toward the University Studies requirements, as indicated by the University Studies designations listed in parentheses following the course numbers.

**General Science Foundation Courses (34 credits).** BIOL 1210, 1220 (BLS); CHEM 1210, 1220 (BPS), 1230; MATH 1050 (QL), 1100 (QL); SOIL 3000; STAT 2000 (QI) or 3000 (QI); NR 2220.

**Departmental Common Courses (36 credits).** ENVS 3000, 4000 (DSS); FRWS 2000, 2010, 3600, 3610, 3700, 3710, 3800, 3810, 3850, 3900.

The first two years of study in the Department of Forest, Range, and Wildlife Sciences are designed to provide students with a sound background in the natural sciences, an introduction to the field of natural resources management, and an introduction to their respective major. The last two years are designed to provide an advanced understanding of natural resource management and science, depth concentration in the major, and experience with the integration of scientific and management concepts across a diversity of disciplines and management scenarios. Students are expected to enroll for 15 or more credits of coursework per semester.

**Bachelor of Science in Conservation and Restoration Ecology.** Students in the Conservation and Restoration Ecology major must meet the course requirements for University Studies, as well as complete the General Science Foundation Courses and the Departmental Common Courses listed above. They must also complete 27 credits of Professional Coursework, including FRWS 4600 and 4700, and a 21-credit specialization. This specialization is designed by the student in consultation with a faculty advisor to meet specific goals and career objectives and must be approved by the FRWS department head.

**Bachelor of Science in Forestry.** Students in the Forestry major must meet the course requirements for University Studies, as well as complete the General Science Foundation Courses and the Departmental Common Courses listed above. They must also complete 19 credits of Professional Coursework, including: AVER 3700, 4930; ENVS 3300; FRWS 5350, 5700, 5710; and an option in either soils/watershed (AVER 4490 and SOIL 5130) or Remote Sensing/Geographic Information Systems (AVER 5930 and FRWS 5750).

**Bachelor of Science in Rangeland Resources.** Students in the Rangeland Resources major must meet the course requirements for University Studies, as well as complete the General Science Foundation Courses and the Departmental Common Courses listed above. They must also complete 22 credits of Professional Coursework, including: ADVS 2080 or 2090; AVER 3700; BIOL 3400, 4400 (QI); FRWS 4000; SOIL 5130; and an upper-division range economics course approved by the FRWS department head.
Bachelor of Science in Wildlife Science. Students in the Wildlife Science major must meet the course requirements for University Studies, as well as complete the General Science Foundation Courses and the Departmental Common Courses listed above. They must also complete 21 credits of Professional Coursework, including: BIOL 5250 (CI), 5560 or 5570, 5580; FRWS 3300, 4500, 4600, 4880.

Career Opportunities

Graduates in Forest, Range, and Wildlife Sciences (FRWS) qualify for a broad range of career opportunities specific to their major. The Bachelor of Science degrees in Forestry, Rangeland Resources, and Wildlife Science are designed to meet the U.S. Office of Personnel Management (OPM) requirements for professional, permanent, full-time jobs with the Forest Service, Fish and Wildlife Service, Bureau of Land Management, National Park Service, or other federal natural resources agencies. The Bachelor of Science in Conservation and Restoration Ecology is designed to meet OPM requirements for Ecologist, but is flexible and intended to meet the needs of nongovernmental careers as well, such as the Nature Conservancy or private natural resource consulting firms, as well as state and county restoration and management agencies. Graduates in all degree programs receive a solid background in biological and quantitative sciences, as well as the communication skills needed to succeed in many career paths.

Financial Assistance

The main opportunities for undergraduates to find financial support through grants, work-study, and loans are listed on pages 22-26 in the Financial Aid and Scholarship Information section. In addition, more than 30 scholarships are available for eligible students in the College of Natural Resources. Some students may be able to find paid internships with private or governmental organizations, or work for a faculty member on a research project. Interested persons should contact the college’s Academic Service Center for more information on financial assistance for undergraduate students.

Additional Information

The undergraduate program may be tailored to individual student needs with the help of a faculty advisor. For additional information about the degree requirements, course sequencing, and departmental specialization options and their related coursework, as well as updated information describing current programs and courses offered by the Department of Forest, Range, and Wildlife Sciences, visit the Forest, Range, and Wildlife Sciences main office, Natural Resources 206, or visit: http://www.cnr.usu.edu/frws.

Graduate Programs

Admission Requirements

The Department of Forest, Range, and Wildlife Sciences offers opportunities for graduate study through MS and PhD degree programs in Ecology, Forestry, Rangeland Science, and Wildlife Biology. The department also offers opportunities to participate in a college-wide Master of Natural Resources (MNR) degree program administered through the College of Natural Resources. The MNR is described more fully on page 278.

The programs of instruction and research leading to graduate degrees in the department are available only to students meeting high scholastic standards who are accepted for study by the departmental faculty. Students desiring entrance to these graduate programs should contact the department head for information concerning eligibility.

USU School of Graduate Studies general admission requirements are described on pages 90-91. Applicants for graduate study in the department should have a bachelor’s degree from an accredited college or university, a cumulative GPA of at least 3.0 (out of 4.0), and GRE scores (quantitative and verbal) above the 40th percentile. Foreign students should submit a TOEFL score of at least 550. Exceptions to these standards will be considered on a case-by-case basis. Written statements of interest help match applicants with faculty advisors. A faculty member must agree to serve as the major professor in order for an applicant to be accepted for study. Prospective students are encouraged to contact faculty members early in the application process to investigate mutual interests, projects, and prospects for financial support.

A natural resources baccalaureate degree is not required for admission to the department, although a sound background in the natural sciences is strongly recommended. Students lacking the requisite background will work with their supervisory committee to address deficiencies.

Degree Programs

The MS degree is offered for students motivated toward a management or administrative career in natural resources management. The MS may be obtained through either a Plan A (research thesis) or Plan B (nonthesis) program, as described on page 95. The Plan A option requires a thesis based on original research conducted by the student. The Plan B option is recommended for professional forestry, rangeland, or wildlife managers who do not desire research training. The PhD degree is intended for students seeking a natural resources research or academic career. Comprehensive exams (both oral and written) are required in the doctoral program.

The minimum requirement for an MS degree is 30 credits, including at least 24 credits in residency and 6 credits of thesis research. The minimum requirement for a PhD degree is 60 approved graduate credits in addition to an MS degree, or 90 approved graduate credits with no MS degree. At least one year (a minimum of 32 credits), including a minimum of two consecutive semesters, of full-time registration must be in residence at USU.

With committee approval, graduate credit may be transferred from accredited graduate schools, provided the minimum residency requirement (including thesis and dissertation credit) at USU is met. Transfer credit, which must not have been used for any other degree, will be shown on official USU transcripts at completion of the degree.

Research

Cooperation with other departments and research centers of the University, as well as with government collaborators, permits strong graduate programs in all aspects of forest, range, and wildlife-related sciences. Particular mention should be made of the USU Ecology Center, in which the Forest, Range, and Wildlife Sciences Department is very active; the Utah Agricultural Experiment Station, which has a full program in both applied and basic research; the Utah Cooperative Fisheries and Wildlife Research Unit; the Predator Ecology and Behavior Field Station; the Jack H. Berryman Institute; the U.S. Forest Service Rocky Mountain Forest and Range Experiment Station; and the USDA Agricultural Research Service.
Financial Assistance

General aspects of financial support for graduate students at Utah State University are listed on pages 89-90 in the Graduate Financial Assistance section. This includes important information on the University-wide policies and terms of reference for research and teaching assistantships, graduate tuition obligations and benefits, Western Regional Graduate Programs, and competitive University-wide fellowships and scholarships. The College of Natural Resources also offers a limited number of Quinney Doctoral Fellowships for incoming doctoral students.

Graduate research assistantships may be available on a competitive basis to both MS and PhD students through major professors having contracts, grants, or other awards from the University, private sector, or government agencies. These assistantships vary in the amount of support offered, but they commonly offer a stipend to help cover living expenses and operating funds to carry out the research. Other benefits may include assistance with tuition and student health insurance, as well as opportunities to travel.

The department also has a few graduate teaching assistantships for students who help with teaching, grading, or recitation in large courses. These typically pay only a modest supplement on a semester basis, however, and are not sufficient to cover living expenses. Domestic PhD students on a research assistantship in some departmental degree programs are required to hold at least one teaching assistantship during their program, to obtain experience in classroom (mainly undergraduate) instruction. MS students may also hold teaching assistantships, contingent upon availability of funds. Acceptance to pursue graduate study does not guarantee the student financial assistance.

Additional Information

For more information about graduate programs and departmental faculty and their research emphasis areas, as well as updated information describing current programs and courses offered by the Department of Forest, Range, and Wildlife Sciences, visit the Forest, Range, and Wildlife Sciences main office, Natural Resources 206, or visit http://www.cnr.usu.edu/frws.

Forest, Range, and Wildlife Sciences Faculty

Professors

John A. Bissonette, Leader, Utah Cooperative Fish and Wildlife Research Unit, landscape ecology, terrestrial vertebrate ecology
F. E. “Fee” Busby, Dean of College of Natural Resources, effects of livestock grazing
Martyn M. Caldwell, Director Ecology Center, plant physiological ecology
Michael R. Conover, animal behavior, wildlife damage management
Raymond D. Dueser, conservation ecology
James N. Long, forest ecology, silviculture
John C. Malechek, rangeland management
Terry A. Messmer, fisheries and wildlife extension specialist, wild ungulate and waterfowl management, wetlands ecology, private land management, conservation communication
Frederick D. Provenza, range animal production
Neil E. West, rangeland desertification/condition/trend
Michael L. Wolfe, wildlife ecology and management

Research Professors

Michael M. Jaeger, behavioral ecology
Frederick F. Knowlton, Predator Ecology and Behavior Project, predator ecology, behavior and management
Jesse A. Logan, forest insect ecology, disturbance ecology, dynamical systems analysis
Leila McReynolds Shultz, plant taxonomy and geography

Adjunct Professors

Barbara H. Allen-Diaz, plant community ecology
Gary E. Belovsky, population ecology
James E. Bowns, range ecology
John W. Connelly, upland game ecology, conservation, management
Norbert V. DeByle, forest ecology
Douglas A. Johnson, plant ecophysiology
Jerran T. Flanders, range science and wildlife ecology
Scott R. Winterstein, wildlife population dynamics and management

Professors Emeriti

Thadis W. Bos, range management
Theodore W. Daniel, silviculture
John A. Kadlec, wetlands ecology, wildlife management
Ronald M. Lanner, forest genetics, dendrology
Frederic H. Wagner, wildlife ecology, natural resources policy
John P. Workman, range economics

Associate Professors

Frederick A. Baker, forest pathology, computer applications
Roger E. Banner, range extension specialist
Christopher A. Call, vegetation manipulation/management
Thomas C. Edwards, Jr., Utah Cooperative Fish and Wildlife Research Unit, spatial ecology, habitat modelling, biostatistics
Michael J. Jenkins, disturbance ecology and management, insects, fire, snow avalanches
Michael B. Kuhns, forestry extension specialist, urban forestry, tree physiology
R. Douglas Ramsey, remote sensing, geographic information systems, landscape ecology, spatial analysis
Eugene W. Schupp, plant population ecology and restoration ecology
Helga Van Miegroet, forest soils and biogeochemistry

Adjunct Associate Professors

Dale L. Bartos, range ecology
Mark W. Brunson, social and psychological aspects of forest and rangeland management
David C. Chojnacky, forest mensuration
D. Layne Coppock, animal production systems/technology transfer and international pastoral development
John L. Crane Jr., environmental resource management
Thomas A. Jones, native grass breeding
Bruce A. Kimball, range ecology
Niki S. Nicholas, biogeochemistry
Kenneth C. Olson, grazing livestock nutrition

Research Associate Professors

Eric A. Gese, Predator Ecology and Behavior Field Station, predator behavior and ecology
John A. Shivik, predator ecology

Adjunct Associate Professors

Dale L. Bartos, range ecology
Mark W. Brunson, social and psychological aspects of forest and rangeland management
David C. Chojnacky, forest mensuration
D. Layne Coppock, animal production systems/technology transfer and international pastoral development
John L. Crane Jr., environmental resource management
Thomas A. Jones, native grass breeding
Bruce A. Kimball, range ecology
Niki S. Nicholas, biogeochemistry
Kenneth C. Olson, grazing livestock nutrition
James A. Pfister, poisonous range plants
Michael H. Ralphs, poisonous plants/grazing management
Robert H. Schmidt, wildlife policy, wildlife damage management

Associate Professors Emeriti
Brien E. (Ben) Norton, grazing ecology, international range management
Gar W. Workman, wildlife ecology and management

Assistant Professors
Karen H. Beard, community ecology, ecosystem ecology, conservation biology
Karen E. Mock, conservation genetics and applied molecular ecology
Daniel K. Rosenberg, population, conservation, and landscape ecology
Ronald J. Ryel, plant physiological ecology

Research Assistant Professors
Barbara J. Bentz, forest entomology
Thomas J. DeLiberto, Predator Ecology and Behavior Field Station, veterinary medicine of wild species
Jennifer A. Gervais, ecotoxicology, population dynamics

Temporary Research Assistant Professor
Juan J. Villalba, foraging behavior

Adjunct Assistant Professors
Larry M. Conner, wildlife ecologist, wildlife damage management, mammalogist
Mary M. Conner, quantitative ecology and estimation of population parameters
Charles G. Johnson, Jr., plant and community ecology
Kyran E. Kunkel, carnivores, predator/prey ecology, mammal restoration ecology
Chris L. Lauver, range ecology
Nicole L. McCoy, natural resource economics
Thomas A. Monaco, research ecologist
Dale L. Nolte, foraging behavior
William C. Pitt, Acting Station Leader and wildlife research biologist, Predator Ecology and Behavior Field Station
Johanna M. Ward, population dynamics, avian ecology, conservation biology

Assistant Professor Emeritus
Barrie K. Gilbert, wildlife ethology, behavioral ecology

Adjunct Instructors
Jon Keith Schnare, timber harvest planning and logging methods
David Torell, collaborative processes, natural resources issues management, volunteer management, fundraising
Katherine S. Yoth, wildland/urban interface, fire fuels management, student internships

Course Descriptions
Forest, Range, and Wildlife Sciences (FRWS), pages 399-402
Geology

Department Head: John W. Shervais
Location: Geology 205
Phone: (435) 797-1273
FAX: (435) 797-1588
E-mail: geology@cc.usu.edu
WWW: http://www.usu.edu/geoldept

Undergraduate Advisor: Peter T. Kolesar, Geology 110, (435) 797-3282, peter.kolesar@usu.edu

Graduate Director: W. David Liddell, Geology 212, (435) 797-1261, davel@cc.usu.edu

Degrees offered: Bachelor of Science (BS), Bachelor of Arts (BA), and Master of Science (MS) in Geology; BS in Composite Teaching in Earth Science

Undergraduate emphases: BS in Geology—Hydrogeology-Engineering Geology and Geoarchaeology

Graduate Specializations: MS in Geology—Geomorphology, Hydrogeology, Igneous Petrology, Paleocology, Sedimentary Geology, Structural Geology, and Tectonics

Undergraduate Programs

Objectives
Geology is the study of the planet Earth, the materials of which it is made, the processes that act on these materials, the products formed, and the history of the planet and its life forms since its origin. Geology considers the physical forces that act within and on the Earth, the chemistry of its constituent materials, and the biology of its past inhabitants as revealed by fossil evidence. Geologists integrate biology, chemistry, engineering, mathematics, and physics in the study of our natural surroundings. The knowledge thus obtained is used by geologists to explore for energy, mineral, and water resources; to identify geologically stable sites for major structures; and to provide foreknowledge of some of the dangers associated with the mobile forces of a dynamic Earth. Geologists provide fundamental information required by modern society to plan for cultural and industrial development, reduce geological hazards, identify potential resources, and assist in the design of waste-disposal facilities.

The Department of Geology prepares students for professional careers in the geosciences and provides the background required for advanced studies. The department offers three options of study to meet the growing demand for geoscientists with training in general geology (BS in geology without an emphasis), hydrogeology-engineering geology emphasis, or geoarchaeology emphasis. All options provide exposure to the sciences and an appreciation of our physical surroundings. The BS program in Geology meets the curriculum standards established by the American Institute of Professional Geologists.

The department also offers the Composite Teaching Major in Earth Science to prepare teachers of earth science at the secondary school level. Requirements for this major meet or exceed the standards of the National Science Teachers Association. Those students who major in earth science should be aware that state licensure is required of secondary education teachers. The Composite Teaching Major in Earth Science fulfills the requirements that provide eligibility for licensure. Licensure requirements vary from state to state, and students should investigate the requirements for the states in which they intend to seek employment. Advising for the Secondary Teacher Education Program (STEP) and State of Utah secondary education licensure is provided by the USU Department of Secondary Education.

The Department of Geology is housed within the Geology Building, which is located at the northeast corner of the Old Main Quad. The Geology Building provides spacious, well-equipped teaching labs, classrooms, and facilities, including a display and study area for students, computer access, document room, map room, preparation facilities, and research labs.

General College of Science Requirements

All general College of Science requirements are embedded within the various major requirements listed below. No extra coursework is required to fulfill the general college requirements.

Requirements

Departmental Admission Requirements. New freshmen admitted to USU in good standing qualify for admission to this major. Transfer students from other institutions need a 2.2 GPA, and students transferring from other USU majors need a 2.0 GPA for admission to this major in good standing. Students seeking admission to the Composite Teaching Major in Earth Science should be aware that a 2.75 minimum GPA is required for admission to the Secondary Teacher Education Program (STEP) in the Department of Secondary Education. Students in the Hydrogeology-Engineering Geology emphasis must meet all College of Engineering GPA standards appropriate for the courses to be taken having either the ENGR or CEE prefix.

Field Trips and Labs. Most Geology courses have required laboratories and/or field trips. Those enrolled are expected to dress properly for the conditions and observe safety precautions issued by the instructors. Most courses require modest lab fees.

Bachelor of Arts Degree. For a BA in Geology, the foreign-language requirement must be satisfied in addition to the Bachelor of Science in Geology requirements.

Bachelor of Science Degree in Geology. Three options of study are available for a BS in Geology: General Geology (BS in Geology without an emphasis), Hydrogeology-Engineering Geology Emphasis, and Geoarchaeology Emphasis. For a BS in Geology (General Geology option), the following courses are required: GEOL 1150, 3200, 3500, 3520, 3550, 3600, 3700, 4500, 4700, 5200; CHEM 1210, 1220, 1230, 1240; PHYS 2210, 2220; MATH 1210; STAT 3000 or MATH 1220; CS 1050 or CS 1700 or CEE 5190 or AWER 4930; 12-20 credits of Geology electives; and up to 8 electives in approved, science-related areas. For a list of approved courses, students should see the current major requirement sheet or consult their geology advisor.
For a BS in Geology (Hydrogeology-Engineering Geology Emphasis), the following courses are required: GEOL 1150, 3200, 3500, 3550, 3600, 3700, 4700, 5200, 5510, 5600; CHEM 1210, 1220, 1230, 1240; PHYX 2210, 2220; MATH 1210, 1220, 2250; ENGR 2000, 2040; CEE 3500; CEE 3430 or 4300; SOIL 3000 or 5130.

For a BS in Geology (Geoarchaeology Emphasis), the following courses are required: GEOL 1150, 3200, 3500, 3550, 3600, 3700, 4700, 5430; CHEM 1210, 1220, 1230, 1240; PHYX 2210, 2220; MATH 1210; STAT 3000; CS 1050 or 1700; PHYX 3010; ENV S 5110 or FRWS 2200; BMET 2000; AWER 3000 or GEOL 3500; SCI 4300; INST 5200; SCED 3100, 3210, 3300, 3400, 4200, 4210, 4300, 4400, 5300, 5500, 5600; SPED 4000; AWER 4930, 5930.

**Bachelor of Science Degree in Composite Teaching—Earth Science.** For the BS in Composite Teaching—Earth Science, the following courses are required: GEOL 1150, 2500, 3200, 3500, 3550, 3600, 3700, 4700, 5430; CHEM 1210, 1220, 1230, 1240; PHYX 2210, 2220; MATH 1210; STAT 3000; CS 1050 or 1700; ENV S 5110 or FRWS 2200; BMET 2000; AWER 3000 or GEOL 3500; SCI 4300; INST 5200; SCED 3100, 3210, 3300, 3400, 4200, 4210, 4300, 4400, 5300, 5500, 5600; SPED 4000; AWER 4930, 5930.

**Geology Minor.** A minimum of 18 credits is required for an approved minor in Geology. Required courses are GEOL 1100 or 1150; and GEOL 3200. Elective geology courses must be numbered 3500 or higher.

**Senior Thesis.** Geology majors in good academic standing may elect to complete a senior thesis. This is an endeavor which normally spans a year in its preparation and presentation. Senior thesis credits may be applied toward the elective requirements in the General Geology option. For further information, students should contact their geology advisor or the geology department head.

**Geology Honors.** Geology majors with a minimum GPA of 3.30 may elect to complete the requirements for the Geology Honors degree option. This is a departmental recognition which is separate from the University Honors program. For further information, students should contact their geology advisor or the geology department head.

**Graduate Programs**

**Admission Requirements**

See general admission requirements on pages 90-91. In addition, applicants must have acceptable GRE scores. Minimum scores of 40th percentile on the Verbal section and 40th percentile on the Quantitative section and a combined minimum of 1,000 are required. A member of the Geology faculty must agree to serve as the major professor for the applicant prior to acceptance.

Applications will be considered throughout the year, but program entry in fall semester is preferred. Students who wish to be considered for assistantships or other financial aid must have complete applications on file no later than February 15 for entry into the program the following fall semester.

**Prerequisites for Matriculation**

Completion of a BS or BA in geology, biology, physics, chemistry, or engineering is required for matriculated status. Suggested prerequisite courses include: CHEM 1210, 1220, 1230, 1240; PHYX 2210, 2220; MATH 1210; STAT 3000; and CS 1050 or CS 1700 or CEE 5190 or AWER 4930. Deficiencies in geology are determined based on current USU undergraduate degree requirements for either the Geology or Hydrogeology-Engineering Geology option, as appropriate. The following geology courses or their equivalents are expected: GEOL 1150, 3200, 3500, 3550, 3600, 3700, 4700, and 5200. It is expected that any deficiencies will be made up before the end of the first year of study.

**Degree Program**

**Master of Science Degree.** The department offers advanced study and research opportunities leading to the MS degree in Geology. Although many research specialties require advanced courses selected primarily from Geology offerings, additional courses may be selected from other departments on campus, such as Civil and Environmental Engineering; Plants, Soils, and Biometeorology; Biology; Mathematics and Statistics; Aquatic, Watershed, and Earth Resources; Environment and Society; and Forest, Range, and Wildlife Sciences.

**Specializations**

Fields of specialization for graduate research include the following: hydrogeology, igneous petrology, paleoecology (including invertebrate paleontology), sedimentary geology (including petrology, basin analysis, sedimentation, stratigraphy, and petroleum geology), process geomorphology, Quaternary geology, structural geology, and regional tectonics.

**Degree Requirements**

Only the Plan A thesis option is allowed for the MS degree in Geology. The recommended distribution is 20 credits of coursework and 10 credits of thesis to obtain the required 30 credits for the MS degree. A minimum of five 6000-level geology courses (other than GEOL 6800) is recommended for the degree program. Only two grades of less than B (C to B-) will be accepted as part of the required degree program as listed on the “Program of Study for Master’s Degree.” A 3.0 grade point average must be obtained in required coursework as listed on the Program of Study. Thesis credits will be graded P-F only (i.e., no letter grade will be given). Geology graduate students using department or University facilities and/or under geology faculty supervision must register for a minimum of 3 credits every semester, up to and including the semester in which the thesis is cleared by the School of Graduate Studies. Registration may not be required during the summer.

**Research**

There are six broad areas of research emphasis within the department: (1) sedimentary geology, (2) structural geology (3) regional tectonics, (4) igneous petrology and geochemistry, (5) geomorphology, and (6) hydrogeology.

Research in sedimentary geology is diverse: sedimentation and development of coral reefs and associated carbonate environments during Pleistocene and Holocene times, changes in shallow-water carbonate environments through early Paleozoic time,
nonmarine siliciclastic depositional systems and petroleum reservoirs, geochemical provenance methods, and large-scale architecture of Mesozoic-Cenozoic intracontinental basins in Asia. Research activities are dominantly field-oriented, and often have a subsurface component. Studies are ongoing in the western United States, Mexico, the Caribbean, China, and west Africa.

Research in structural geology includes the examination of the mechanical and chemical evolution of fault zones, the development of fold-and-thrust structures in Idaho, Montana, Wyoming, and Utah, and the characterization of fluid-flow properties in fractured crystalline rocks.

Research in regional and global tectonics examines the structural and tectonic development of extensional structures in the Great Basin and Salton Trough; collisional and accretionary tectonics in the Western U.S., Pakistan, and the southern Appalachians; the relationship of ophiolites to active margin processes; and the application of basin analysis to the tectonics of basin formation and large scale crustal structures in China, Mongolia, Pakistan, and west Africa.

Research in igneous petrology and geochemistry focuses on the origin and evolution of basic to intermediate magmatic systems, and their relationship to global tectonic processes. Current projects include plume-related volcanism and its interaction with continental lithosphere in the Snake River Plain, Idaho; the origin and tectonic evolution of accreted arc terranes; the multi-stage origin of ophiolites; and the formation and evolution of lunar highlands crust.

Geomorphology research includes the study of climate and anthropogenic controls on landscape change and sedimentation; controls on alluvial stratigraphy; hillslope processes; numerical modeling of climate controls on basin stratigraphy; Quaternary landscape evolution of the Grand Canyon; and the integration and evolution of the Colorado River.

Research activity in hydrogeology includes wellhead protection in confined to semiconfined aquifers, the relationships between stream losses and water table depths, and the identification and geochemical characterization of groundwater recharge to surface streams.

Geology faculty members commonly interact with the faculty and staff of the Utah Water Research Laboratory; the College of Natural Resources; the Department of Plants, Soils, and Biometeorology; and the Department of Civil and Environmental Engineering.

**Financial Assistance**

Departmental financial support for incoming graduate students consists primarily of graduate teaching assistantships, which are awarded on a competitive basis. There is often other financial support available, such as research assistantships, resulting from grants or other external funding. Students requesting financial support should apply directly to the department no later than February 15. Admission to the MS program does not guarantee financial assistance.

**Additional Information**

Additional information on the research activities of faculty and graduate students may be obtained directly from the Department of Geology’s website at [http://www.usu.edu/geoldept](http://www.usu.edu/geoldept).

**Geology Faculty**

**Professors**

- James P. Evans, structural geology, structural petrology
- W. David Liddell, marine ecology, paleoecology, sedimentology
- John W. Shervais, igneous petrology, geochemistry

**Adjunct Professors**

- Lynn M. Dudley, soil chemistry
- David G. Tarboton, water resources and hydrology

**Professor Emeritus**

- Robert Q. Oaks, Jr., sedimentary petrology, stratigraphy

**Associate Professors**

- Donald W. Fiesinger, igneous petrology, Dean of College of Science
- Susanne U. Jancke, tectonics, structural geology
- Peter T. Kolesar, carbonate petrology, geochemistry
- Thomas E. Lachmar, hydrogeology

**Adjunct Associate Professors**

- Janis L. Boettinger, soil mineralogy
- John C. Schmidt, fluvial geomorphology

**Assistant Professors**

- Joel L. Pederson, process geomorphology, Quaternary geology
- Bradley D. Ritts, basin analysis

**Research Assistant Professor**

- Carol M. Dehler, sedimentation, geochemical cycles

**Adjunct Assistant Professor**

- David G. Chandler, surface hydrology

**Course Descriptions**

Geology (GEOL), pages 404-406
Health, Physical Education and Recreation

Department Head: Craig W. Kelsey
Location: Health, Physical Education and Recreation 122
Phone: (435) 797-1498
FAX: (435) 797-3759
E-mail: hper@cc.usu.edu
WWW: http://www.coe.usu.edu/hper

Graduate Program Coordinator: Richard D. Gordin, Jr., HPER 147, (435) 797-1506, gordin@cc.usu.edu

Undergraduate Academic Advisors:
Health Education Specialist Major and Parks and Recreation Major: Mary Lou Reynolds, HPER 111B, (435) 797-1278, reynolds@cc.usu.edu
Physical Education Major: Suzanne D. Stones, HPER 111C, (435) 797-1495, suzies@cc.usu.edu
(Note: During the summer months, the advisor for the Physical Education Major is Mary Lou Reynolds.)

Degrees offered: Bachelor of Science (BS) in Health Education Specialist; BS in Parks and Recreation; BS in Physical Education; Master of Science (MS) and Master of Education (MEd) in Health, Physical Education and Recreation

Undergraduate emphases: BS in Health Education Specialist—School Health and Community Health; BS in Physical Education—Exercise Science, Pre-Physical Therapy, and Teaching

Graduate specializations: MS—Corporate Wellness, Exercise Science, and Health Education

Undergraduate Programs

Objectives

Undergraduate Programs of Study. The Health, Physical Education and Recreation (HPER) Department offers undergraduate programs of study designed to prepare USU students for successful careers in one of three areas: Health Education Specialist, Physical Education, or Parks and Recreation. Preparation is accomplished through well-rounded, rigorous course requirements.

Activity Courses. USU students are served by an extensive elective lifetime-skill activity course program. The number and diversity of courses encourages students to increase their lifetime participation skills and enjoy opportunities, creativity, and expression. Students may also achieve and maintain a high level of personal fitness and adopt a proactive lifestyle conducive to health and well-being.

Recreational and Intramural Activities. The intramural program is planned and conducted to meet the needs of all students regardless of skill or ability. The major objectives are to offer a wide variety of sports experiences, to encourage lifetime sports participation, to develop habits of fair play, and to provide leadership experiences. The intramural concept not only embraces the traditional highly-organized program with teams, leagues, and tournaments, but also voluntary free play activities where opportunities are provided for physical recreation for all segments of the University community.

Departmental Admission Requirements

Health Education Specialist Majors and Minor. New freshmen, transfer students, and students from other USU majors who have at least a 2.75 total GPA qualify to enter the Health Education Specialist pre-major. Students must formally apply to the School Health emphasis and minor. Pre-major/minor coursework must be completed before application to the school health major or minor. Pre-major coursework for the School Health emphasis includes: ENGL 1010, Breadth Humanities, NFS 1020, BIOL 2000, 2010, MATH 1050 or STAT 1040 (or higher), Breadth Physical Sciences, FCHD 1500, Breadth Creative Arts, and Breadth American Institutions. Pre-minor coursework for the School Health minor includes: ENGL 1010, BIOL 2000 or 2010, HEP 2500, MATH 1050 or STAT 1040 (or higher), and NFS 1020. For application materials and deadlines, contact the HPER Department Main Office (PE 122). No formal application is required for the Community Health emphasis; however, students must complete at least 30 credits and must have at least a 2.75 total GPA before they will be considered Health Education Specialist majors.

Physical Education Majors and Minor. New freshmen, transfer students, and other USU majors who have at least a 2.75 total GPA qualify to enter the Physical Education major. A 2.75 total GPA is also required for the Physical Education Coaching minor. Students who are qualified to enter the Physical Education Coaching minor should enroll in the advising office.

Parks and Recreation Major and Minor. New freshmen, transfer students and students from other USU majors who have at least a 2.5 total GPA qualify to enter the Parks and Recreation major or minor.

Course Requirements

Health Education Specialist Major. All students in the Health Education Specialist major must complete the following 30 credit hour core: BIOL 2000, 2010; NFS 1020; HEP 2000, 2500, 3000, 3200, 3600, 4200, 5100. In addition, students must complete requirements for either the Community Health Emphasis or the School Health Emphasis, and must achieve a C- or better grade in all HEP courses. A 2.75 total GPA is required for graduation.

Community Health Emphasis. The Community Health emphasis offers a program of study leading to a Bachelor of Science degree as a Health Education Specialist. The emphasis requires a total of 72 credits. Students must complete the Health Education Specialist 30-credit core, and the Community Health Education 36-credit core which consists of the following: HEP 3800, 3900,
School Health Emphasis. The School Health emphasis offers a program of study leading to a Bachelor of Science degree as a Health Education Specialist, and is an approved teaching major through the Department of Secondary Education. The emphasis requires a total of 74 credits. It is also necessary for students to complete an approved teaching minor (credits will vary). Students must complete the Health Education Specialist 30 credit core, the Secondary Education 35 credit core, and the School Health Education 9 credit core. The School Health Education core includes: FCHD 1500; HEP 3100, 4500; and the 35-credit professional education framework for secondary teacher preparation. (HEP 4400 is included in the professional education framework.)

School Health Minor. The School Health minor requires a total of 32 credit hours. Required courses include: BIOL 2000 or 2010; FCHD 1500; HEP 2000, 2500, 3000, 3100, 3200, 4500, 5100; NFS 1020. (HEP 4400 is included in the professional education framework.)

Parks and Recreation Major. The HPER Department offers a program of study leading to a Bachelor of Science Degree in Parks and Recreation. This program prepares students to become professionals in the areas of public, private, commercial, therapeutic, voluntary, and special service settings of parks and recreation. Graduates of the program will be capable of directing, planning, designing, managing, and administering parks and recreation programs. The Parks and Recreation major requires 51 credits. The following courses are required: PRP 1000, 2500, 3000, 3100, 3500, 3750, 3900, 4000, 4300, 4400, 4700, 4750, 5000; BIS 1400 or INST 5400. In addition, the student must choose 6 credits from the following courses: LAEP 1030; ENVS 4130, 4500, 4600; HEP 2000, 3400; PRP 1500, 4200; up to 3 credits in three different activity courses numbered PE 1000-2000. Students must also complete an outside minor, which must be approved by the HPER Department. Instead of a minor, Parks and Recreation majors may elect to complete a Therapeutic Recreation Track (22 credits). Required courses include: BIOL 2000, 2010; FCHD 1500; PSY 1010, 3210. Students must also choose two courses from the following: PSY 1100, 1210, 2100; REH 1010; SOC 3410; SPED 4000. Additionally, students must complete PRP 4200 as part of their major electives. A 2.5 total GPA is required for graduation.

Parks and Recreation Minor. A minor in Parks and Recreation consists of a minimum of 20 credits of coursework selected from the core courses and electives listed below. The required courses in this minor include PRP 1000, 1500, 2500, 3000, and 3500. In addition, students must select 5 credits from the following courses: PRP 3100, 3900, 4000, 4300, and ENVS 4500.

Physical Education Major: Exercise Science Emphasis. The Physical Education Exercise Science emphasis consists of 51 credits of coursework leading to a Bachelor of Science Degree in Physical Education. The following courses are required: PEP 2000, 3100, 4100, 4200, 4400; HEP 2500; PE 3000. (The prerequisites for these courses include: BIOL 2000, 2010; MATH 1050.) No fewer than 5 credits must be taken from the following: HEP 2000, 3200, 3400; PEP 4000, 5070, 5430. A minimum of 4 credits (including lab) must be taken from the following: BIOL 1010, 1020, 1210, 1220, 3200, 5190. At least 3 credits must be taken from the following: CHEM 1010, 1110, 1120, 1150, 1210, 1220, 1230, 1240. No fewer than 3 credits must be selected from the following: PHYX 1100, 1200, 2110, 2120; PSY 1010, 2100, 2800, 3210; NFS 1020, 3020; STAT 1040. Three (3) different Physical Education Activity Classes must be taken to complete the required coursework. A 2.75 total GPA is required for graduation.

Physical Education Major: Pre-Physical Therapy Emphasis. The Physical Education Pre-Physical Therapy emphasis consists of 69 credits of coursework leading to a Bachelor of Science Degree in Physical Education. Please note that it is the student’s responsibility to check with the individual physical therapy schools concerning courses required for admission. The HPER Department will not guarantee admission into physical therapy school. The following courses are required: PEP 2020, 3100, 4100, 4200, 4250, 4400; PE 3000; PHYX 2110, 2120. (The prerequisites for these courses include: BIOL 2000, 2010; MATH 1050; MATH 1100 or 1210; PHYX 2110.) A minimum of 4 credits (including lab) must be taken from the following courses: BIOL 1010, 1020, 1210, 1220, 3200, 5190. (The prerequisites for these courses include: BIOL 1210, 1220, 3200; MATH 1050; CHEM 3700.) A minimum of 9 credits (including lab) must be taken from the following courses: CHEM 1110, 1120, 1130; or CHEM 1210, 1220, 1230, 1240. (The prerequisites for these courses include: MATH 1050; CHEM 1210, 1230.) A minimum of 6 credits must be taken from the following courses: MATH 1100 or 1210; STAT 1040 or PSY 2800. (The prerequisites for these courses include: MATH 1050 for MATH 1100; MATH 1050 and 1060 for MATH 1210; MATH 0900, STAT 1040.) A minimum of 3 credits must be taken from the following courses: PSY 1210, 2100, 3210. (The prerequisite for these courses is PSY 1010.) A 3.0 total GPA is required for graduation.

Physical Education Major: Teaching Emphasis. The Physical Education Teaching emphasis requires 90 credits of coursework and leads to a Bachelor of Science Degree in Physical Education with a K-12 teaching license. The following courses are required: PEP 2000, 2100, 2200, 2300, 2400, 2500, 3050, 3100, 3200, 3350, 3400, 3500, 4000, 4100, 4200, 4350, 4400. (The prerequisites for these courses include: BIOL 2000, 2010; MATH 1050; HEP 2000; PE 3000.) Students must also complete PEP 4500. In order to obtain a teaching license, students must complete the 35-credit Secondary Teacher Education Program (STEP). Students also need to complete a teaching minor. A 2.75 total GPA is required for graduation.

Physical Education Coaching Minor. The Physical Education Coaching minor requires 24 credits of coursework, plus 20 credits of prerequisite courses. The following courses are required: PEP 3100, 3200, 4000, 4100, 4350, 4400. (The prerequisites for these courses include: BIOL 2000, 2010; MATH 1050; HEP 2000; PE 3000.) Students must complete three of the following courses: PEP 2100, 2200, 2300, 2400, 2500. Students must complete two of the following courses: PEP 3350, 3400, 3500. In addition, students must complete PEP 2050 and 4500. In order to obtain a teaching certificate, the following additional coursework is required: PEP 3300 or 4300, and PEP 4900. Courses within the Secondary Teacher Education Program (STEP) are also required.
Additional Information

Updated information concerning undergraduate courses and major or minor requirements can be obtained from the HPER Department, or check the departmental home page at: http://www.coe.usu.edu/hper.

Financial Support

The College of Education and Human Services distributes scholarship applications beginning in January of each academic year. For information on those scholarships awarded by the HPER Department, visit the departmental office in HPER 122.

Graduate Programs

Please refer to the general admission requirements on pages 90-91 of this catalog. In addition, the letters of recommendation must be written by professionals in health or physical education who know the applicant and his/her work well. Students with fewer than 12 credits of undergraduate health or physical education coursework must make up any deficiencies before being granted matriculated status. Basic competencies that have not been acquired through courses or experience may be obtained by completing prerequisite undergraduate courses without credit. Other nongraduate credit courses may be required by the admissions committee. Students with weak oral or written English skills will be required to take remedial work or complete undergraduate or Intensive English classes.

Degree Programs

Master of Science. The MS is available for students who plan to teach, provide community leadership, or do further graduate or research study.

Master of Education. The MEd is designed for students desiring to improve teaching competencies.

Specializations

MS students may select an area of emphasis for research and study from the following specializations: Corporate Wellness, Exercise Science, and Health Education.

Course Requirements

Core Courses

MS candidates specializing in Corporate Wellness must complete the following courses: EDUC 6570; HEP 6800; PEP 6290, 6400, 6450, 6500, 6540, 6800, 6810; and PSY 6470.

MS candidates specializing in Exercise Science must complete PEP 6400, 6800, 6810, 6970; EDUC 6570. Eleven credits must be selected from the following: PEP 6050, 6070, 6420, 6430, 6450, 6540, 6830; HEP 6100; EDUC 6600.

Research

Research areas include health promotion, health education, exercise science, corporate wellness, sport psychology, sport in society, biomechanics, and pedagogy.

Financial Assistance

Teaching and research assistantships are available through the HPER Department and are awarded on a competitive basis. Application for the assistantships must be made by March 15 to the department head. A formal application for admission must be submitted to the School of Graduate Studies at the same time as the application for an assistantship. A recipient of a graduate assistantship is usually eligible for a waiver for the out-of-state portion of his or her tuition.

Additional Information

Additional and/or updated information about graduate courses and programs may be obtained from the HPER Department, or check the departmental home page at: http://www.coe.usu.edu/hper.

Health, Physical Education and Recreation Faculty

Professors

Richard D. Gordin, Jr., motor learning, sport psychology
Craig W. Kelsey, parks and recreation

Professors Emeritus

Lanny J. Nalder, corporate wellness, exercise physiology, preventive and post-coronary exercise rehabilitation
Robert E. Sorenson, health and wellness, stress management

Associate Professors

Hilda Fronske, motor learning
Julie A. Gast, community health, multicultural health issues, women’s health
Donna L. Gordon, health promotion
Edward M. Heath, exercise physiology
Arthur R. Jones, recreation administration
John M. Kras, administration, history, philosophy and sociology of sport
Dennis A. Nelson, family recreation, multicultural education, recreation programming
Rolayne Wilson, elementary physical education
Course Descriptions

Health Education Professional (HEP), pages 408-409
Physical Education Professional (PEP), pages 454-456
Parks and Recreation Professional (PRP), page 466
Physical Education Activity (PE), pages 452-454
Dance West Summer Classes (DE), page 375
History

Department Head: Norman L. Jones
Location: Main 323
Phone: (435) 797-1290
FAX: (435) 797-3899
TTY: (435) 797-1290
E-mail: mingold@hass.usu.edu
WWW: http://www.usu.edu/history

Graduate Program Coordinator: Michael L. Nicholls,
Main 310, (435) 797-3791, nicholls@hass.usu.edu

Director of Undergraduate Studies: Denise O. Conover,
Main 321H, (435) 797-0870, conoverd@hass.usu.edu

Degrees offered: Bachelor of Science (BS), Bachelor of Arts (BA), Master of Science (MS), Master of Arts (MA) in History; participates in Master of Social Sciences (MSS)

Undergraduate Programs

Objectives

The Department of History offers a flexible program to accomplish the following objectives:

1. To train undergraduates to research, analyze, synthesize, and communicate reasonable conclusions about the past by using the historical method.

2. To inculcate cultural literacy and provide the knowledge necessary for informed decision-making by citizens of Utah, the United States, and the world.

3. To provide students with crucial work skills in research, analysis, communication, and collaboration, as well as enriching their lives.

4. To contribute to the liberal arts curriculum of the University through general education, general interest courses, the history major, the history teaching major, minors in history and classics, and the interdisciplinary programs of folklore, American studies, and British and commonwealth studies.

History is a reading- and writing-intensive program.

Requirements

Departmental Requirements. New freshmen accepted in good standing by the University may apply for admission to the History Department. Students transferring from another institution or another major will be admitted if they have a minimum 2.5 GPA in history courses and an overall minimum GPA of 2.5. A minimum 2.75 GPA is required for entry into the teacher education program.

Candidates for a degree must earn a grade of C or better in all history courses used to meet the requirements for a history major or minor, a history teaching major or teaching minor, or a classics minor.

Bachelor of Arts (BA) Degree in History

The BA degree requires a minimum proficiency in a foreign language. This proficiency may be established in one of the following ways:

1. 16 credits in a single language.

2. Documentation of a proficiency level of “intermediate low” or better through an examination administered by the USU Department of Languages, Philosophy, and Speech Communication.

3. Completion of any upper-division foreign language course constituting a third-year course of study with a grade of C or higher.

Bachelor of Science (BS) Degree in History

The BS degree in history requires 15 credits of math and science beyond the University Studies requirements. Of the 15 credits, 3 must be earned in a statistics course, preferably in social science statistics. The remaining 12 credits must include a course series from the following list: BIOL 1210, 1220; CHEM 1210, 1220; GEOL 1150, 3200; PHYX 2110, 2120, 2210, 2220.

History Major. Thirty-six credits of history coursework are required. A grade of C or better must be earned in all history courses used for the major. Each major must complete one of the following three courses in the area of premodern civilization: HIST 1020, 1040, or 1060. Each major must complete one of the following two courses in the area of modern civilization: HIST 1030 or 1050. Each major must complete one of the following two courses in the area of American history: HIST 2700 or 2710. (If a student has taken HIST 1700 on another campus or at USU before entering the History Major, this course may be counted toward meeting the American history survey requirement.) No student, including transfer students, may count more than 12 credits of lower-division coursework toward the history major. Every senior must take HIST 4990, the capstone course for the major. Students should complete their remaining 21-24 credits by taking 3000- and 4000-level history courses. Since new courses may be approved from time to time, any upper-division course listed in the current Schedule of Classes under History is acceptable.

No more than 3 credits of HIST 4930 may be applied toward the major.

Since the study of history requires an understanding of many fields of human endeavor, students majoring in history must select a minor. Historians are encouraged to take electives in fields that will broaden their knowledge of the world and are closely allied to history, such as literature, economics, geography, anthropology, political science, sociology, classics, philosophy, or foreign language.

Students wishing to undertake graduate work should pursue the BA degree. During their senior year, they should take the graduate record exam (GRE).

History Teaching Major. Thirty-nine credits, earned in history courses, are required. A grade of C or better must be earned for all history courses used for the major. Each major must complete one of the following three courses in the area of premodern...
civilization: HIST 1020, 1040, or 1060. Each major must complete one of the following two courses in the area of modern civilization: HIST 1030 or 1050. Each major must complete one of the following two courses in the area of American history: HIST 2700 or 2710. (If a student has taken HIST 1700 on another campus or at USU before entering the history teaching major, this course may be counted toward meeting the American history survey requirement.) No student, including transfer students, may count more than 12 credits of lower-division coursework toward the history teaching major. Every history teaching major must take one of the following three courses as a senior capstone course: HIST 4850, 4860 or 4870. Students should complete their remaining 24-27 credits by taking 3000- and 4000-level history courses. A minimum of two courses must be taken from each of the following areas: U.S. history, European history, and world history. Since new courses may be approved from time to time, any upper-division course listed in the current Schedule of Classes under History is acceptable. To become licensed to teach history, students must be admitted to the Secondary Teacher Education Program (STEP). A 2.75 GPA is required for admission, as well as a writing test, a speech and hearing test, and a background check. Application should be made as soon as practical after the history teaching major has begun. Applications for admission are available in the History Department office. The STEP requires 35 credits of coursework, in addition to the 39 credits of history courses. For additional information about the STEP, contact Harold Heap, secondary education undergraduate advisor, (435) 797-2222.

All teaching majors must also have a teaching minor in an area for which teaching licensure can be granted.

No more than 3 credits of HIST 4930 may be applied toward the major.

Minor in History. Twenty-one credits are required. A grade of C must be earned in all history courses used for the minor. Every student must complete one of the following three courses in the area of premodern civilizations: HIST 1020, 1040, or 1060. Every student must complete one of the following two courses in modern civilization: HIST 1030 or 1050. Every student must complete one of the following courses in the area of American history: HIST 2700 or 2710. (If a student has taken HIST 1700 on another campus or at USU before entering the history minor, this course may be counted toward meeting the American history survey requirement.) No student, including transfer students, may count more than 12 credits of lower-division coursework toward the history teaching major. Every history teaching major must take one of the following three courses as a senior capstone course: HIST 4850, 4860 or 4870. Students should complete their remaining 9-12 credits by taking 3000- and 4000-level history courses.

No more than 3 credits of HIST 4930 may be applied toward the minor.

History Teaching Minor. Twenty-four credits are required. A grade of C or better must be earned in all history courses used for the minor. Every student must complete one of the following three courses in premodern civilization: HIST 1020, 1040, or 1060. Every student must complete one of the following two courses in modern civilization: HIST 1030 or 1050. Every student must complete one of the following courses in the area of American history: HIST 2700 or 2710. (If a student has taken HIST 1700 on another campus or at USU before entering the history teaching minor, this course may be counted toward meeting the American history survey requirement.) No student, including transfer students, may count more than 12 credits of lower-division coursework toward the history minor. All teaching minors in history must take one of the following: HIST 4850, 4860 or 4870. Students should complete their remaining 9-12 credits by taking 3000- and 4000-level history courses.

No more than 3 credits of HIST 4930 can be applied toward the minor.

Classics Minor with Emphasis in Civilization. Twenty-one credits of coursework are required. All students must take HIST 3130 and 3150. They must take one of the following three courses in ancient archaeology: HIST 3110, ANTH 1030, or ANTH 3170. They must take one of the following three ancient literature courses: CLASS 1100, 3210, or THEA 5290. They must take one of the following three ancient art courses: HIST 3110, 4210, or ART 4710. They must take one of the following two ancient thought courses: POLS 4310 or PHIL 3100. The remaining 3 credits are elective and may include any of the courses listed above.

Classics Minor with Emphasis in Latin Language. Thirteen credits are required. All students must complete HIST 3150 and 7 credits of upper-division (3000- and 4000-level) courses in Latin language. They must also complete one of the following courses: ART 4710, CLAS 1100, 3210, HIST 4210, or THEA 5290.

Classics Minor with Emphasis in Greek Language. Thirteen credits are required. All students must complete HIST 3130 and 7 credits of upper-division (3000- and 4000-level) courses in classical Greek language. They must also complete one of the following courses: ART 4710, CLAS 1100, 3210, PHIL 3100, or THEA 5290.

Academic Opportunities

Departmental Honors in History. Students in the department with a minimum GPA of 3.5 may apply to pursue an honors degree in history. Those interested should consult the department honors coordinator.

Phi Alpha Theta. History students with a minimum GPA of 3.1 in history classes and an overall minimum GPA of 3.0 are eligible for membership in the national history honor society, Phi Alpha Theta. Those interested should consult the faculty advisor for Phi Alpha Theta.

Undergraduate Teaching Fellows. The UTF program is designed to provide students, particularly potential teachers, with the opportunity to assist professors and, thereby, learn first-hand about the nature of the profession. UTFs must maintain a minimum GPA of 3.0 and be sponsored by a professor. Application forms are available in the History Department office.

Additional Information

For updated information concerning programs and courses offered by the Department of History, visit the departmental web page at http://www.usu.edu/history.
Financial Support

Scholarships, grants-in-aid, and work-study programs are available through the University. The History Department offers tuition waivers and scholarships to outstanding students. In addition, undergraduates may be employed as research assistants and clerical assistants within the department. For current information on scholarships and employment opportunities, consult the department head.

Graduate Programs

Admission Requirements

Graduate applicants may be admitted to the program for either the master of arts or master of science in history if they meet the following qualifications: (1) hold a baccalaureate degree; (2) have at least a 3.0 cumulative GPA over the last 60 credits of undergraduate work, with a 3.5 GPA in history courses recommended; (3) submit Graduate Record Examination (GRE) general test scores, with a required minimum score at the 40th percentile on the verbal section, and a recommended minimum score at the 40th percentile on both the quantitative and analytical portions of the exam; (4) submit three letters of recommendation from persons acquainted with the applicant’s academic performance and potential; and (5) submit a brief statement of proposed fields of interest and career goals.

The Department of History also strongly recommends that applicants have either an undergraduate major or minor in history or a closely related field (i.e., American studies, classics). Familiarity with one or more foreign languages is highly desirable and is required for the master of arts degree and for master’s level research in many fields of history. Applications will be strengthened by the submission of an example of the student’s historical writing, such as a paper (about 15 pages in length) written for a seminar or upper-division course.

The final recommendation for admission will be made upon consideration of all the above factors by the department and the School of Graduate Studies.

Degree Programs and Additional Requirements

Master's Degree, Plan A (Thesis). The thesis option should be taken by anyone intending to do research or enter another program for the doctoral degree. A master of arts, master of science, or master of social sciences degree can be completed with this option.

The program consists of 30 semester credits beyond the bachelor’s degree, 6 credits of which must be in thesis research. Students must take HIST 6000, as well as either HIST 6010 or 6020, or another theory-intensive course approved by the director of graduate studies. Students may apply a maximum of 4 internship credits earned while working in an archives, for a museum, on the staff of a scholarly journal, or as a teaching intern in an upper-division undergraduate course.

The remainder of the 30 credits may be taken as electives in history or related courses relevant to the student’s program.

Upon arrival at USU, students are urged to meet with the departmental graduate advisor, who will direct them to one or more faculty members with similar interests. Through consultations with the graduate and faculty advisor, the first-year student will form a thesis committee and formulate a course of study. By the end of the first year, most students will have submitted to their committees a proposal for the thesis, which they will write under the close supervision of the committee members. The oral defense usually takes place in the spring semester of the second year.

Master’s Degree, Plan B (Nonthesis). A nonthesis master’s program can help a student attain employment in many areas, but is not recommended for students planning to secure a doctorate. A master of arts, master of science, or master of social sciences degree can be completed with this option.

The Plan B program consists of 30 credits beyond the bachelor’s degree. The course requirements are identical to those of the Plan A program, except that only 3 thesis credits are permitted.

Students completing the Plan B program do not write a full-length thesis. Instead, Plan B students write a research paper of approximately 30 pages in length and submit a portfolio of their graduate writing, which includes two additional and distinct pieces of writing. Students defend their Plan B research papers and writing portfolios before their major professor and the members of the supervisory committee. Final approval of the Plan B rests with the department, rather than with the School of Graduate Studies.

Master of Arts. To receive a master of arts (MA) degree, students must successfully complete two years of foreign language at the undergraduate level. If two years of undergraduate language study already appear on the student’s transcript, he or she must demonstrate current competence through successful completion of a language exam or by taking a 3000- or 4000-level language course for which a grade of B or higher proves competency. In all cases, an individual assessment must be made of a student’s language status. For further information, see page 95.

Students planning to continue on for a doctorate should be aware that many doctoral programs in history require that students pass written proficiency exams in two languages.

Master of Science. To receive a master of science (MS) degree in history, students may be required to demonstrate, to the satisfaction of their supervisory committee, the ability to incorporate scientific methodologies in their research as appropriate.

Master of Social Sciences (MSS). Like the MA and MS in history, the MSS degree requires a minimum of 30 credits, including 15 credits in the major discipline of history, plus a minimum of 15 credits from one of the following two tracks. Track A: a minimum of 15 credits from two approved minor areas, with at least two courses in each minor area. Track B: a minimum of 15 credits from an approved minor and a liberal arts and sciences cluster, with at least two courses in the minor and two courses in the cluster. Accepted minor disciplines include instructional technology, environment and society, political science, psychology, and sociology/anthropology. This degree is designed for secondary school teachers who need more training to obtain licensure in additional teaching fields or who simply wish to deepen their understanding of a related field.

Students in the MSS program are required to take HIST 6000 and 3 credits of HIST 6970 for their Plan B. A supervisory committee consists of a major professor in history and two committee members, each representing one of the student’s minor fields. MSS students, like other Plan B students in history, must write a research paper of approximately 30 pages and submit a portfolio of their graduate writing that consists of two separate and distinct pieces of work, one from each of their two minor fields. An oral
defense of the student’s Plan B paper and portfolio is held before the student’s supervisory committee.

Additionally, the master of social sciences (MSS) in history requires students to demonstrate an understanding of statistical applications in the social sciences.

**Financial Assistance**

The primary financial assistance offered by the Department of History is through graduate assistantships. Each year, the History Department offers qualified students, on a competitive basis, a total of seven graduate assistantships. These assistantships entail approximately 20 hours of work per week, assisting faculty members with departmental introductory survey courses. The award carries a stipend and an out-of-state tuition waiver. To keep their assistantships, graduate assistants must maintain a GPA of 3.0 (or a B average) and be a full-time student (see page 89). While enrolled in the MA or MS program, graduate assistants may hold graduate assistantships for a maximum of two years. Applications for graduate assistantships should be postmarked no later than February 1, for the upcoming academic year.

Graduate students may be eligible for Carr Scholarships to supplement their graduate assistantships. Competitive grants to support travel and research are also available to history graduate students.

In addition, financial assistance is available through the *Western Historical Quarterly*, a journal published at USU. The editors of the journal offer, during alternate years, the S. George Ellsworth Editorial Fellowship and the Robert M. Utley Editorial Fellowship. These fellowships are awarded to highly qualified students working as editorial assistants in that office. These fellowships are nationally competitive and allow graduate students to learn all aspects of journal production. They carry a stipend (with additional funding possible during the summer) and a waiver of the out-of-state portion of the tuition. Materials should be postmarked no later than February 1, for the upcoming academic year. Applicants will be notified in early April.

Funding for the S. George Ellsworth Fellowship is provided by the *Western Historical Quarterly*, the School of Graduate Studies, the College of Humanities, Arts and Social Sciences, and the S. George Ellsworth Endowment of the Mountain West Center for Regional Studies. The S. George Ellsworth Fellowship is being offered for the 2005-2006 academic year.

Funding for the Robert M. Utley Fellowship is provided by the *Western Historical Quarterly* and the School of Graduate Studies. The Robert M. Utley Fellowship is being offered for the 2004-2005 and 2006-2007 academic years. For further information about *Western Historical Quarterly* fellowships, write to: *Western Historical Quarterly*, Utah State University, 0740 Old Main Hill, Logan UT 84322-0740; or send e-mail to: cdoyle@hass.usu.edu.

The application deadline for both fellowships is February 1, for the upcoming academic year.

**Additional Funding.** In addition to graduate assistantships and the *Western Historical Quarterly* editorial assistantships, the School of Graduate Studies awards a limited number of scholarships. To be eligible for these awards, all students should complete the application for admission and send it, along with GRE scores and letters of recommendation, to the School of Graduate Studies by February 1. A financial aid application form (which may be obtained from the History Department) should be returned to the History Department by February 1.

Students interested in establishing eligibility for federal loans and work-study will need to complete the Free Application for Federal Student Aid (FAFSA) and submit it to: Financial Aid Office, Utah State University, 1800 Old Main Hill, Logan UT 84322-1800. Questions about eligibility should be directed to the Financial Aid Office, tel. (435) 797-0173.

**Career Opportunities**

Some graduates of USU’s master’s program continue their formal education in PhD programs or law schools. Others find employment in the two-year college or secondary school systems, as teachers or administrators. Still others work for historical societies, museums, publishing firms, and a variety of enterprises in the private sector.

**Additional Information**

Current announcements and other information are posted to the History Department website, [http://www.usu.edu/history](http://www.usu.edu/history).

**History Faculty**

**Professors**

Jay Anderson, folklore, folklife, film studies
C. Robert Cole, England, modern European history
Kermit L. Hall, President of Utah State University, American legal history
Norman L. Jones, medieval, early modern Europe, Britain, Christianity
David R. Lewis, American Indian, environmental, Utah, editor of *Western Historical Quarterly*
Daniel J. McInerny, American intellectual history, Nineteenth Century
Leonard N. Rosenband, France, European economic and labor history
Frances B. Titchener, ancient Greece and Rome, Latin, Greek
Barre Toelken, folklore and folklife, director of Folklore Program

**Adjunct Professors**

Doran J. Baker, Electrical and Computer Engineering Department, history of science
Barry M. Franklin, Secondary Education Department, history of education
Christopher B. R. Pelling, Regius Professor of Greek, Oxford University: Classics

**Trustee Professor Emeritus**

Anne M. Butler, U.S. West, U.S. Women

**Professors Emeritus**

William F. Lye, Africa, India, Canada
F. Ross Peterson, U.S. modern political history, Black history

**Associate Professors**

Christopher A. Conte, Africa, world, and environmental history
Mark L. Damen, ancient world, theatre history, Latin, Greek
R. Edward Glazier, Russia and East Asia, associate dean of College of Humanities, Arts and Social Sciences
Peter Mentzel, Eastern Europe, Ottoman empire, Islamic civilization
Michael L. Nicholls, early American history
Colleen O’Neill, West, Native American, labor, associate editor of Western Historical Quarterly
Stephen C. Siporin, folklore, oral narrative folklore, folk art

Assistant Professors
Jennifer Ritterhouse, U.S. history, African-American history, U.S. South, women’s history
James Sanders, Latin America
Susan O. Shapiro, Greek intellectual history, ancient Greek and Latin language
Timothy S. Wolters, science and technology, American history

Adjunct Assistant Professors
Daniel M. Davis, photograph curator, U.S. West
Stephen C. Sturgeon, manuscript curator, Twentieth Century U.S. West, political, environmental history

Lecturer
Denise O. Conover, American diplomatic history, U.S. military, American civilization

Adjunct Instructors
Michael W. Johnson, Director of Utah History Fair, Mountain West Center for Regional Studies
Elaine Thatcher, Associate Director of Mountain West Center for Regional Studies

Course Descriptions
History (HIST), pages 409-413
Latin (LATN), page 430
Greek (GRK), page 408
Classics (CLAS), page 368
Honors Program

Director: David F. Lancy
Location: Merrill Library 374
Phone: (435) 797-2715
FAX: (435) 797-3941
E-mail: honors@cc.usu.edu
WWW: http://www.usu.edu/honors/

Program Coordinator: Christie L. Fox, Merrill Library 374,
(435) 797-3940, clf@cc.usu.edu

Staff Assistant: Kay Gamble, Merrill Library 374,
(435) 797-2715, kgamble@cc.usu.edu

Undergraduate Program

Overview

Utah State University’s Honors Program, established in 1966, provides an enhanced academic environment for highly motivated undergraduates. The Honors Program includes a community of scholars whose curiosity, creativity, and enthusiasm for learning foster educational achievement and personal growth.

Honors offers students intensive seminars, experimental classes, interdisciplinary courses, writing projects, leadership opportunities, and special activities. Participants may define independent study programs and design special research projects. Honors students work in close contact with professors in smaller classes; they pursue studies in greater depth than regular classes would allow. Participants also enjoy the company of other committed students who encourage and support one another’s intellectual growth and productivity. Honors students participate actively in their own education.

Honors serves students who work hard, raise questions, and seek answers. It is designed for students who want to go beyond minimum requirements and narrow specialties. The program benefits those who want to make the most of their university experience.

The Honors program maintains strict standards for both entering and completing its program. However, there are no extra fees to pay, and there are Honors options suitable for both entering freshmen and transfer students. The most important criterion for success is a student’s motivation and dedication to learning.

Entrance to the Honors Program

Students enter Honors at one of two points during their academic career. The majority will enter through the “Scholars Forum.” Students with strong academic qualifications, who plan to enroll at Utah State as freshmen, are automatically given membership in the Scholar’s Forum, which includes enrollment in a 1-credit online orientation class (HONR 2000H) and an appropriate Honors University Studies class. The Scholar’s Forum gives high-ability students the opportunity to explore various options to maximize the value of their undergraduate education. Many will elect to continue along the “Honors Pathway” until graduation.

Other students may elect to join Honors after they have completed all or nearly all of their General Education requirements. These students will initially enroll in HONR 2100H (Honors Inquiry Seminar), which will prepare them to pursue an Honors degree in their major (i.e., “Departmental Honors”).

Participation in Honors

To be eligible for entrance into Honors, a student must have a GPA of 3.50. To maintain eligibility and to graduate in Honors, a student must not allow her or his GPA to drop below 3.30. The Honors Office places students with a GPA of less than 3.30 on probation. A student with a GPA of less than 2.50 will be dropped from the program. Reinstatement can be requested if the GPA is raised to 3.30. Honors students must also register for one Honors class per semester in order to remain in the program.

Honors Degrees

Utah State University offers Honors Degrees designed to fill a variety of student needs. Members may work toward one of three degree options:

1. Department Honors. Requires 15 semester credits as specified in a Department Honors plan, including a senior thesis/project.

2. Department Honors with Honors in University Studies. Requires 27 semester credits including as many as 12 credits from the Honors Course List and at least 15 credits, including Honors senior thesis/project credits, in an approved Department Honors Plan.

3. University Honors. Requires 27 semester credits including at least 12 credits from the Honors Course List and as many as 15 credits, including Honors senior thesis/project credits, in an upper-division plan of study that has been approved by the Honors Director.

Listing of Honors Courses

Class offerings change frequently. For the most complete list, see the Honors Course List available in the Honors Program office, Merrill Library 374.

Course Descriptions

Honors (HONR), pages 413-414
Industrial Technology and Education

Department Head: Maurice G. Thomas
Location: Industrial Science 112E
Phone: (435) 797-1795
FAX: (435) 797-2567
E-mail: mthomas@cc.usu.edu
WWW: http://www.engineering.usu.edu/ite/

Graduate Program Coordinator: Edward M. Reeve,
Industrial Science 108, (435) 797-3642, fast@cc.usu.edu

Undergraduate Advisor: Ronnie Green, Engineering 312,
(435) 797-2790, ronnie@engineering.usu.edu

Degrees offered: Bachelor of Science (BS) in Technology and Industrial Education, BS in Aviation Technology—Maintenance Management, BS in Aviation Technology—Professional Pilot, A&P Certificate in Aircraft Maintenance Technician—Airframe & Powerplant, Master of Science (MS) in Industrial Technology

Undergraduate emphases: BS in Technology and Industrial Education—Technology Education and Trade and Technical Education

Undergraduate Programs

Objectives

The Department of Industrial Technology and Education offers degrees in two fields: technology education and aviation technology. The department values the integration of academic knowledge with hands-on technical skills. This is achieved by emphasizing the application of scientific and technological principles in extensive laboratory activities. The department strives to ensure that all graduates will obtain employment to match their interests and preparation.

The Technology and Industrial Education programs prepare graduates to teach in public schools, applied technology colleges, and community colleges. Aviation Technology—Maintenance Management graduates fill aviation maintenance management positions in government and industry. The Aviation Technology—Professional Pilot curriculum prepares graduates to be professional pilots. The A&P Certificate in Aircraft Maintenance Technician—Airframe & Powerplant provides training and FAA licensing for graduates to perform maintenance and repairs on aircraft.

Admission Requirements

Admission requirements are commensurate with those outlined for the University. See pages 15-18 in this catalog.

Professional Technology Program (PTP)

The Professional Technology Program (PTP) applies to the Aviation Technology—Maintenance Management major, as well as to the Aviation Technology—Professional Pilot major. The purpose of the program is to provide a quality education for students by requiring that they be fully prepared for upper-division coursework by having satisfactorily completed all required pre-professional courses.

Enrollment in upper-division ITE courses (3000-level and above) is available only to students who have been accepted into the PTP or into an appropriate graduate program or to students with a non-ITE major requiring a specific class. (Non-ITE majors may take a maximum of two upper-division ITE classes.)

To be eligible to apply for admission to a professional program, a student must be in good academic standing in the University and college, must achieve a grade of C- or better in every required preprofessional course, and must have an overall grade point average of 2.0 in required preprofessional coursework completed at USU.

A student can repeat no more than three of the required preprofessional courses in order to satisfy the PTP application and eligibility requirements. Multiple repeats of the same course are included in the total of three repeats. Audits count as a time taking a class unless prior written approval is obtained from the college academic advisor.

Although transfer credit accepted by the department and the college may be applied toward PTP admission requirements, the grades received will not be used in the USU GPA calculation. A final decision on admission of a transfer student into the PTP will not be made until after the applicant has completed at least 15 credits of acceptable coursework at USU.

Eligible students must apply for admission to the PTP during the semester in which they are completing the required preprofessional courses.

For all technology majors in the Professional Program, the following academic regulations apply in addition to University regulations:

1. A minimum GPA of 2.0 must be maintained in technology/math/science/business courses required for, or used as technical electives in, the chosen major. Courses which were part of the preprofessional program requirements and University Studies courses are not included in this GPA calculation.

2. No more than 6 hours of D or D+ credit may be applied toward meeting graduation requirements in technology/math/science/business classes.

3. College of Engineering courses may be repeated only once. Audits count as a time taking a class unless prior written approval is obtained from the department head. A maximum of three required or elective courses completed as part of a Professional Program can be repeated in order to meet graduation requirements. (Courses completed as part of a preprofessional program are not included in this total of three repeats.)
4. The P-D-F grading option may not be used in required or elective courses completed as part of a Professional Program. (The P-D-F grading option is approved for University Studies courses.)

5. The academic regulations listed above (1-4) apply to required coursework and any technology/math/science/business course which could be used to satisfy graduation requirements for the chosen degree. That is, once a student completes a particular technical elective, it becomes a required course for that student.

6. Students in violation of departmental or college academic regulations, no longer eligible for graduation, or not making satisfactory progress toward a degree, will be placed on probation.
   a. Students will be placed on probation if they (i) earn an F in a technology/math/science/business course which could be used to satisfy graduation requirements for the chosen degree (see item 5 above); (ii) have more than 6 hours of D credit (see item 2 above); or (iii) have a GPA of less than 2.0 (see item 1 above).
   b. Students remain on probation until they improve their standing by repeating and passing all failed classes, repeating classes to reduce the number of D credits to 6 or less, and/or by raising their GPA above 2.0.
   c. While on probation, a student must earn a semester GPA of 2.0 or higher in technology/math/science/business classes and must not earn any grades of D or F.

While on probation, a student may not preregister. The student’s major code will be changed to a preprofessional code. The student must meet at least once per semester with the college academic advisor to work out a schedule having the primary goal of correcting the existing academic problems.

Requirements

Bachelor of Science in Technology and Industrial Education

Technology Education. This emphasis prepares the student to teach in junior and senior high schools. The curriculum requirements include the following: ITE 1000, 1010, 1020, 1030, 1040, 1200, 2030, 2300, 3030, 3050, 3200, 3220, 3300, 3440, 4300, 4400, 5220, 5500, 5630; MATH 1050, 1060; ENGL 1400; PHYX 1800; Instructional Technology course (contact advisor for course number); SCED 3100, 3210, 3220, 3230, 3240; SPED 4000; ENGL 1010, 2010. Students are also required to complete a technical option (either ITE 1640 or ITE 4200). Students in this emphasis also take University Studies courses and electives. See major requirement sheet, available from the department, for further information.

Trade and Technical Education. This emphasis prepares the student to teach applied technology education classes at the high school or post-high school level. The curriculum requirements include the following: technical courses/work experience, 47 credits; professional courses, 27 credits, including INST 5200, ITE 3200, 3300, 3900, 3930, 4300, 4400, 4700, 5220, 5910, SPED 4000; University Studies, 24 credits; general electives, 9 credits; ENGL 1010, 2010; BIS 1400; MATH 1050; SPCH 1050; and STAT 2000.

State licensure requires a minimum of two years of approved vocational experience. Successful completion of a trade competency examination is accepted in lieu of vocational experience.

Bachelor of Science in Aviation Technology—Maintenance Management

Aviation Technology—Maintenance Management graduates are qualified to enter the work force in many rewarding career fields in aviation. Employment opportunities exist in target industries such as major airline carrier maintenance management, commuter airline maintenance management, fixed-base operator (FBO) maintenance, and Federal Aviation Administration (FAA) aircraft inspection after some field experience. This major has a great deal of depth in general maintenance, which applies to most industrial maintenance operations. Although the major’s focus is aviation, the knowledge and skills gained can be used in other fields.

The courses for Aviation Technology—Maintenance Management are as follows: ITE 1030, 1100, 1130, 1140, 1170, 1200, 1240, 2100, 2110, 2140, 2150, 2170, 2180, 2190, 2200, 2300, 2420, 2430, 2440, 3010, 3120, 3280, 3610, 4200, 4490, 4610, 4620; MATH 1050, 1060, 1100; PHYX 1800; STAT 2300; ENGL 1010, 2010; MHR 3110, 3710; and BIS 1400.

Students in Maintenance Management must also complete 10 credits of technical electives, which must be chosen from upper-division courses. Technical electives include: ITE 3030, 3230, 3410, 4250; BA 3700, 4720. Students in this degree also take University Studies courses and electives. See major requirement sheet, available from the department, for further information.

Bachelor of Science in Aviation Technology—Professional Pilot

Aviation Technology—Professional Pilot graduates are trained to be commercial pilots. The degree requirements include completion of the following FAA licenses: private, instrument, commercial, CFI, CFII, and Multi-Engine. The courses for this specialization are as follows: ITE 1100, 1130, 2170, 2180, 2300, 2330, 2350, 2430, 2510, 2520, 2540, 2550, 2620, 2660, 2720, 2740, 2860, 2880, 3010, 3120, 3140, 4280, 4490, 4660, 5400, 5410; MATH 1050, 1060, 1100; BMET 2000, 3250; ENGL 1010, 2010; BIS 1400, 1550; PHYX 1800; and MHR 3110. Nine credits of upper-division electives are required, chosen from the following list: MHR 3710, 3720; INST 5230, 5400; SOC 3320, 3500; PSY 4240; BIS 4350, 4550; PHIL 3520; and ITE 4250. Also 21 credits of University Studies classes and 7 credits of other electives (including upper-division courses) need to be taken to fulfill requirements for graduation. Prior to taking some of the courses required for this major, students must attain a 2.5 cumulative GPA.

A&P Certificate in Aircraft Maintenance Technician—Airframe & Powerplant. This two-year technical program emphasizes aircraft repair and maintenance. Required courses are: ITE 1030, 1130, 1140, 1170, 1200, 1240, 2100, 2110, 2140, 2150, 2170, 2180, 2190, 2200, 2300, 2420, 2430, 2440, 3200, 3280, 4200; MATH 1050, 1060; PHYX 1800; and ENGL 1010. FAA regulations require students to earn a 70 percent or higher score to pass each course.
Graduate Programs

The Master of Science (MS) degree in Industrial Technology is offered by the department. Candidates may choose either the Plan A thesis option or the Plan B nonthesis program.

Admission Requirements

See the general admission requirements for graduate study in this catalog (pages 90-91). Students applying for admission to the MS program must complete the GRE with a minimum quantitative and verbal score of 1,000 and a 40th percentile minimum score on the verbal and quantitative tests or must complete the MAT with a minimum score of 43. Admission committees also consider experience, undergraduate record, and formal recommendations.

MS Degree

The degree is designed for industrial educators who want to strengthen their background in current educational theory and practice. Students are required to complete a professional core of courses relating to technology education or applied technology education and to select additional courses from a list of related courses. Plan A requires a minimum of 30 semester credits, including a thesis. Plan B is a nonthesis option that requires 33 semester credits, including a creative project. The core courses for this specialization are as follows: ITE 6090, 6100, 6150, 6450, and 6750.

Financial Assistance

The department offers a limited number of graduate research and teaching assistantships. For further information, contact the Industrial Technology and Education Department.

Industrial Technology and Education Faculty

Professors
Kurt Becker, technology education, construction technology, computer aided drafting
Edward M. Reeve, technology education, communication technology
Maurice G. Thomas, technology education

Professor Emeritus
Jay C. Hicken, technology education, wood technology, power/energy/transportation

Associate Professors
Ward P. Belliston, computer electronics technology
Gary A. Stewardson, technology education, manufacturing technology
David P. Widauf, aviation technology

Assistant Professor
Kevin S. Garrity, aviation technology, professional pilot

Senior Lecturer
James L. Garrett, aviation maintenance

Lecturers
Randy Chesley, aviation maintenance
Gary R. Green, aviation technology, professional pilot

Chief Flight Instructor
Sean E. Heiner

Course Descriptions

Industrial Technology and Education (ITE), pages 420-424
Instructional Technology

Department Head: Byron R. Burnham
Location: Emma Eccles Jones Education 215A
Phone: (435) 797-2692
FAX: (435) 797-2693
E-mail: gbaird@cc.usu.edu
WWW: http://it.usu.edu/

Degrees offered: Master of Education (MEd), Master of Science (MS), Educational Specialist (EdS), Doctor of Philosophy (PhD) in Instructional Technology

Graduate specializations: MEd—Educational Technology, Information Technology and School Library Media Administration; MS and EdS—Instructional Development for Training and Education

Undergraduate Programs

Objectives and Requirements

There is no major in instructional technology at the undergraduate level because of the need for those preparing in the field to have especially strong general education knowledge as well as depth in a specialized field of study. The minors include School Library Media or Multimedia Development. The objectives and requirements of these minors are as follows:

School Library Media Minor Objectives
1. Provides students with library media skills.
2. Prepares students to receive a Utah Library Media Certificate.
3. Prepares students for employment as a School Library Media Specialist.

School Library Media Minor Requirements
This minor is available only through distance education. Those persons wanting to certify for positions in the public schools must complete a teaching certificate and the prescribed School Library Media minor. A 2.7 grade point average is required for admission and certification as a school library media specialist at the bachelor’s level. For detailed requirements, contact the department.

Multimedia Development Minor Objectives
1. Provides students with design skills.
2. Develops students’ multimedia production skills.
3. Prepares students for employment in the multimedia field.

Multimedia Development Minor Requirements
Persons not seeking a public school position may elect the minor in Multimedia Development, in conjunction with a major in other fields. The Multimedia Development minor is especially appropriate for fields which require computer-based instruction, such as business, computer science, engineering, communications, and others. For detailed requirements, contact the department.

Graduate Programs

Instructional Technology is a systematic way of designing, developing, implementing, and evaluating the processes of learning and teaching with specific objectives based on research in human learning and communication. It employs a combination of human and nonhuman resources to bring about more effective instruction. Instructional technology includes aspects of instructional design, product development, interactive learning technologies, multimedia, distance education, and library and information literacy. Each aspect of the field has unique contributions to make to the teaching-learning process.

The department offers specializations in Educational Technology, Information Technology and School Library Media Administration, and Instructional Development for Training and Education. A program emphasis in online learning communities in education and training is also offered.

Graduates are in demand in business and industrial settings, as well as in education, because of their preparation in training and instructional design. Admission to the graduate program is open to all students regardless of their undergraduate preparation.

Admission Requirements

See general admission requirements, pages 90-91. The MS and MEd admission requirements include a 3.0 GPA for the last 60 semester credits (90 quarter credits) and an MAT score or GRE verbal and quantitative scores at or above the 40th percentile. In addition, the department requires that those applying for the EdS program have a master’s degree, and a score at or above the 40th percentile on the verbal/quantitative tests of the GRE or 46 percent or above on the MAT. Those applying for the PhD program must have GRE verbal and quantitative test scores at or above the 40th percentile. Demonstrated writing and computer proficiency is required of all applicants. A minimum score of 550 on the TOEFL is required for all prospective international students.

Applications for all degree programs must be submitted to the School of Graduate Studies by January 31. Space permitting, additional qualified candidates will be considered until the beginning of summer semester. Students who wish to be considered for financial aid must submit applications by January 31 for the beginning of summer semester. All graduate students are expected to begin their programs in the fall semester.

Applications for the EdS and PhD programs who do not hold a master’s degree in Instructional Technology must complete additional course requirements.

No applications will be considered until all required information is received by the School of Graduate Studies.

Degree Programs

Master of Science (MS). This degree emphasizes instructional design and development, and prepares the graduate with skills to apply principles of instructional systems design to education and training. The program prepares instructional developers to take positions in corporate training programs in business and industry.
It also leads to careers in public and higher education, development of interactive learning technologies, telecommunications, distance education, and adult education.

The MS degree is available to qualified students with bachelor’s degrees from any field. Undergraduate students planning in advance for an MS in Instructional Technology should consider the department’s Multimedia Development minor as part of their bachelor’s program.

**Master of Education (MEd).** This master’s program is only available through extension and distance education via EDNET (a two-way audio/video system). The MEd degree is a two-year cohort rotation (i.e., students proceed as a group through the two-year program). To be successful in this master’s degree program, students should own or have access to a personal computer. They will also need an e-mail address and internet access in order to communicate with faculty members and other students in the program. Persons choosing the MEd have two specializations available: Educational Technology and Information Technology and School Library Media Administration.

The **Educational Technology** specialization is directed at public school educators and administrators who are interested in applying the principles of educational technology to the teaching/learning process. This specialization may lead to a position as a district-level or building-level educational technology specialist responsible for technology integration and in-service training related to computers and other technologies.

The **Information Technology and School Library Media Administration** specialization is directed at persons seeking employment in a school library media center. Students seeking this specialization must complete the School Library Media minor (available only through extension and distance education) and apply for a Utah State Library Media Certificate. This specialization may lead to a position as a district-level or building-level school library media specialist (K-12). The library media specialist is prepared to apply principles of library and information technology to help students and teachers. The library media specialist also understands the effective use of learning resources in the teaching/learning process.

**Educational Specialist Degree (EdS).** The Educational Specialist degree is intended for students interested in acquiring advanced skills in instructional technology beyond those of the master’s degree. This program involves coursework, independent study, practicum experiences, and a culminating experience. The degree requires a minimum of 30 credits beyond the master’s degree, providing the master’s degree was received in the instructional technology field. For students with a master’s degree in a field other than instructional technology, a minimum of 40 credits is required.

**Doctoral Degree (PhD).** The doctor of philosophy degree emphasizes research and theory building in instructional design and development. The degree offers advanced preparation for graduates seeking a career in higher education, research centers, or corporate training and development.

**Course Requirements.** Course requirements for all degrees are dependent upon the area of emphasis and are individually planned by the student and the supervisory committee. For planning materials and program details, contact the department.

**Financial Assistance.** Fellowships, assistantships, and other financial support are available and awarded on a competitive basis. Apply through the department.

### Instructional Technology Faculty

**Professors**
- Byron B. Burnham, adult learning
- J. Nicholls Eastmond, Jr., theory and evaluation
- Alan M. Hofmeister, research
- M. David Merrill, instructional design
- Barbara A. White, distance education

**Professors Emeriti**
- Don C. Smellie, foundations
- Ron J. Thoraldsen, research and interactive learning
- R. Kent Wood, theory, foundations

**Associate Professors**
- Mimi Recker, cognitive modeling, interactive learning
- J. Steven Soulier, message design, computer applications
- Linda L. Wolcott, distance education, library media, and foundations

**Assistant Professors**
- Joanne P. Bentley, learning theory and evaluation
- Brett E. Shelton, immersive technologies, cognitive studies
- David A. Wiley, learning objects, instructional design theory

**Research Assistant Professor**
- Charles G. Stoddard, school library media, technology education

**Adjunct Instructors**
- Val W. Dawson, instructional development
- JaDene M. Denniston, school library media
- Kevin L. Reeve, distance education
- Thomas M. Risk, multimedia development
- Nathan M. Smith, Jr., computer applications
- Marilyn Taylor, school library media

**Lecturer**
- Sheri Haderlie, Assistant Outreach Coordinator, technology for preservice teachers

### Course Descriptions

Instructional Technology (INST), pages 416-419
Intensive English Language Institute

Director: Glenda R. Cole
Location: Main 075
Phone: (435) 797-2059
FAX: (435) 797-4050
E-mail: gcole@cc.usu.edu
WWW: http://www.hass.usu.edu/~ieli/

Assistant Director: Thomas J. Schroeder, Main 073, (435) 797-1237, faschroe@cc.usu.edu

Undergraduate Advisor: Janel Campbell, Main 069, (435) 797-2081, janel.campbell@usu.edu

Objectives

The Intensive English Language Institute (IELI) is an academic program in the College of Humanities, Arts and Social Sciences. IELI teaches international students, residents, and refugees the English skills and cultural knowledge they need to be successful university students. IELI also trains international teaching assistants (ITAs) for USU. Information about the ITA training is available through the School of Graduate Studies.

The IELI program accepts students seeking a degree at Utah State University, as well as students who want to study English for personal or professional reasons. Students may enroll to study only English.

Undergraduate students who apply to USU without a TOEFL score of at least 173 computerized or 500 paper/pencil and graduate students applying without a minimum TOEFL score of 213 computerized or 550 paper/pencil must take the IELI Placement Examination, given the first day of each semester, including the first day of the IELI summer session. Based on the examination results, students will be required to study in the IELI or be exempted from further study and permitted to take classes in their major fields.

Curriculum

Four levels of study are offered each semester. The ability levels of classes range from elementary through advanced. Several of the level 1 and 2 classes are combined into multilevel classes. Classes focus on listening, speaking, reading, writing, and cultural skills. In addition, there are topics courses, covering topics ranging from current events and the environment to academic literacy and the cultures of the U.S. through literature and film. Students must complete one topics course for every level they study in the IELI program.

Students advance from one level of a class to the next higher level by obtaining a grade of C- or higher in the lower-level class.

Students who do not obtain a C- or higher in a class must repeat the class. Students who complete all level 4 classes with a C- or higher may begin taking courses outside of IELI. Students at level 4, who have less than a full course load remaining in IELI, must take other University credits sufficient to stay in status with visa requirements. Exceptions to this policy must be approved by the director of IELI in consultation with students’ major field advisors and the international student officer.

Credit for Intensive English Study

Classes in IELI carry academic credit. Full-time students at each level take 18 credits per semester. A student who begins IELI at level 1 and progresses to level 4 may earn a total of 72 undergraduate elective credits. While all the credits will appear on a student’s transcript, a maximum of 18 can be counted toward graduation. Application of the 18 credits will be determined by the student’s college and major department. Students must, therefore, meet with their departmental advisors to determine the role of IELI credits in their graduation requirements.

Services

New students in IELI take the Placement Examination and attend an orientation meeting prior to the beginning of each semester. All students are assigned an advisor in IELI who helps them with various difficulties they may encounter. In addition, all the services and privileges offered to students on campus are available to IELI students. These services include health care services, recreational opportunities, and numerous special programs for international students.

Intensive English Language Institute Faculty

Associate Professors
Franklin I. Bacheller
James E. Bame
Glenda R. Cole
James R. Rogers II
Thomas J. Schroeder

Assistant Professor
Ann E. Roemer

Course Descriptions

Intensive English Language Institute (IELI), pages 415-416
Interdisciplinary Studies Major

Contact and Advising: Science/HASS Advising Center
Location: Student Center 302
Phone: (435) 797-3883
FAX: (435) 797-2096
E-mail: mleavitt@hass.usu.edu

Degrees offered: Bachelor of Science (BS) and Bachelor of Arts (BA)

Objectives
The organization of academic departments and their associated degree programs reflects the history and traditions of study in those fields. The Interdisciplinary Studies major is intended to serve the needs of students who want to design a unique individualized academic program, obtain a broadly-based education, and diversify their professional potential. The degree is not intended to replace existing majors or curricula. Rather, it is designed to provide the small number of students whose degree needs cannot be met with other majors with a program which is less restrictive and more responsive to their individual plans and interests. Students who complete their programs will receive the Bachelor of Science or (if they meet the language requirement) the Bachelor of Arts degree. The degree cannot be used as part of a dual major.

Application
Students may apply for admission to the Interdisciplinary Studies program after completing a minimum of 45 credits. Students who wish to pursue this degree must submit a letter of application which must include the following information: (1) a clear statement of the student’s educational objectives, (2) a proposed program of study which includes the specific courses, and (3) a brief statement explaining why the program is worthy of a college degree. A current transcript must also be included.

The application will be reviewed to determine (1) that the proposal represents a coherent and carefully planned program of study and (2) that space is available in the courses proposed for the program. After approval, an advisor in the Science/HASS Advising Center will assist the student in completing the program.

Requirements
With guidance and approval from the advisor, the student selects and completes at least 45 credits of coursework for the major. Courses used to meet the 45-credit requirement may come from any department with the following restrictions:

1. At least 21 of the 45 credits in the major must be taken at the 3000 level or above.
2. Courses used for the major must include at least 15 credits each from two different academic disciplines.
3. The selection of the courses in the major must focus on an overarching theme and be consistent with the student’s educational and career goals.
4. As part of the 45 credits, the student must complete a 3-credit senior project or thesis supervised by a faculty advisor.
5. Courses used for University Studies Breadth or selected Depth Education requirements may not be counted toward the 45 credits.
6. Students must pass every course approved in the program of study and earn a composite GPA of at least 2.0 in the 45 credits of courses used for the major. Students must also earn a USU GPA of at least 2.0 to graduate in this major.

Course Descriptions
Interdisciplinary Studies (ITDS), page 419
Interior Design Program

Director: Tom C. Peterson
Location: Family Life 320A
Phone: (435) 797-1556
FAX: (435) 797-8245
E-mail: carol.hatch@usu.edu

Degrees Offered: Bachelor of Science (BS) and Bachelor of Arts (BA) in Interior Design

A Master of Science (MS) degree is also available. Degree options are designed for graduates with degrees in interior design, as well as those without interior design degrees. For additional graduate degree information, contact the Interior Design Program.

Undergraduate Emphases: Studio Emphasis, Design Sales and Marketing Emphasis

Overview

The program in interior design is structured with two specific emphases, both of which offer a BS and BA degree. Each has been developed to prepare students for entry into the varied professions of interior design. Students must identify, research, and creatively solve problems pertaining to the function and quality of the interior environment, as well as its relationship to natural and man-made resources. Students must also gain an understanding of the legal and ethical issues that guide and direct the profession.

An interior designer renders professional services with respect to interior and related spaces, both commercial and residential, with special attention to the individuals who will eventually reside in those spaces. These services include programming, design analysis, space planning, and aesthetics, using specialized knowledge of interior construction, building codes, equipment, materials and furnishings. Another component of each student’s training in interior design is the preparation of drawings and documents relative to the design of interior spaces, in order to enhance and protect the health, safety, and welfare of the public.

In an effort to meet the needs of the design profession, the Interior Design Program provides foundation training and technical skill building during the freshman and sophomore years. This is followed by a review process which determines the choice of emphases students may select to complete their degree. The two available emphases are (1) Studio and (2) Design Sales and Marketing.

Course Requirements

The suggested sequence for completing required coursework for the two Interior Design emphases are as follows.

All Majors

Freshman Year: ID 1700 (1 credit), 1750, 1790, 2710, 2720, 2730, 2750, 2760; ENGL 2010; either ID 2710 or 2720 (3 credits); and one art elective.

Sophomore Year: ID 1700 (1 credit); ID 2710, 2720, 2730, 2750, 2760; ENGL 2010; either ART 2710 or 2720 (3 credits); and one art elective.

Studio Emphasis

Junior Year: ID 1700 (1 credit); ID 3730, 3760, 3770, 3780, 3790; PHIL 3810; one art elective; University Studies Breadth courses (6 credits); ID 4710 (4 credits), which should be taken the summer semester after the junior year.

Senior Year: ID 1700 (1 credit); ID 4740, 4750, 4760, 4770; BUS 3250; FCHD 3340; MHR 2990; PHYX 4020.

Design Sales and Marketing Emphasis

Junior Year: ID 1700 (1 credit); ID 3730, 3790; MHR 2990; PHIL 3810; BIS 2450; BUS 3250; one art elective; University Studies Breadth courses (6 credits); ID 4710 (4 credits), which should be taken the summer semester after the junior year.

Senior Year: ID 1700 (1 credit); ID 4740; FCHD 3340; BIS 2550, 3550; BA 3500; MHR 3110, 3710; PHYX 4020.

Laptop Computer Requirement

Students entering sophomore-level interior design courses must bring their own laptop computer. Specifications for the laptop will be provided by the Interior Design Program. The computer should be purchased just prior to beginning the sophomore year. Required software will be made available.

Sophomore Review

In addition to basic undergraduate and graduate requirements set forth in this catalog, students in Interior Design must participate in a Sophomore Review in order to matriculate to junior class standing. The review takes place during the spring semester of a student’s sophomore year in the program. Students wishing to enroll in junior-level courses must first submit projects from as many of the following courses as possible: ID 1790, 2710, 2720, 2730, 2750, 2760; ART 1110, 1120; and one elective art skills class. Students will be provided a space for the display of their projects. The manner in which the work is exhibited is at the discretion of the program.

An additional component of the Sophomore Review will be an analysis of the student’s academic performance. Courses considered for junior status are: ID 1750, 1790, 2710, 2720, 2730, 2750, 2760, 3740, 3750; ART 1110, 1120; three credits from ART 2710 or 2720; and one art skills course. The student’s overall GPA will also be used as part of the review process.

Students with a cumulative GPA of 3.0 or above will be given preference in this process, following the successful completion of the first portion of the review. As studio space is limited, admission to the Studio Emphasis will be offered first to those ranking
highest in the review process, until capacity is reached. Others who successfully complete the review process will be offered a place in the Design Sales and Marketing Emphasis.

If a student who has been approved to take upper-division classes stops out of the program, he or she will be readmitted if space is available. Due to space limitations, first preference will be given to students with continuous registration in the program.

Tours

Each year the Interior Design Program may sponsor a tour to a major design center. Students should plan to take advantage of this opportunity while enrolled in the program.

**Interior Design Faculty**

**Professor**

*Tom C. Peterson*, design process and experiential learning

**Assistant Professor**

*Steven R. Mansfield*, architecture and computer aided design

**Lecturers**

*Darrin S. Brooks*, residential design and interior history

*Kevin H. Woolley*, commercial design and space planning

**Course Descriptions**

Interior Design (ID), pages 414-415
Contact: Veronica Ward  
Location: Main 324E  
Phone: (435) 797-1319  
FAX: (435) 797-3751  
E-mail: vward@hass.usu.edu  
WWW: http://websites.usu.edu/politicalscience/  

Advising: Political Science Department, Main 320, (435) 797-1306  

Degree offered: Bachelor of Arts (BA)  

Area Options: World Economy and Development, Peace and Security, Global Environment and Natural Resources, and Peoples and Nations  

Admission Requirements for this Major  
1. New freshmen admitted to USU in good standing qualify for admission to this major.  
2. Transfer students from other institutions or from other USU majors need a 2.5 total GPA for admission to this major in good standing.  

Overview  
Problems of security, development, ethnic conflict, and human rights, as well as problems relating to the environment and natural resources, are increasingly confronted at a global rather than a national level. With its theoretical models and real-world application, the study of international studies is an exciting and highly relevant interdisciplinary major. This program cultivates the development of language and intercultural skills, develops understanding of global problems and circumstances, and expands the student’s capacity to make informed judgments regarding complex international and global issues.  

Requirements  
In addition to completing the necessary core courses listed below, students must also choose one area option from one of the four available options. Through these options, students gain a level of expertise in their chosen area. Each student must also complete a senior research project (3 credits). This project must fit within the area option chosen by the student. Under the direction of a faculty member, this project may be completed within the context of an existing course, or may be completed independently under the guidance of the chosen faculty member.  

In addition to the senior research project and the choice of one area option, the student must also complete an international experience component. The student may choose the traditional study abroad experience in an accredited program, which must be approved by the international studies advisor. The student may also choose an internship. The internship must have a clear international focus and must be supervised by a faculty member. The relevant faculty member, as well as the international studies advisor, must approve proposals for internships. Students may count a total of 3 credits earned during an internship toward completion of the major.  

Graduation Requirements  
International Studies Major (39 credits minimum). Students must complete at least 39 approved semester credits. These must include POLS 2100; ECON 1500 or 3400; ANTH 1010 or 2100; GEOG 1030; and HIST 1020 or 1030. Students must also select a minimum of 6 upper-division credits from any one of the following four area options: (1) World Economy and Development, (2) Peace and Security, (3) Global Environment and Natural Resources, and (4) Peoples and Nations. In addition, students must acquire at least a basic knowledge of one foreign language. Students must successfully complete either one language course at the 3000 level, or pass a competency examination at the same level. An overall GPA of 3.0 is required.  

Minor (18 credits). Students may obtain a minor in International Studies by completing a total of 18 semester credits. These must include POLS 2100; ECON 1500 or 3400; ANTH 1010 or 2100; GEOG 1030; and HIST 1020 or 1030. Students must also select 3 elective upper-division credits from any one of the following four area options: (1) World Economy and Development, (2) Peace and Security, (3) Global Environment and Natural Resources, and (4) Peoples and Nations. An overall GPA of 3.0 is required.
**Journalism and Communication**

**Department Head:** Edward C. Pease  
**Location:** Animal Science 310  
**Phone:** (435) 797-3292  
**FAX:** (435) 797-3973  
**E-mail:** jcom@cc.usu.edu  
**WWW:** http://www.usu.edu/journalism

**Assistant Department Head:** Penny M. Byrne,  
Animal Science 108A, (435) 797-3289, pennyb@hass.usu.edu

**Graduate Program Coordinator:** Michael S. Sweeney,  
Animal Science 311, (435) 797-3213, msweeney@cc.usu.edu

**Degrees offered:** Bachelor of Science (BS) and Bachelor of Arts (BA) in Journalism; Master of Science (MS) and Master of Arts (MA) in Communication

**Undergraduate emphases:** Broadcast/Electronic Media, Print Journalism, Public Relations/Corporate Communications

**Graduate specializations:** Print, Photo, and Broadcast Journalism

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**Undergraduate Programs**

**Objectives**

The undergraduate major in the Journalism and Communication Department, leading to the Bachelor of Arts or the Bachelor of Science degree in Journalism, is designed to prepare students for careers in a wide range of communication fields, through instruction in the philosophical groundings, theoretical perspectives, and hands-on applications of communications skills and practice. The curriculum integrates practical mass communications skills training with critical thinking skills, while helping students to understand the processes and effects of communication, as well as the relationships, roles, and interactions of mass communication with other social institutions.

With individual student objectives in mind, the Department of Journalism and Communication offers a flexible program of study having the following goals:

1. Provide students with theoretical and practical understanding of the workings of mass communication principles and practice.
2. Provide students with abilities and practical skills required to work in communications professions.
3. Provide students with a grounding in the philosophical, ethical, and legal frameworks of mass communication, as well as an understanding of the roles and responsibilities of mass communication in a democratic society.
4. Develop in students critical thinking and analytical abilities, facility in social science research methods, and strong written and oral communication skills, within a broad liberal arts context.

The Department of Journalism and Communication maintains professional studios and labs, designed to train students in various communications and journalism skills. These include the multimedia computer newsroom, a digital nonlinear video editing lab, a full TV studio, and a photographic darkroom. Students receive instruction in traditional journalistic basics, such as writing, information-gathering, reporting, and video production; in new technologies of online information gathering; and in critical skills of media literacy.

**Requirements**

**Course Requirements.** Journalism majors must complete a minimum of 30 credits and a maximum of 36 credits in Journalism and Communication courses, while pursuing one of the three emphasis course sequences outlined below. Of the 120 semester credits required for graduation from Utah State University, Journalism majors must complete at least 65 credits in other departments within the College of Humanities, Arts and Social Sciences. In addition, majors must complete a minor/cognate area outside of the Journalism and Communication Department, selected with the approval of an advisor.

Therefore, the basic Journalism course of study is as follows: Journalism and Communication courses, 30-36 credits; University Studies courses, 30 credits; courses in the minor/cognate area, 18 credits; electives from outside the Journalism and Communication Department, 36-40 credits; **Total Credits, 120.**

**Major Status.** Students may apply for major status upon completion of a minimum of 60 semester credits, including the Journalism Premajor Core requirements, while maintaining a 2.5 cumulative GPA. Students may declare themselves as Journalism Premajors at any time after their admission to the University. Majors must maintain a minimum 2.5 GPA, both overall and in the major. Students whose GPA drops below 2.5 will be placed on probation and may be dropped from the major if grades do not improve within one semester. No Journalism and Communication class may be repeated more than once. All courses in the major must be taken for a grade (not Pass-Fail). Courses must be taken in sequence.

Students transferring from other institutions may be accepted into the major if they fulfill these requirements. Up to 9 transferred semester credits may count toward the major, if approved by an advisor.

**Premajor Core Requirements (9 credits).** The following courses are required for all majors, and must be completed prior to application for major status: JCOM 1000, 1110, and 2000. Prior to taking JCOM 1110, students must complete ENGL 1010, a language proficiency test, and a typing test. Majors must complete each of the premajor requirements with a C+ or better.
Major Requirements (6 credits). The following courses are required for all majors after acceptance into the department: JCOM 2110, 4000, and 4030. Premajor core and individual course prerequisites must be taken prior to taking these courses. Prior to taking JCOM 2110, students must complete JCOM 1110 with a grade of C+ or higher. Senior standing is required for enrollment in JCOM 4000. Junior standing or permission of the instructor is required for enrollment in JCOM 4030.

Emphasis Areas. Each student must select one of the following emphasis areas: Broadcast/Electronic Media (Requirements: JCOM 2200, 2210, and either JCOM 4210 and 4220 or JCOM 4230 and 5210); Print Journalism (Requirements: JCOM 2120, 3110, and 3120); or Public Relations/Corporate Communications (Requirements: JCOM 2300 2310, 3300, 5300, plus one upper-division JCOM skills elective).

Other Communications Electives. In addition to the Pre-major, major, and emphasis area courses listed above, students must select additional electives from courses in the Department of Journalism and Communication, to ensure a total of 30-36 credits completed in the Journalism and Communication Department.

Journalism Minor

Students may earn a minor in Journalism by completing a minimum of 18 JCOM credits. These credits must include JCOM 1000 and either JCOM 1110 or 2000. For the remaining 12 JCOM credits, students must select one of the following options: (a) JCOM 2120, plus nine JCOM faculty advisor-approved upper division (3000 or higher) JCOM credits; (b) JCOM 2200 and 2210, plus six JCOM faculty advisor-approved upper-division (3000 or higher) JCOM credits; or (c) JCOM 2300 and 2310, plus six JCOM faculty advisor-approved upper-division (3000 or higher) JCOM credits. The minimum GPA requirements for Journalism minors are the same as those required for Journalism majors.

Financial Support

In addition to general scholarships and other financial support opportunities available through the University and the College of Humanities, Arts and Social Sciences, the Department of Journalism and Communication awards various scholarships to juniors, seniors, and graduate students. For a listing of scholarships, deadlines, and application requirements, contact the Department of Journalism and Communication. In addition, many professional paid and unpaid internships are available through the department.

Careers in Journalism and Communication

Journalism majors often begin their careers in various media professions, such as newspapers, radio and TV broadcasting, and public relations, many serving as interns while still attending school. Upon graduation, they land jobs in a variety of capacities for both journalism businesses and other industries requiring workers with excellent communication and problem-solving skills. In recent years, USU journalism students have routinely swept state, regional, and national competitions in print and video journalism, multimedia and new technologies, and, increasingly, public relations.

This success translates into an excellent reputation for USU students among businesses hiring USU students as interns and hiring USU graduates for professional positions. Jobs held by recent graduates include newspaper and magazine reporter, photographer, graphic artist, and editor; radio and television reporter, anchorman, and producer; public relations director and account executive; multimedia software designer for HTML, web pages, CD-ROMs, etc.; and public information officer for politicians, legislative and lobbying groups, sports teams, and colleges, as well as for environmental organizations and other groups in the business and public sectors. Training and expertise in communication, including writing and reporting, visual literacy, publication layout and design, computer graphics, and online applications, prove to be valuable add-on skills for graduates entering a variety of occupations or going on to graduate school and law school.

In addition to these kinds of opportunities enjoyed by undergraduates, master’s degree graduates often return to communication careers in new capacities, or teach at the community college level in journalism and communication departments.

Additional Information

For further information about publications, curriculum, scholarships, faculty, and other program offerings, including USU’s TV studio facilities; weekly newscasts and TV programs; the award-winning student news website, the Hard News Cafe; and the Media and Society Lecture Series; check out the Journalism and Communication Department’s website: http://www.usu.edu/journalism.

Graduate Programs

The Master of Science (MS) and the Master of Arts (MA) degrees in Communication combine professional practice and theoretical training, and are designed to fit individual student needs. Students may specialize in print, photo, or broadcast journalism. Application to the graduate program is made through the USU School of Graduate Studies.

Objectives

The master’s program in Communication at Utah State University offers a two-track approach to graduate study, designed for the maximum individual flexibility in pursuit of the student’s goals.

The Plan A, also known as the “Thesis Option” or “Media Research,” is a course of study designed for students considering or planning to go on to a doctoral program. The Plan A option requires more coursework in theory and methodology, as well as in research tools, in order to provide grounding for advanced study at the PhD level, whether in communication or another discipline. This option also requires completion of a master’s thesis, consisting of original research.

The Plan B, also known as the “Professional Option” or “Media Practice,” is designed for students seeking the master’s degree as a terminal degree, and planning to go from USU into the mass media professions, or into a teaching position at the junior college level. Typically, Plan B students are mid-career media professionals seeking retooling, refreshers, or credentials for community college teaching. The Plan B option requires a professional project, approved by a major professor, in place of the research thesis.

In either case, graduate students in Communication work closely with advisors throughout their programs to design coursework and a research or professional activity agenda, along with appropriate study in a cognate area outside of Communication, that will permit them to achieve their individual goals, within the core framework of Communication coursework, whether they include professional training or additional doctoral work.
Admission Requirements

For admission to the graduate program in Communication, all students must complete the department’s English Language Proficiency Examination, and must complete or demonstrate competency in the following Communication foundation courses: JCOM 1110, 3110, 4020, and 4030. Competency may be demonstrated through previous coursework or experience, and one or more of these requirements may be waived with permission of the graduate program coordinator. These credits do not count toward the graduate degree. In addition, other undergraduate courses may be required.

Degree Requirements

Students may elect either the Plan A (thesis) or the Plan B (professional) option to fulfill the degree requirements of 30 semester credits as outlined below. Plan A is intended for students planning to continue graduate study, to teach, or to enter professions requiring research skills. Plan B is intended for students seeking a terminal professional degree. Selection of either the Plan A or Plan B option must be made in consultation with the student’s advisor and filed with the graduate coordinator by the end of the first semester of study.

All students must complete core requirements in either plan. Students must, in consultation with their advisor, select an appropriate research tools class in research methods; the course need not be taught by the Journalism and Communication Department. To remain in good standing, all students must fulfill Graduate School requirements.

Plan A: Media Research

Core Requirements (21 credits). All students must complete the following courses: JCOM 6000 (3 cr.), 6020 (3 cr.), 6040 (3 cr.), 6400 (3 cr.), and 6970 (6 cr.). In addition, students must select an appropriate 3-credit Research Tools course (from any department), providing methodological training most appropriate for the student, in consultation with the advisor.

Journalism and Communication Electives (6 credits)

Cognate Area (6 credits). With advisor permission, students may include additional Journalism and Communication electives.

Plan B: Media Practice

Core Requirements (18 credits). All students must complete the following courses: JCOM 6000 (3 cr.), 6020 (3 cr.), 6040 (3 cr.), 6400 (3 cr.), and 6500 (3 cr.). In addition, students must select an appropriate 3-credit Research and Practice course, in consultation with their advisor. A Research Tools course (from any department), providing methodological training most appropriate for the student, must also be selected in consultation with the advisor.

Journalism and Communication Electives (6 credits)

Cognate Area (9 credits). With advisor permission, students may include additional Journalism and Communication electives.

Additional Information

For more information about graduate studies in the Department of Journalism and Communication, contact the School of Graduate Studies or the Department of Journalism and Communication. Also, check out the departmental website at: http://www.usu.edu/journalism.

Journalism and Communication Faculty

Professor
Edward C. Pease, journalism, media criticism

Professor Emeritus
Nelson B. Wadsworth, print journalism

Associate Professors
Penny M. Byrne, broadcasting, media law
Brenda Cooper, media criticism, gender and mass communication
Michael S. Sweeney, print journalism, media history

Associate Professors Emeritus
Scott A. Chisholm, media management, literary journalism
James O. Derry, international mass communication development

Assistant Professors
Cathy Ferrand Bullock, mass communication theory and research methods
Emmanuel E. “Emeka” Nneji, public relations
Lex A. Roka, public relations
Nancy M. Williams, print journalism, Internet

Video Lab Supervisor
S. Dean Byrne, broadcast and electronic media

Temporary Lecturer
R. Troy Oldham, public relations, corporate communications

Adjunct Instructors
Tim Vitale, public relations
Jay C. Wamsley, print journalism

Course Descriptions

Journalism and Communication (JCOM), pages 425-427
Landscape Architecture and Environmental Planning

Department Head: To be appointed
Location: Fine Arts Visual 230
Phone: (435) 797-0500
FAX: (435) 797-0503
E-mail: ainscoughm@hass.usu.edu
WWW: http://www.usu.edu/laep/
Undergraduate Program Director: Michael L. Timmons,
Fine Arts Visual 260, (435) 797-1510,
michael.timmons@usu.edu
Graduate Program Director: John C. Ellsworth,
Fine Arts Visual 238, (435) 797-0504,
john.ellsworth@usu.edu
Degrees offered: Bachelor of Landscape Architecture (BLA) and Master of Landscape Architecture (MLA); Master of Science (MS) in Bioregional Planning. BLA and first professional MLA programs are fully accredited by the American Society of Landscape Architects.
Graduate specializations: MLA—Land Rehabilitation/Revegetation, Small Town Rehabilitation, Urban Wildlife, Visual Resource Management

Department Objectives

The objectives of the department are to (1) provide an educational and technical program responsive to current societal needs related to environmental planning, landscape architecture, and urban design; (2) give students the opportunity to participate in collaborative learning experiences with other disciplines on campus; (3) prepare students for professional careers in the private or public sector, and (4) conduct original research to advance the body of knowledge in landscape architecture, environmental planning, and design.

Undergraduate Programs

Admission and Graduation Requirements

The Bachelor of Landscape Architecture (BLA) degree program is an intensive four-year studio-based course of study, fully accredited by the American Society of Landscape Architects. Accreditation standards require the department to maintain a reasonable faculty/student ratio. Space in the program is limited by available facilities, faculty, and qualified applicants. Admission to the upper division is competitive, and is limited to students who are determined by the faculty to have the best potential for academic success. Matriculation into the upper division will normally be limited to 25 students, although additional students may be matriculated in special circumstances at the discretion of the LAEP faculty.

Any student admitted to USU is eligible for enrollment in lower-division LAEP courses. Declared LAEP majors will be advised of their relative class standing at the end of their freshman year and at the mid-point of their sophomore year, to assist in their personal academic career planning. At the end of the sophomore year, a selection process will determine which students will matriculate into the upper division of the program.

Eligibility for matriculation requires the completion of the following prerequisite courses: LAEP 1030, 1200, 1350, 2300, 2600, 2650, 2700, 2720; PLSC 2620; and ITE 1200. Students applying for matriculation must have a minimum USU GPA of 2.5.

Selection of students to be matriculated to the upper division is based on a letter of intent; a portfolio demonstrating creative potential, problem solving skills, and graphic fluency; and cumulative GPA earned in the eight LAEP prefix courses listed above. Portfolios and letters of intent are to be submitted by the last Monday in March. Detailed information regarding the letter of intent and portfolio requirements may be obtained from the LAEP Office. The final selection of students to matriculate to the upper division is a decision of the LAEP faculty. The review of students for matriculation will take place during the week following spring semester final exams, and students will be notified as soon as possible thereafter.

Students who have had LAEP courses waived or covered by articulation from another institution will have their GPA calculated only on the basis of LAEP grades actually earned at USU.

Transfer students from other programs of landscape architecture who have completed the equivalent of the lower-division USU LAEP coursework may apply for admission to the upper division of the program through submission of a portfolio, letter of intent, transcript of grades, and description of landscape architecture courses taken. Students who have previously been enrolled and matriculated into the upper division at USU, and must interrupt their education for up to three academic years, may resume their studies at the same level of the program which they departed upon returning to USU. Students who have stopped-out longer than three years must reapply, following the guidelines specified for transfer students. The decision on applications from transfer students and for readmission rests with the LAEP faculty and will be considered on a case-by-case basis.

Computer Requirement. Personal computer design, graphic, and operational competence is an essential component of the contemporary professional environment. Appropriate computer skills are required for most entry-level opportunities in landscape architecture and environmental planning.

Course content increasingly relies on computer skills and personal access to computers with the appropriate software.

All students entering the upper division of the BLA program must purchase, lease, or otherwise obtain continuing and uninterrupted access to a personal computer which meets the configuration requirements specified by the LAEP Department. Contact the department for current specifications.
High school students planning to major in landscape architecture may enhance their preparation with courses in art, natural sciences, social sciences, and math through college algebra.

**BLA Degree.** The Bachelor of Landscape Architecture (BLA) degree is a four-year program consisting of courses relating to theory, design, history, and the various technical areas of the profession. The degree provides a substantial basis for a professional career, as well as an excellent foundation for advanced graduate studies. In addition to the courses required for upper-division status, the following LAEP courses are required for graduation: LAEP 3100, 3120, 3300, 3500, 3610, 3700, 4100, 4110, 4120, and 4920. Additional non-LAEP courses required are: MATH 1050, ASTE 3050, GEOL 3100, AWER 1200 or FRWS 2200, and SOC 3610 or 4620. Students must also complete the University Studies requirements. For more detailed information, see major requirement sheet available from the department.

**Specialized Service Courses.** LAEP 1030, 1200, 2300, and 3700 are available for majors in other fields who may wish to gain an exposure to the different aspects of landscape architecture and environmental planning. A minor is not given in LAEP; however, these service courses are available, without prerequisites, for those requesting them.

### Graduate Programs

**Admission Requirements**

The application deadline for consideration in the first round of reviews is March 15. Applications received later than March 15 will be considered as space availability allows. February 1 is the application deadline for consideration for some scholarships, fellowships, and other financial aid. For general admissions requirements, see the appropriate sections of this catalog.

**Computer Requirement.** Personal computer design, graphic, and operational competence is an essential component of the contemporary professional environment. Appropriate computer skills are required for most entry-level opportunities in landscape architecture and environmental planning.

Course content increasingly relies on computer skills and personal access to computers with the appropriate software.

All students entering the second year of the First Professional Degree MLA program and all students entering the first year of the Advanced Professional Degree MLA program must purchase, lease, or otherwise obtain continuing and uninterrupted access to a personal computer which meets the configuration requirements specified by the LAEP Department. Contact the department for current specifications.

### Master of Landscape Architecture

The program for the Master of Landscape Architecture (MLA) emphasizes both traditional site scale planning and design, as well as broader areas of the profession, such as large-scale regional landscape analysis and planning, and computer-aided design and planning techniques. The MLA first professional degree is fully accredited by the Landscape Architectural Accreditation Board of the American Society of Landscape Architects.

The Master of Landscape Architecture program is designed to prepare the student for the landscape architect’s challenging role of providing a holistic approach to environmental planning and design. In order for landscape architects to contribute effectively to an interdisciplinary effort, they must be competent in the fundamentals of landscape architecture and also have an understanding of the subject matter of other professions. Landscape architects must master the communication skills necessary to achieve meaningful collaboration. In support of this philosophy, the following are the major objectives of the MLA program.

1. To provide a well-structured curriculum in fundamental professional knowledge and skills.
2. To research, analyze, and resolve land use and design issues related specifically to the Intermountain West. The scope of the program examines national, regional, and local issues, and their impact on the visual, physical, and cultural setting of the Intermountain West.
3. To integrate field experience and research into major studio courses structured around real-world projects.
4. To provide opportunities for each student for exploration and development of an area of specialization as noted elsewhere.
5. To draw upon the regional, national, and international relationships of Utah State University to facilitate a program of academic and professional excellence which will allow the student to achieve eminence in practice, research, or education.

### Areas of Faculty Expertise

The Master of Landscape Architecture Program provides opportunities for each student to study and conduct research in areas which take advantage of the strengths of Utah State University and the landscape context of the Intermountain West centered around the expertise of the LAEP Department faculty, including:

- Land Rehabilitation/Revegetation—Ellsworth and Johnson;
- Regional landscape Planning—Shapiro and Nicholson;
- Visual Resources Management—Ellsworth;
- Urban Wildlife/Recreation Planning—Johnson; Riparian Systems—Johnson and Bell;
- Community Planning—Nicholson, Lavoie, and Bell;
- Public Lands/Recreation—Timmons;
- Urban Design/Theory—Lavoie;
- Historic Landscapes and Preservation—Timmons.

These areas of faculty expertise include an assessment of the relevant environmental, design, social, economic, and public policy issues utilizing a wide range of computer-compatible techniques and models.

### Specializations

Graduate specializations (MLA) may be designated on a student’s transcript with the approval of the supervisory committee after completion of a Plan A original research thesis. There are currently four specializations: Land Rehabilitation/Revegetation, Small Town Rehabilitation, Urban Wildlife, and Visual Resource Management.

### Course of Study

The graduate program director advises all incoming students until they have selected a thesis topic. A major professor whose interests are closely aligned to those of the student (see areas of faculty expertise above) supervises thesis work. A minimum of 30 graduate-level credits, including thesis work, is required. Students supplement requirements with courses negotiated with the major professor and supervisory committee. An outside area of emphasis
or graduate specialization (see above) may be pursued by concentrating elective coursework in another department.

The department offers two MLA programs. One is for students who have previously earned baccalaureate degrees in landscape architecture from accredited programs and the other is for students with degrees from other fields.

**MLA—Advanced Professional Degree**

The MLA—Advanced Professional Degree is a two-year program of study. Applicants must hold baccalaureate degrees in landscape architecture from accredited programs. The advanced degree allows outstanding students to expand their knowledge in areas of special interest under the supervision of a major professor and supervisory committee.

For information about currently required and recommended coursework, as well as other requirements for this degree, contact the LAEP Department.

**MLA—First Professional Degree**

A three-year program leading to the MLA degree is available for candidates with previous baccalaureate degrees in fields other than landscape architecture. The curriculum includes a substantial lecture and studio sequence designed to establish fundamental professional skills.

For information about currently required and recommended coursework, as well as other requirements for this degree, contact the LAEP Department.

**Master of Science in Bioregional Planning (joint degree program with Environment and Society)**

Good planning and management of natural resources and systems supersedes individual disciplines, requiring an interdisciplinary approach for the successful resolution of environmental issues. The intent of this program’s curriculum is to integrate the biophysical disciplines more closely while also addressing the social and political sciences. This degree program is offered jointly by the Department of Landscape Architecture and Environmental Planning in the College of Humanities, Arts and Social Sciences, and by the Department of Environment and Society in the College of Natural Resources.

This program consists of a two-year period of study with a required thesis or paper/project. To maintain a program focus, the student selects from three clusters of coursework (research methods/case studies, biophysical, and social/economic policy). A minimum of 36 graduate-level credits, including 3-6 credits of thesis or paper/project is required. A capstone course is required for all LAEP students. The program contains a total of nine elective credits from which the candidate and his or her committee can formulate an area of emphasis.

**Course of Study**

This two-year MS program is comprised of an interdisciplinary core of courses and faculty for addressing complex issues in the areas of bioregional planning and management. Environmental issues are placed on four problematic content areas: biophysical, social/ demographic, economic, and public policy. The spatial focus is on the planning for large landscape areas with dispersed populations with a primary economic base in agriculture, energy development, tourism/recreation, retirement communities, and natural resources.

The program requires a minimum of 36 graduate-level credits, including 3-6 credits of work on a thesis or paper/project. Nine of the required credits may be in an area of emphasis. These nine credits are to be negotiated with the candidate’s major professor and supervisory committee. Requirements for the MS in Bioregional Planning are as follows:

**Required.** Environment Systems Research Institute (ESRI) certification course or ENVS 6900 (Geographic Information Systems), LAEP 6740, and ENVS 6900 (Shipley Seminar/NEPA/EIS).

**Research Methods/Case Studies (3-4 credits).** One of the following courses is required: FRWS 6500, SOC 6100, 6150.

**Biophysical (3-4 credits).** One of the following courses is required: FRWS 5400, 6710, AWER 6330. For those students without a background in ecology, FRWS 4600 is also required. Credits earned for FRWS 4600 or equivalent do not apply to the graduate program.

**Social/Economic Policy (3-4 credits).** One of the following courses is required: ENVS 6000, POLS 5180, or SOC 6630.

**Capstone Course (5 credits).** LAEP 6100 is required for all LAEP students.

**Area of Emphasis (9 credits).** Nine credits should be available to the candidate for an area of emphasis.

**Thesis or Project (3 or 6 credits).** A thesis or Plan B paper/project option is required and is to be negotiated with the candidate, major professor, and supervisory committee.

**Total Credits: 36-39**

**Environmental Field Service**

**Practical Education and Community Service.** The department sponsors a program of planning and design services in which MS, MLA, and BLA students may participate. The Environmental Field Service program offers students the opportunity to interact with community leaders and citizens and to test concepts and skills acquired in the classroom while working on real projects.

**Internships and Cooperative Education**

Many students take advantage of the practical learning opportunities available through internships and cooperative education programs. The department, student, and government agency or private firm make the necessary arrangements. Internships and cooperative education experiences are not required for degree completion. In some cases, these experiences may be used as the basis for waiver of selected courses, subject to approval in advance by the major professor, graduate program director, and department head. Students completing these experiences are required to make a summary presentation to department faculty and students.
Financial Assistance

The application deadlines for scholarships and financial assistance vary. For current application deadline information, contact the LAEP Department, the USU Financial Aid Office, and the School of Graduate Studies. Acceptance to pursue graduate study does not guarantee the student financial assistance.

Career Opportunities

The Department of Landscape Architecture and Environmental Planning provides education for careers in landscape architectural site planning, design, environmental planning, and management, with special consideration for conditions in the Intermountain West. Graduates are employed by local, state, and federal agencies, as well as by private sector professional firms. LAEP graduates also find employment in academia at both the undergraduate and graduate levels.

Landscape Architecture and Environmental Planning Faculty

Sumner Margetts Swaner Professor
Tamara F. Shapiro, regional landscape planning

Professors
John C. Ellsworth, visual resources management, computer applications, and disturbed lands rehabilitation
Craig W. Johnson, planting design, land rehabilitation, wildlife habitat planning and design

Associate Professors
David L. Bell, residential design, landscape construction, and community planning and design
Caroline Lavoie, urban design/theory
John K. Nicholson, urban and regional planning, and computer applications
Michael L. Timmons, site planning and design, recreation planning, and landscape history

Associate Professor Emeritus
Vern J. Budge, landscape construction and recreation planning

Adjunct Instructor
David G. Garce

Lecturer
Kristofor L. Kvarfordt, design visualization, illustration graphics, 3-D design development

Course Descriptions

Landscape Architecture and Environmental Planning (LAEP), pages 428-429
Languages, Philosophy, and Speech Communication

Department Head: Charlie Huenemann  
Location: Main 204  
Phone: (435) 797-1209  
FAX: (435) 797-1329  
E-mail: langphil@cc.usu.edu  
WWW: http://www.usu.edu/langphil

Undergraduate Advisors:  
French: Charlie Huenemann, Main 204A, (435) 797-0254, hueneman@cc.usu.edu  
German: Renate Posthofen, Main 212, (435) 797-1336, posthofr@cc.usu.edu  
Philosophy: Richard Sherlock, Main 202E, (435) 797-1244, ruffie@cc.usu.edu  
Spanish: M. Isela Chiu-Olivares, Main 202G, (435) 797-1213, isela@cc.usu.edu  
Spanish Teaching: John E. Lackstrom, Main 211, (435) 797-1210, fat88@cc.usu.edu  
Speech: Harold J. Kinzer, Barn 202, (435) 797-3610, kinzer@cc.usu.edu

Degrees offered: Bachelor of Arts (BA) in French, German, and Spanish; BA and Bachelor of Science (BS) in Philosophy; BA and BS in Speech; Master of Second Language Teaching (MSLT)

Undergraduate Programs

Mission Statement

The Department of Languages, Philosophy, and Speech Communication offers programs in modern languages and literature, philosophy, and speech communication. While these programs differ widely in their curricula, they are bound together by two considerations: (1) an emphasis on humanistic content and method of inquiry; and (2) a recognition on the part of the departmental faculty that a critical part of becoming an educated person lies in achieving a greater understanding of one’s self and of others, an understanding opened up through insight into the spoken and written word.

Courses offered by the department provide majors and minors with opportunities to achieve this understanding by increasing their communicative, logical, interpretive, linguistic and research skills; their ability to function within an increasingly globalized society; and their awareness of ethical, aesthetic, and other values. Courses offered by the department also give teaching majors and minors the opportunity to serve the needs of the education profession.

Through its participation in the University Studies program, the department provides all students with an opportunity to gain knowledge of how people come to understand themselves through their cultural, literary, and philosophical achievements. The department also furthers the education of both traditional and non-traditional students through faculty participation in interdisciplinary programs such as Honors, Liberal Arts and Sciences, Asian Studies, and Women and Gender Studies; and in cooperative education, distance learning, extension, and study-abroad programs.

Admission Requirements

Admission requirements for freshmen desiring entrance to major programs offered by the Department of Languages, Philosophy, and Speech Communication are the same as those for Utah State University (see pages 15-18). Transfer students from other institutions and from other majors within Utah State University must have an overall minimum GPA of 2.5 (2.75 for Spanish) to be admitted to the department’s major programs.

All students majoring in programs offered by this department must maintain a minimum GPA of 2.5 in their major (2.75 in Spanish) to be in good standing in the department and to obtain official approval for graduation.

Career Information

The Department of Languages, Philosophy, and Speech Communication maintains a resource center in the departmental office (Main 204) containing general information about graduate schools and nonacademic careers in modern languages, philosophy, and speech communication. Students are invited to use this resource center during office hours.

Scholarship Information

Four scholarships are offered through the Department of Languages, Philosophy, and Speech Communication. The Brett Blanch Memorial Scholarship is awarded to an outstanding philosophy major. The Carl T. Degener Memorial Scholarship is awarded to an outstanding language major at the junior level. Outstanding upper-division students in French (and under some circumstances Spanish) are eligible for the Jean Inness Scholarship. The Thain Scholarship is awarded to an outstanding high school senior enrolling in a language or philosophy course at USU. For more details, contact the department office.

Graduate Program

Master of Second Language Teaching (MSLT)

The Master of Second Language Teaching (MSLT) degree program is designed for students desiring additional training at the graduate level in an integrative, interdisciplinary program combining coursework in the field of Foreign Language Education, Bilingual Education, and ESL/EFL Education. Attainment of the degree requires the completion of a minimum of 30 credits of coursework in the MSLT program. The program leading to the MSLT consists of a core curriculum of 18 credits and a profes-
sional curriculum of 12 credits. Courses in the core curriculum are designed to respond to the program’s emphasis areas in language, literacy, and culture. Courses in the professional curriculum address teaching methodology, curriculum preparation, materials development, and testing. A Master’s Project in the form of a substantial cumulative Master’s Portfolio is also required. The Master’s Portfolio will include a comprehensive statement of the candidate’s philosophy of second language teaching and learning and how this philosophy will be applied in a professional environment. This project will be defended at the end of the degree program. All candidates must take a research course in the professional curriculum designed to aid in preparing the Portfolio Project.

This master’s degree program does not lead to licensure by the Utah State Board of Education. Individuals who do not have Utah State Board of Education licensure and wish to obtain that credential must take the three-semester Secondary Teacher Education Program (STEP) in the College of Education and Human Services.

For program information, including admission requirements, degree requirements, courses, and financial assistance, contact the departmental office or see the program’s website at: http://www.usu.edu/langphil/mslt.

Languages

Language faculty members in the Department of Languages, Philosophy, and Speech Communication teach courses leading to undergraduate degrees in French, German, and Spanish, as well as to undergraduate minors in Chinese, French, German, Japanese, Portuguese, Russian, and Spanish. Teaching majors and minors are also offered in French, German, and Spanish. The department also offers a minor program in Linguistics.

French, German, and Spanish Major Programs. The goal of the French, German, and Spanish BA degree programs is to prepare students to be able to take advanced studies in these languages, literatures, and cultures; to provide those who may enter other professions a solid grounding in these languages, literatures, and cultures, in order that they may function as members of the international community. The curricula supporting these goals includes courses in language, literature, civilization, culture, and linguistics. See the course requirements which follow.

Course Requirements

Language Major Requirements

Bachelor of Arts in French. French Major (33 credits): 30 credits of upper-division coursework in French, plus LING 4100; and other University Studies courses as required by the University. LING 4100 must be taken before FREN 4200. French Teaching Major (35 credits): LING 4100, 3300 or 4300, 4400; FREN 3060 or 4060; FREN 3090 or 4090; 18 credits selected from the following: FREN 3550, 3570, 3600, 3900, 4200, 4610 or 4620, LING 4920; and other University Studies courses as required by the University.

Bachelor of Arts in German. German Major (33 credits): GERM 3000, 3040, 3050; LING 4100; plus 21 credits of additional upper-division coursework selected from German courses, LING 4900 or 4920, and other University Studies courses as required by the University. German Teaching Major (35 credits): GERM 3000, 3040, 3050, 4200; LING 4100, 3300 or 4300, 4400; plus 16 credits of additional upper-division coursework in German, and other University Studies courses as required by the University.

Bachelor of Arts in Spanish. Spanish Major (33 credits): SPAN 3040; at least 3 courses from among the following: SPAN 3600, 3610, 3620, 3630; SPAN 3550 or 3570; SPAN 4900 or 4910; LING 4100, and three additional credits in Linguistics; plus 9 credits of upper-division coursework in Spanish or Linguistics and other University Studies courses as required by the University. Spanish Teaching Major (36 credits): SPAN 3040, 3550, 3570, 3600 or 3610, 3620 or 3630, 4200, 4900 or 4910; LING 4100, 4190, 3300 or 4300, 4400; plus 6 credits of upper-division coursework in Spanish or Linguistics, and other University Studies courses as required by the University. At least half of the credits applied toward the major must be completed at USU or through its sponsored programs.

Language Minor Requirements

Chinese Minor. 12 upper-division credits in Chinese.

French Minor. 12 upper-division credits in French.

French Teaching Minor. FREN 3090 or 4090, 3600, 4200; LING 4190, 3300 or 4300, 4400.

German Minor. GERM 3000, 3040, 3050, and one other upper-division German course.

German Teaching Minor. GERM 3000 or 3300, 3040, 3050, 4200; LING 3300 or 4300, 4400; plus one other upper-division German course.

Japanese Minor. 12 credits selected from the following courses: JAPN 3010, 3020, 3050, 3100, 3510.


Russian Minor. RUSS 3040, 3050, 3300, 3510, 3540.

Spanish Minor. SPAN 3040, 3550 or 3570; one of the following: SPAN 3600, 3610, 3620, 3630; plus one other upper-division course in Spanish or Linguistics from the department, excluding LING 4920.

Spanish Teaching Minor: SPAN 3040, 3550 or 3570, 4200; one of the following: SPAN 3600, 3610, 3620, 3630; LING 3300 or 4300, 4400; plus one other upper-division course in Spanish or Linguistics from the department, excluding LING 4920.

Linguistics Minor. 12 credits selected from the following courses: LING 4100, 4190, 4400, 4900; ENGL 3020, 4200, 4210, 4230, 5210.

For additional information on language major and minor programs offered by the Department of Languages, Philosophy, and Speech Communication, contact the department office.
Proficiency Tests and Placement in Language Courses. Students who have completed one or more years of language study in high school may take proficiency tests to determine their proper placement in language courses offered by the department.

Credit by Special Examination. Where basic skills in a department-taught language other than Spanish have been acquired by means other than college courses, up to 16 lower-division credits with a letter grade may be earned by completing a course in that language at a higher level than the credits to be acquired. This course needs to be completed with a grade of B or better. In Spanish, these credits must be obtained by taking a placement test. To receive all 16 credits in Spanish, students must pass the test with a score of 500 or better. These credits will count as transfer credits. They will not count toward semester or USU GPA, but will be counted into the cumulative GPA.

Where basic skills in a language not offered by the department have been acquired by means other than college courses, up to 12 lower-division credits may be earned by special examination. All credit received by special examination is listed on transcripts as P (pass) grade. For further information, contact the department.

Technology Assisted Language Center. The department operates a technology assisted language center, located in Main 002, for instructional use associated with language classes, and for students desiring additional language practice outside of the classroom. The center includes computer workstations capable of running multimedia applications, televisions, VCR players, and audio equipment.

Exchange Programs. The department serves as the academic administrative home to student exchange programs with the University de la Rioja in Spain, and with three institutions in Japan: Kansai Gaidai, Gifu University, and the Faculty of Cross-Cultural Studies at Kobe University. Information about these programs can be found on the department’s website or through the USU Study Abroad Office. (See page 69 in this catalog.)

Summer Study-abroad Programs. The department offers summer study programs in Germany, France, and Spanish-speaking countries. Students must be in good standing at the University and must have some language background to participate in these programs. In addition, the department also conducts an annual two- to three-week travel-study tour to Russia, including visits to Moscow and St. Petersburg. Students can receive credit for participating in these programs. For more information, contact the department.

National Honor Societies

Lambda Pi Eta (LPH) is the National Communication Honor Society of the National Communication Association for undergraduate junior and senior communication students. Among the goals of LPH are to recognize, foster, and reward outstanding scholastic achievement; and to provide an opportunity for faculty and students to discuss and exchange ideas about their field of interest.

Sigma Delta Pi (SDP) is the National Collegiate Hispanic Honor Society of the American Association of Teachers of Spanish and Portuguese for students studying Spanish. Among the goals of SDP are to honor those who attain excellence in the study of the Spanish language and of the literature and culture of the Spanish-speaking peoples, and to encourage college and university students to acquire a greater interest in and a deeper understanding of Hispanic culture.

Languages Course Descriptions

Chinese (CHIN), pages 367-368
French (FREN), pages 398-399
German (GERM), pages 406-407
Italian (ITAL), page 419
Japanese (JAPN), pages 424-425
Korean (KOR), page 428
Language (LANG), page 430
Linguistics (LING), pages 430-431
Navajo (NAV), page 447
Portuguese (PORT), pages 465-466
Russian (RUSS), pages 473-474
Spanish (SPAN), pages 481-482

Philosophy

Philosophy at USU reflects the ideals of the liberal arts in encouraging the respect for truth without promoting dogmatism, and in offering the opportunity for students to increase their self-understanding at the same time as they increase their knowledge of the world around them.

Philosophy faculty in the Department of Languages, Philosophy, and Speech Communication teach courses leading to an undergraduate major and a minor in philosophy. The mission of the Philosophy program at Utah State University is to provide a high-quality education leading to an understanding of the major areas of inquiry represented within the discipline of philosophy. Coursework emphasizes the areas of the history of philosophy, logic, ethical theory and applied ethics, and metaphysics and epistemology. The curriculum is designed to meet a wide variety of student interests in pursuing a major in philosophy. It provides a rigorous foundation for students intending to further their education in law school or graduate school in philosophy, and it also provides an exciting and challenging education for those students who enjoy thinking about ideas for their own sake. Coursework is also designed to enrich the education of students majoring in other subjects, by providing them with opportunities to gain an understanding of philosophical perspectives on and philosophical foundations of their chosen fields.

Course Requirements

Bachelor of Arts in Philosophy (30 credits). PHIL 1200 or 2200, 2400 or 2500, 3100, 3120; one of the following courses: PHIL 3500, 3510, 3520, 4500, 4540, or 4610; two of the following courses, at least one of which must be PHIL 4300 or 4400: PHIL 4300, 4310, 4400, 4410, 4420; three other upper-division philosophy courses; other University Studies courses as required by the University; completion of the foreign language requirement for the BA degree (see page 50).

The Bachelor of Science degree can be awarded in Philosophy to philosophy majors who have not completed the foreign language requirement for the Bachelor of Arts degree in Philosophy.
Philosophy Minor (18 credits). Six courses in Philosophy, at least four of which must be at the upper-division level, must be completed for a philosophy minor.

**Philosophy Course Descriptions**

Philosophy (PHIL), pages 457-458

**Speech Communication**

Speech Communication has been taught continuously at USU almost from the University’s founding in 1888. Speech Communication faculty in the Department of Languages, Philosophy, and Speech Communication teach courses leading to a Bachelor of Arts or Bachelor of Science degree in Speech, as well as to minors in Organizational Communication and Speech Communication Teaching.

The speech major emphasizes organizational communication. Organizational communication is the study of how communication creates organizations and of how organizations shape communication. Coursework in the program addresses the theories and analytical skills enabling students to identify common communication problems arising in organizational contexts and to develop appropriate communication policies and practices. The program also teaches important aspects of intercultural and interpersonal communication theory.

Students majoring in speech are encouraged to earn a BA degree by completing two years of study in a foreign language. This broadens cultural and social awareness and can increase one’s understanding of the nature of language in general.

Admission to the speech major will be limited to 25 students each year. Admission decisions will be based on (1) academic record, (2) realistic career or professional study objective, (3) ability of this program to prepare the student for intended career, (4) satisfactory speaking and writing competencies, and (5) motivation and creativity demonstrated by class performance, work experience, volunteer activities, and other means offered by the student during the application process.

Students not admitted may apply the following year. If not admitted on the second application, the student will be permitted to complete a minor, but will not be considered again for the major.

To obtain guidelines for applying to the speech major, contact the Department of Languages, Philosophy, and Speech Communication.

The minor program in Organizational Communication is designed for students who seek communication and human relations competencies, an understanding of human communication behavior, and the critical thinking skills required for success in a variety of careers.

The course of study leading to a minor in Speech Communication Teaching is designed to develop the communication competencies and the understanding of communication processes and theory necessary for effective high school speech communication instruction. Prior to student teaching, the program features practicum experience in which students learn how to critique and coach speech communication students.

**Course Requirements**

**Speech Major (30 credits).** As many as 15 credits taken at other colleges or universities may be used to partially satisfy these requirements. For more information, students should contact their advisor. Communication Core (6 credits): Complete the following:

- SPCH 1050, 2600. Capstone Course (3 credits): SPCH 5100.
- Organizational Communication Theory (9-12 credits): Complete at least three of the following, for a total of 9 credits: SPCH 3250, 3300, 3400, 5000, 5090, 5250, 5280, JCOM 3400. Organizational Communication Application (9-12 credits): Complete at least three of the following (at least two having a SPCH prefix), for a total of 9-12 credits: SPCH 2280, 3000, 3050, 3600, 4280, 4800, LING 4900, BIS 4350, 5660, MHR 3710, 3820.

**Organizational Communication Minor (15 credits).** SPCH 1050 or 2600, 3250, and 9 other credits in Speech Communication courses, selected in consultation with a program advisor. At least 3 of these 9 credits must be from a class offered at the 4000 or 5000 level.

**Speech Communication Teaching Minor (19 credits).** SPCH 1050, 2600, 3000, 4280, 5100, 5280, and either SPCH 3330 or 5090.

**Speech Communication Course Descriptions**

Speech Communication (SPCH), page 482

**Languages, Philosophy, and Speech Communication Faculty**

**Professors**
- Lynn R. Eliason, 19th century Russian and German novels, Russian culture
- Charles W. Johnson, philosophy of mind, Wittgenstein, logic, philosophical methods
- John E. Lackstrom, linguistics, Spanish applied linguistics, TESL
- Mark D. Larsen, Latin American literature, computer applications in languages
- Kent E. Robson, ethics, philosophy of language, history of philosophy, philosophy of science, philosophy of religion
- Richard Sherlock, medical and environmental ethics, ethical theory, ethical issues in genetics, political philosophy, philosophy of religion

**Professors Emeritus**
- Hans K. Mussier, German literature, Lessing, enlightenment, translation, teaching methodology
- Alfred N. Smith, Jr., French, foreign language education, cross-cultural studies

**Associate Professors**
- M. Isela Chiu, Spanish, Portuguese, Latin American literature
- Maria-de Jesus Cordero, colonial Spanish-American literature
- Charlie Huenemann, history of modern philosophy, Kant, metaphysics
- Harold J. Kinzer, organizational communication
- Taira Koybaeva, Russian, linguistics, international marketing and business relations
- Kevin L. Krogh, Spanish Peninsular literature
- Renate Posthofen, German language and literature, contemporary culture and film
- John S. Seiter, interpersonal communication, intercultural relations, social influence
- Gordon Steinhauff, philosophy of science, logic, metaphysics
- William H. Wilcox, Jr., ethical theory, applied ethics, philosophy of law, social and political philosophy
- Fuencisla Zomeño, Spanish and Luso-Brazilian literature
Associate Professors Emeritus
Jerry L. Benbow, Peninsular Spanish literature and grammar
Lynne H. Goodhart, 20th century French poetry, women in literature
Ilona Jappinen, German language, literature and culture, Nietzsche/expressionism
Gordon E. Porter, Spanish, Spanish literature, Portuguese
Norman R. Savoie, contemporary French culture, contemporary French detective fiction
Janet C. Stock, French, business French, 20th century French literature, Proust

Assistant Professors
Janette K. Bayles, French
Anne F. Carlson, French
Susan J. Dudash, French
Sarah Gordon, French
Jennifer A. Peeples, speech communication

J. P. Spicer-Escalante, 19th century Latin American literature
Maria Luisa Spicer-Escalante, Hispanic applied linguistics
Felix W. Tweraser, German

Assistant Professor Emeritus
Valentine Suprunowicz, Russian literature

Instructor
Nat Bartels, foreign language education

Principal Lecturer Emeritus
Viva L. Lynn, Spanish literature

Lecturers
Catharina de Jonge-Kannan, second language acquisition
Atsuko Neely, Japanese, second language acquisition
Liberal Arts and Sciences Major

Contact and Advising: Science/HASS Advising Center
Location: Student Center 302
Phone: (435) 797-3883
FAX: (435) 797-2096
E-mail: mleavitt@hass.usu.edu or lynnes@hass.usu.edu
WWW: http://www.usu.edu/shac/las.html

Degree Offered: Bachelor of Arts (BA) in Liberal Arts and Sciences

The Liberal Arts and Sciences (LAS) Major offers a broad and challenging course of study in the humanities, sciences, arts, and social sciences. Through a multi-disciplinary but coherent approach to learning, the program meets the needs of students majoring in professional fields, as well as those desiring a general background for adaptability and mobility in employment. LAS offers USU students the training required to be competitive and to contribute effectively in the organizations, professions, and communities of the twenty-first century.

This major allows the student to develop an individualized curriculum in consultation with the program advisor (Student Center 302). This major requires a 2.3 overall GPA for admission and a 2.3 USU Cumulative GPA for graduation.

Although the emphasis of this major is in the humanities, arts, and social sciences, the student is encouraged to seek out other educational interests as part of an academic program. The following credit distribution will be typical of most students:

University Studies (30 credits). The University Studies Program (which is required for all students seeking a bachelor’s degree) consists of two sets of requirements: General Education Requirements and Depth Education Requirements. Included in the General Education Requirements are Competency Requirements, including Communications Literacy, Quantitative Literacy, and Computer and Information Literacy. General Education also includes Breadth Requirements in the areas of American Institutions, Creative Arts, Humanities, Life Sciences, Physical Sciences, and Social Sciences. To complete the Depth Education Requirements, students must complete two Communications Intensive courses, one Quantitative Intensive course, and two Depth courses. For more information about the University Studies Program, as well as lists of courses approved for meeting University Studies Requirements, see pages 42-49 in this catalog. Students should consult with the program advisor to determine which University Studies courses will best meet their learning goals.

Foreign Language (2 years). All students who receive the Bachelor of Arts degree must have completed two years’ training or equivalent in a foreign language approved by the Languages, Philosophy, and Speech Communication Department. One year or equivalent in each of two foreign languages may also satisfy the foreign language requirement for the BA degree. Specifically, the BA language requirement may be completed in one of the following ways:

1. Completion of 16 credits in one foreign language.
2. Completion of 20 credits in two foreign languages.
3. In general, completion of course number 2020 in one of the foreign languages or an upper-division (3000-level or above) foreign language grammar or literature course. Conversation classes generally cannot be considered in satisfying this requirement.
4. Successful completion of the Intensive English Language Institute (IELI) program for international students.
5. TOEFL, Michigan, or IELI placement scores high enough to meet the University admission criteria.

The focus of study for the Liberal Arts and Sciences major is to help students gain a basic understanding of the development of civilization, including historical and cultural traditions, political institutions and processes, an appreciation of arts and literature, and expanded capacities for critical thought. Four learning goals are identified, each requiring a minimum of 9 credits, for a total of 36 credits.

Students plan a multi-disciplinary academic program providing a focus for study, with emphasis in primarily social sciences, humanities, and arts.

Pre-professional and Elective Credits

Depending on a student’s career objectives, a student may take courses leading to further study in medicine, law, business, or other graduate programs, or continue to study in a number of different disciplines.

Course Description

Liberal Arts and Sciences (LAS), page 430
Management and Human Resources

Department Head: Gaylen N. Chandler
Location: Business 415
Phone: (435) 797-1789
Fax: (435) 797-1091
E-mail: mhr@b202.usu.edu
WWW: http://www.usu.edu/mhrdept/index.htm

Undergraduate Advisor: Ruth C. Harrison, Business 302A,
(435) 797-2272, rharrison@b202.usu.edu

Graduate Program Director: Glenn M. McEvoy,
Business 415, (435) 797-2375, glenn.mcevoy@usu.edu

Degrees offered: Bachelor of Science (BS) and Bachelor of Arts (BA) in Management; BS and BA in Human Resource Management; Master of Science (MS) in Human Resources

The department also participates in the College of Business Master of Business Administration (MBA) Degree. A description of the MBA degree and program requirements can be found on pages 153-154. Graduate-level courses offered by the department are included in the plans of study of graduate students in a wide variety of disciplines. Students can specialize in Entrepreneurship or Human Resource Management in the on-campus MBA program.

Undergraduate Programs

Objectives

The programs in the Department of Management and Human Resources are designed to prepare students for administrative and leadership positions in business, government, and other institutions. Specialized training is provided in Management and Human Resource Management, as well as training directed at understanding the broader aspects of business as it functions within a national and international environment. The study of management is approached from an organizational leadership framework.

Management deals with the skills and attributes of organizational leadership. These include the ability to critically assess issues currently facing one’s organization or unit; the ability to develop a vision for the organization and translate it into a mission, objectives, and strategies; and the ability to accomplish these through the acquisition and allocation of resources, and organizing, leading, and empowering people.

Human Resource Management deals with those processes which provide, develop, and maintain a productive workforce. Subject areas include recruiting employees, determining what tasks need to be performed, placing the right person in the right position, determining fair benefits and compensation, evaluating performance, determining current and future employment needs, training and development, labor-management relations, and following legal/ethical practices in employment.

Requirements for Majors

College of Business Requirements. All students majoring in management or human resource management must satisfy the College of Business requirements, provided on pages 101-102. Academic advising about these requirements is available in the College of Business Career and Education Opportunities Center, Business 310A.

All students at the University are required to satisfy the University Studies requirements of the University as described on pages 42-49 of this catalog. Additional requirements for Management and Human Resources majors consist of two basic components.

1. College of Business Core. The following courses are required: MHR 2990; ACCT 2010, 2020; BIS 2450, 2550; ECON 1500, 2010; MATH 1050, 1100; STAT 2300; and PSY 1010 or SOC 1010.

2. Department of Management and Human Resources Precalculus Requirement. The following courses are required for majors in Management and Human Resource Management: MATH 1100; SOC 1010 or PSY 1010; SPCH 2600, 3050, or BIS 2450.

Completion of 20 credits of university work with a minimum GPA of 2.50 is necessary before a student is allowed to enroll in BIS 2550; ACCT 2010, 2020; and MHR 2990.

Access to 3000-level Management and Human Resources courses is restricted. Only those students who have completed a minimum of forty (40) semester credits with a minimum GPA of 2.67 will be allowed to enroll in 3000-level Management and Human Resources courses.

College of Business Enrollment Restrictions. Admission to the college does not ensure access to the courses required for graduation. The following admission requirements must be met by all USU students:

1. An overall GPA (transfer credits included) of 2.50 and 20 semester credits of college-level work are required for admission into ACCT 2010, 2020; MHR 2990; and BIS 2550.

2. All 3000-, 4000-, and 5000-level courses in the College of Business are restricted to students admitted to the College of Business or another USU major with an overall GPA of at least 2.67 and completion of at least 40 credits.

3. An overall GPA of 2.67, admission to the College of Business, and completion of 84 credits are required for admission into MHR 4880 and 4890.

4. To earn a College of Business bachelor’s degree, at least 60 semester credits must be from courses outside the College of Business.

5. Many of the courses in the College of Business require prerequisites. Before registering for courses within the College of Business, students should consult with their advisor or refer to the current General Catalog to ensure they have completed the necessary prerequisites.
Freshman Admission. Students may be admitted directly into the College of Business and the Department of Management and Human Resources as incoming freshmen if they have less than 24 earned post-high school college credits and if all of the following conditions are met: (1) admitted to Utah State University; (2) designated a Management or Human Resource Management major on USU application or submitted a College of Business application to the College of Business Career and Education Opportunities Center; (3) ACT Composite of 24 or higher; and (4) high school GPA of 3.5 or higher.

All admitted freshmen, regardless of declared College of Business major, must first complete the following four courses, or their equivalents, with a C grade or better in each course, as prerequisites to College of Business courses numbered 3000 and above: ECON 1500, Introduction to Economic Institutions; History, and Principles; MATH 1100, Calculus Techniques; STAT 2300, Business Statistics; and PSY or SOC 1010, General Psychology or Introductory Sociology.

Non-Freshman and Transfer Admission. USU students and transfer students from other accredited colleges and universities may be admitted directly to any College of Business major if they have met the following conditions: (1) admitted to Utah State University; (2) earned 24 or more post-high school college credits with 3.5 GPA or higher; and (3) designated a College of Business major on USU application (transfer students) or submitted a College of Business application to the College of Business Career and Education Opportunities Center (USU continuing students).

Admission for students not meeting the above conditions is competitive based on available space in the College of Business. Application forms, available at the College of Business Career and Education Opportunities Center, may be submitted after completion of at least 24 credits of coursework, including the pre-business course requirements, or equivalent, with a C grade or better. An essay will also be required.

Pre-Business Course Requirements (13 credits). Applicants will be ranked according to an Application GPA that is calculated as follows: one-third weight on 13 credits earned in four required courses (ECON 1500, MATH 1100, STAT 2300, and PSY or SOC 1010); one-third weight on last 24 credits earned; and one-third weight on overall GPA. Essays will be evaluated by the admissions screening committee.

Grades for courses which have been repeated will be discounted one step each time courses are repeated for the College of Business Application GPA (e.g., A- to B+). Students may not repeat a course more than twice, and may have no more than 10 repeats in total to earn a degree. (College of Business courses are limited to one repeat.)

Matriculation Requirement. No more than 15 USU College of Business credits (ACCT, BA, BIS, BUS, MHR), numbered 2000 and above, earned as a nonbusiness major (before acceptance into the College of Business) can be applied to a College of Business degree. More than 15 business credits can be transferred from other accredited institutions. However, additional USU credits added to previously earned transfer credits may not exceed 15.

Departmental Core for Both Undergraduate Majors. During the initial portion of the Management and Human Resources upper-division programs, all degree seeking students will be required to take the following core classes, which are designed to provide a broad background in the various areas of business: BA 3400, 3500, 3700; BUS 3250; ECON 3400; MHR 3110, 3710, 3820, 4630; MHR 4880 or 4890. Since MHR 4880 and 4890 are both capstone courses, they should not be taken until near the end of the senior year.

During the latter portion of the program, the student working toward a degree in the Department of Management and Human Resources will be devoting his or her efforts toward fulfilling the requirements in one of the two majors: Human Resource Management or Management.

Major in Human Resource Management. In addition to the core requirements, students majoring in Human Resource Management must complete two of the following classes: MHR 3720, 3810; PHIL 3520 or MHR 4730; MHR 5640; BIS 4350 or ECON 5660; ECON 5670 or 5680. It is recommended that students wishing to work in a human resource position, and who are not planning to pursue a graduate degree in human resource management, take MHR 3810, BIS 4350 or ECON 5660, and either ECON 5670 or 5680.

Major in Management. In addition to the core requirements, students majoring in Management must complete two of the following classes: MHR 3720, 3810, 4710, 5640; PHIL 3520 or MHR 4730; BIS 4350 or ECON 5660, ECON 5670 or 5680; or other classes as determined through advisement.

If a College of Business student elects to take a minor, he or she is encouraged to select one from outside the College of Business.

Requirements for Minors

A minor in Management and a minor in Human Resource Management are available, as outlined below. Any deviation from the programs as outlined must be submitted in writing, with justification for the changes, to the department head for approval. A 2.50 GPA in the minor courses is required.

Minor in Management. This minor is for students with majors outside the College of Business who want to work in an organization where they will assume leadership or management responsibilities. The Management minor consists of 12 credits. MHR 3110 is required. In addition, three courses must be selected from the following: MHR 2990, 3710, 3720, 3810, 3820, 4630, 4730, 5640; PHIL 3520 or MHR 4730; BIS 4350 or ECON 5660; ECON 5670 or 5680; or other classes as determined through advisement.

Minor in Human Resource Management. This minor is for students with majors outside the College of Business who want to work in any human resource function of an organization. The Human Resource Management minor consists of 12 credits. MHR 3110 and 4630 are required. In addition, two courses must be selected from the following: MHR 2990, 3710, 3720, 3810, 3820, 5640; ECON 5670 or 5680; PHIL 3520 or MHR 4730; BIS 4350 or ECON 5660; or other classes as determined through advisement.

Minors for Students with Majors within the College of Business. Students with majors within the College of Business may elect to take a minor in either Management or Human Resource Management. In such cases, in consultation with the head of the Department of Management and Human Resources, an appropriate minor will be determined based on the student’s career objectives. Students will be expected to complete 12 credits of related coursework beyond the College of Business Core Requirements. All such minors must be approved by the head of the Department of Management and Human Resources.
Graduation Requirements

To be recommended by the department for graduation, majors in the Department of Management and Human Resources must have a grade point average of at least 2.50 in their upper-division core and specialization courses, as well as an overall GPA of 2.50. This includes transfer credits. The College of Business requires that at least 60 semester credits be taken in courses taught outside the College of Business. Up to 9 semester credits of economics and 6 semester credits of statistics can be considered as courses taught outside the College of Business. At least fifty percent of the business credits required for a business degree must be taken on the Utah State University campus or at a designated residence center.

Financial Assistance

The Department of Management and Human Resources and the College of Business award scholarships in addition to those available through the University Financial Aid Office. Information and application forms are available from the College of Business Career and Education Opportunities Center, Business 310A.

Student Organization

The department sponsors a student organization. Membership in the organization is open to all students, both undergraduate and graduate, who meet the membership requirements.

Society for Human Resource Management (SHRM) is the professional Human Resource Management organization co-sponsored by the Bridgerland Chapter of SHRM.

Graduate Programs

Master of Science in Human Resources (MS HR)

The MS in Human Resources degree prepares students for professional careers in the field of Human Resource Management. The instruction is designed to teach students to assume a strategic role in helping organizations gain competitive advantage by building employee commitment, competence, and effectiveness. Required subject areas include human resource planning, recruiting, selection, placement, compensation and benefits, performance management, career planning, training and organizational development, labor and employee relations, ethical/legal employment practices, statistical methods, and program evaluation.

Students without sufficient relevant work experience are required to complete an approved internship. The executive in residence in the MHR Department and/or the MS in Human Resources steering committee will serve as facilitators to help secure internship opportunities. All students are strongly encouraged to take the certification exam of the Human Resource Certification Institute (HRCI).

Students are expected to be admitted to the program as matriculated students before taking coursework leading to the degree.

Degree Requirements. Students are held responsible for meeting requirements as outlined in this catalog. Requirements specific to this degree are outlined below. It is the student’s responsibility to be aware of all requirements and initiate the resolution of apparent inconsistencies.

The typical degree option is Plan C, which includes coursework to meet the degree requirements. The student should consult with the graduate program director if the Plan B option is being considered.

The MS in Human Resources degree usually requires 33 credits beyond the Business Core. The total number of credits is 51 for students without an undergraduate business degree or commensurate work experience. Coursework includes MHR 6330, 6360, 6510, 6550, 6620, 6630, 6640, 6650, 6670, 6690, 6760; BUS 6160, 6250; and one 3-credit elective approved by the steering committee. Students with applicable and relevant work experience may waive BUS 6250 (Graduate Internship) on approval of the steering committee. Students with an undergraduate degree from an AACSB-accredited business school or equivalent work experience will not be required to take BUS 6160. Students are also strongly encouraged to take the HRCI (Human Resource Certification Institute) exam.

Additional information about the MS in Human Resources degree may be obtained by contacting the Department of Management and Human Resources.

Admission Requirements

See Admission Procedures on pages 90-91. Students are required to submit scores on either the Graduate Record Examination (GRE) or the Graduate Management Admissions Test (GMAT). Prospective students may request information on the expected test performance standards for acceptance. Applicants are expected to have strong written and oral communication skills.

Financial Assistance and Assistantships

A limited number of graduate assistantships, scholarships, and other departmental awards are provided to outstanding on-campus students on a competitive basis. Acceptance to the program does not guarantee financial assistance. Application forms are available from the MHR Department. The deadline for financial aid assistance is March 15.

Master of Business Administration (MBA)

The department also participates with other departments in the College of Business in offering the Master of Business Administration (MBA) Degree. A description of the MBA degree and program requirements can be found on pages 153-154 of this catalog.

Management and Human Resources Faculty

Professors
Caryn L. Beck-Dudley, Dean of College of Business, business law, employment law, and social responsibility
Gaylen N. Chandler, entrepreneurship, management, human resources
Glenn M. McEvoy, human resources, organizational behavior, management
David B. Stephens, business strategy and labor relations

Professors Emeritus
Vernon M. Buehler
Howard M. Carlisle
John R. Cragun
Gary B. Hansen
Leon R. McCarrey
Y. Krishna Shetty

Associate Professors
Ronda R. Callister, management, organizational behavior, international management
David R. Daines, business law, employment law, and social responsibility
Steven H. Hanks, business strategy, management, and entrepreneurship
Ross E. Robson, lean manufacturing, management

Assistant Professors
Dawn DeTienne, entrepreneurship
David L. Dickinson, labor and employee relations, labor economics

James Hayton, management, human resources
Konrad S. Lee, employment law, business law
Troy V. Mumford, organizational behavior, human resource management, compensation

Adjunct Assistant Professor
Shari Tarnutzer, international management

Senior Lecturer
Alan P. Warnick, human resource management

Course Descriptions
Management and Human Resources (MHR), pages 437-439
Mathematics and Statistics

Department Head: Russell C. Thompson
Location: Lund Hall 211
Phone: (435) 797-2809
FAX: (435) 797-1822
E-mail: mathstat@cc.usu.edu
WWW: http://www.math.usu.edu/

Assistant Department Head: Daniel C. Coster, Lund Hall 301,
(435) 797-2815, coster@math.usu.edu

Undergraduate Program Coordinator: Ian M. Anderson,
Lund Hall 318, (435) 797-2822, anderson@math.usu.edu

Graduate Program Coordinator: D. Richard Cutler,
Lund Hall 302C, (435) 797-2699, richard@math.usu.edu

Mathematics Education Program Director:
James S. Cangelosi, Lund Hall 325C, (435) 797-1415,
jcangel@math.usu.edu

Undergraduate Advisors:
Mathematics: Chris S. Coray, Lund Hall 310, (435) 797-2861,
coray@math.usu.edu
Statistics: Christopher D. Corcoran, Lund Hall 202,
(435) 797-4012, corcoran@math.usu.edu

Degrees offered: Bachelor of Science (BS), Bachelor of Arts (BA), and Master of Science (MS) in Mathematics; BS and BA in Mathematics Education; BS in Composite Mathematics-Statistics Education; Master of Mathematics (MMath); BS, BA, and MS in Statistics; MS in Industrial Mathematics; Doctor of Philosophy (PhD) in Mathematical Sciences

Graduate specializations: PhD in Mathematical Sciences—College Teaching, Interdisciplinary Studies, Pure and Applied Mathematics, and Statistics

Undergraduate Programs

Objectives

The Department of Mathematics and Statistics offers a variety of programs and courses designed to prepare students for careers in teaching and for positions as mathematicians and statisticians in industry and government. The department also provides service courses for students in many other disciplines and contributes to the University Studies program by providing Quantitative Literacy and Quantitative Intensive classes.

Placement of New Students

The mathematics ACT score, on-campus placement tests, and Advanced Placement (AP) calculus and statistics scores are used for placement in 1000-level and 2000-level mathematics and statistics courses. New students and students who are registering for a math class at USU for the first time should have a math ACT score of at least 18 to register for MATH 1010 (Intermediate Algebra), a score of at least 19 to register for STAT 1040, and a score of at least 23 to register for MATH 1030 (Quantitative Reasoning), MATH 1050 (College Algebra), and MATH 1060 (Trigonometry). The alternative to this is to take a placement examination in the Testing Services Office, University Inn 115. A student who has already taken a math class at USU may register for the next higher level course, providing he or she received a grade of C- or better in the prerequisite course. Equivalent transfer courses must also have a C- or better grade. Entering students with math ACT scores of less than 18 should register for MATH 0900 (Elements of Algebra) or take the placement examination to qualify for a higher-level course. The placement exam requires a small fee.

A math ACT score of at least 27 is needed to begin in MATH 1100 or 1210.

Entering students with passing scores on AP calculus or statistics exams will be given 8 semester credits in mathematics for passing either one of the calculus exams, and 4 semester credits for passing the statistics exam. Part of this credit may be for specific USU courses. Students with an AP calculus AB score of 3 will generally be advised to start in MATH 1210 (Calculus I). Students with a score of 4 or 5 on the calculus AB exam or a score of 3 or 4 on the calculus BC exam will be given credit for MATH 1210, and will be advised to begin in MATH 1220 (Calculus II). Students with a score of 5 on the calculus BC exam will be given credit for MATH 1210 and 1220, and advised to begin in MATH 2210 (Multivariable Calculus). Students with a score of 3 or higher on the AP statistics exam will be given credit for STAT 2000. Students may also take a placement test in the USU Testing Center to determine if MATH 1100 (Calculus Techniques) or MATH 1210 (Calculus I) is an appropriate place to start.

The calculus courses MATH 1210, 1220, and 2210 are designed for students in mathematics, the sciences, and engineering. MATH 1100 (Calculus Techniques) is designed primarily for students in business and a few other majors. All students in calculus classes need strong backgrounds in the material covered in MATH 1010 and MATH 1050. In addition, the MATH 1210, 1220, 2210 sequence requires trigonometry (MATH 1060) and a graphics calculator.

Students with outstanding mathematics records in high school and transfer students with some experience in calculus may wish to consult with a departmental advisor prior to registration.

Departmental Admission Requirements

1. New freshmen admitted to USU in good standing qualify for admission to the major.

2. Transfer students from other institutions need a 2.2 transfer GPA, and students transferring from other USU majors need a 2.0 total GPA for admission to this major in good standing.

3. Students may be admitted to the Mathematics Education major by satisfying either of the above conditions. However, in order to be admitted to the Secondary Teacher Education Program (STEP), and to graduate from the Mathematics Education major
(and minor), students must have a cumulative GPA of at least 3.0 in the equivalent of MATH 1210, 1220, and 2210, and an overall GPA of at least 2.75.

**University Requirements**

All students in the Department of Mathematics and Statistics must satisfy the requirements of USU's University Studies program, described on pages 42-49 of this catalog.

**College of Science Requirements**

Every bachelor’s degree candidate in the College of Science must complete the following coursework or its equivalent:

1. One year of calculus: MATH 1210 and 1220. In some degrees or emphases within degrees, the second semester of calculus may be replaced by STAT 3000. The substitution will be for specific degree programs, not by student choice.

2. One of the following year-long sequences: BIOL 1210, 1220; CHEM 1210, 1220; GEOL 1150, 3200; PHYX 2110, 2120; PHYX 2210, 2220. The chosen sequence must be outside the student’s major department.

**Bachelor of Arts (BA) Degree**

For this degree, students must complete the major requirements for the corresponding BS degree, plus the equivalent of two years of training in a foreign language. The Languages, Philosophy, and Speech Communication Department is responsible for approving the foreign language coursework for this degree.

**Major Requirements**

Major and minor requirements in the Department of Mathematics and Statistics vary from time to time. Students may obtain from the department information about the exact requirements in effect at any given time. All grades for MATH and STAT courses applied toward a departmental major or minor must be C- or better. Major and minor requirements in effect at the beginning of Fall Semester 2004 are given below.

**Mathematics Major.** MATH 1210, 1220, 2210, 2270, 2280, 4200, 4310, 5210, and 5710; any two courses (6 credits) from MATH 5110, 5220, 5270, 5310 (or 5340), and 5510; any three additional courses (9 credits) in mathematics at the 5000-level, excluding Actuarial Mathematics (MATH 5570, 5580). Note: MATH 2250 may substitute for both MATH 2270 and 2280; however, MATH 2270 and 2280 are recommended. Several options in this major exist (e.g., Actuarial Science, Computational Math, and dual Majors with Computer Science, Physics, and Electrical Engineering). Contact the Mathematics and Statistics Department for details.

**Mathematics Education Major.** STAT 1040; MATH 1210, 1220, 2210, 2250, 3110, 4200, 4310, 4400, 4620, 5500, and 5710; Secondary Teacher Education Program (STEP): Level 1—SCED 3100, 3210, MATH 3300, 4500; Level 2—SCED 4200, 4210, SPD 4000, MATH 4300; Level 3—SCED 5500, 5630. Admission to the STEP requires a GPA of at least 3.00 in the equivalent of MATH 1210, 1220, and 2210, and an overall GPA of at least 2.75. Graduation from this major also requires an overall GPA of at least 2.75. No more than three repeats in all required courses may be used in GPA computations. The STEP is normally completed during the last three semesters of the degree program, and consequently nearly all the mathematics classes in the Mathematics Education Major must be completed before beginning the STEP.

**Composite Mathematics-Statistics Education Major.** MATH 1210, 1220, 2210, 2270, 3110, 4200, 4310, 4400, 4620, 5500, 5710; STAT 1040, 2000 or 3000, 5100, 5200, 5890; Secondary Teacher Education Program (STEP): Level 1—SCED 3100, 3210, MATH 3300, 4500, STAT 4500; Level 2—SPED 4000, SCED 4200, 4210, MATH 4300; Level 3—SCED 5500, 5630. Admission to the STEP requires a cumulative GPA of at least 3.00 in the equivalent of MATH 1210, 1220, 2210 and an cumulative GPA of at least 3.00 in STAT 1040, 2000 or 3000, and an overall GPA of at least 2.75. No more than three repeats in all required courses may be used in GPA computations. The STEP is mostly completed in the last three semesters of the degree program.

**Statistics Major.** MATH 1210, 1220, 2210, 2270, 4200, 5710 and 5720; CS 1700; STAT 2000 or 3000; STAT 4920, 5100, 5200, 5890; any three additional statistics classes (9 credits) at the 5000-level. One of the three additional classes may be selected from MATH 4630, 5570, 5610, and 5760. Note: MATH 2250 may substitute for MATH 2270.

**Emphasis Requirements**

**Computational Mathematics Emphasis.** This emphasis, available in the Mathematics Major, requires the following: MATH 1210, 1220, 2210, 2270, 2280, 3310, 4200, 5210, 5610, 5620, and 5710; two courses (6 credits) in mathematics at the 4000-level or above, not including Actuarial Mathematics (MATH 5570, 5580); CS 1700, 1710, 1720, 2200, and 2370; any two computer science courses numbered above 4000. Note: MATH 2250 may substitute for MATH 2270 and 2280. MATH 4620 may not be counted towards the elective mathematics credit requirement. Students who complete the computer science coursework with a GPA of at least 2.5 automatically earn a minor in computer science.

**Actuarial Science Emphasis.** This emphasis, available in either the Mathematics Major or the Statistics Major, requires the following for Mathematics majors: MATH 1210, 1220, 2210, 2270, 2280, 4200, 4310, 5210, 5570, 5580, 5710, 5720; STAT 2000 or 3000; STAT 5100; CS 1700; ACCT 2010; ECON 2010; BA 3400; and one business administration course (3 credits) numbered above 4000. Statistics majors should complete STAT 5200 and one 5000-level STAT elective instead of MATH 4310 and 5210. Note: MATH 2250 may substitute for MATH 2270 and 2280. Admission to this emphasis requires explicit departmental approval.

**Dual Major Requirements**

Students who are interested in two or more major areas (in different departments) should consult with a departmental advisor to discuss the possibility of an individually designed degree program. Such programs typically entail completing major requirements in two or more departments, but cooperating departments may agree to waive some requirements in each department to facilitate a dual or triple major.

By meeting requirements for any two separate majors, USU students may earn a dual major, meaning one bachelor’s degree in the combination of two approved majors. Students majoring in
Mathematics may benefit from combining their major with a Computer Science, Electrical Engineering, Physics, or Statistics major. Following are the requirements for each of these dual majors.

Mathematics-Computer Science. MATH 1210, 1220, 2210, 2250 (or 2270 and 2280), 3310, 4200, 5210, 5610, 5620, 5710; CS 1700, 1710, 1720, 2200, 2370, 2550, 2560, 3000, 3100, 4700, 5000 or 5050; SPCH 1050; one of PHIL 2400, 2500, 3520, or 4540; 13 credits from the following list: CS 5000, 5050, 5100, 5200, 5300, 5370, 5400, 5450, 5600, 5650, 5700, 5800, 5850, 5890, 5950 (note that CS 5000 and 5050 may not be double counted); SPCH 1050; one of the following sequences: PHYX 2210, 2220 or BIOL 1210, 1220, or CHEM 1210, 1220, 1230, 1240 or GEOL 1150, 3200, plus one additional computer science advisor-approved science course so that the total in this sequence section is at least 13 credits; plus one additional University Studies class (3 credits) from the BAI, BHU, BSS, or BCA approved lists.

Mathematics-Electrical Engineering Major. All courses in the Electrical Engineering major; MATH 1210, 1220, 2210, 2250, 4200, 4310, 5210, 5710; and three additional courses (9 credits) in mathematics numbered above 4600, excluding MATH 5570 and 5580. Note: Only one of MATH 4620 and 4630 may count towards the elective credit in mathematics.

Mathematics-Physics Major. MATH 1210, 1220, 2210, 2270, 2280, 4200, 4310, 5210, 5710; PHYX 2210, 2220, 2710, 2950, 3600, 3650 or 3700, 3870, and 4900; two additional courses in mathematics numbered above 4600; 8 additional credits in physics numbered above 3500, excluding University Studies Depth courses. Note: MATH 2250 may substitute for MATH 2270 and 2280. MATH 4620 may not count towards the elective credit in mathematics. PHYX 2110 and 2120 may substitute for PHYX 2210 and 2220.

Mathematics-Statistics Major. MATH 1210, 1220, 2210, 2270, 2280, 4200, 4310, 5210, 5710; STAT 2000 or 3000; STAT 5100, 5200, 5890; CS 1700; at least two mathematics courses (6 credits) numbered above 5000; at least two statistics courses (6 credits) numbered above 5000; at least two additional courses (6 credits) numbered above 5000; at least two statistics courses (6 credits) numbered above 5000. Note: MATH 2250 may substitute for MATH 2270 and 2280. Either MATH 5570 or 5760 may substitute for one of the statistics elective courses.

Minor Requirements

Mathematics Minor. MATH 1210, 1220, 2210, 2270, 2280; two courses (6 credits) in mathematics numbered above 4000, excluding MATH 4300, 4400, 4500, and 4620. Note: MATH 2250 may substitute for MATH 2270 and 2280.

Statistics Minor. STAT 2000 or 3000; STAT 5100, 5200; two courses (6 credits) from statistics courses numbered above 5000 or from MATH 5710, 5720, and 5760.

Mathematics Education Minor. STAT 1040; MATH 1210, 1220, 2210, 2250, 3110, 4200, 4310, 4400, 4500, 4620, 5500, 5710; Secondary Teacher Education Program (STEP) for the student’s Secondary Education major. Admission to the STEP requires a GPA of at least 3.00 in the equivalent of MATH 1210, 1220 and 2210, and an overall GPA of at least 2.75. Graduation from this minor also requires an overall GPA of at least 2.75. No more than three repeats in all required courses may be used in GPA computations. The STEP is normally completed during the last three semesters of study, and consequently nearly all the mathematics classes in the Mathematics Education Minor must be completed before beginning the STEP.

Biomathematics Minor. BIOL 1210, 1220; MATH 1210, 1220, 2270, 2280; STAT 3000; MATH/BIOL 4230. (Note: MATH 2250 may substitute for MATH 2270 and 2280.) Biology majors must take one course from the biology electives (listed below), and two courses from the mathematics and statistics electives (listed below). Mathematics and Statistics majors must take two courses from the biology electives, and one course from the mathematics and statistics electives. All other majors must take two courses from each set of electives. Biology Electives: BIOL 5170, 5200, 5600, 5620; PUBH 5330; FRWS 5400; BMET 5500. Mathematics and Statistics Electives: MATH 4630, 5410, 5420, 5460, 5610, 5620, 5710; STAT 5100, 5110, 5120, 5200, 5300, 5600.

Additional Information

Students who enter the University with AP credit in Mathematics and/or Statistics, and about 30 additional AP or CLEP credits, may be able to complete both a BS and an MS degree within five years or less. Interested students should consult with a departmental undergraduate advisor.

Financial Support

The department offers several one-, two-, and four-year scholarships to qualified students who enroll as full-time Mathematics, Mathematics Education, or Statistics majors. The winner of the Hunsaker Scholarship receives a cash award each semester for two years. This award is given in addition to any four-year scholarship or tuition waiver for which the student is eligible. During the final two years, the recipient is expected to work as a grader or tutor for the department. The department also offers other scholarships (Elich, Ellis, van Vliet, and departmental). The amount of these scholarships varies from year to year. The Ellis Scholarship is awarded to a junior or senior Mathematics Education major, and the recipient is selected by the department. To apply for any of these scholarships (except for the Ellis Scholarship, for which there is no application) send a statement of qualifications, including high school transcripts and SAT or ACT scores, and three letters of recommendation to:

Scholarship Committee  
Department of Mathematics and Statistics  
Utah State University  
3900 Old Main Hill  
Logan UT 84322-3900

Applications must be received by April 1.

Graduate Programs

Admission Requirements

See the general admission requirements for graduate programs at Utah State University on pages 90-91 of this catalog. In general, students wishing to pursue graduate studies in mathematics or statistics should have a bachelor’s degree in mathematics, statistics, or a closely related field, with extensive coursework in one of the departmental disciplines.
Students entering the Master of Mathematics (MMath) program must either possess a valid secondary school teaching license or be concurrently enrolled in a secondary school teacher licensure program.

**Degree Programs**

**Master of Science (MS).** The department offers MS programs in mathematics and statistics. This degree is a terminal degree for most students, but is also a “stepping stone” for students who ultimately wish to pursue a doctorate in mathematics or statistics.

**Master of Mathematics (MMath).** This program is designed specifically for secondary school teachers of mathematics. The purpose of this degree is to provide students with a broad background in mathematics.

**Master of Science (MS) in Industrial Mathematics.** The Industrial Mathematics master’s degree is designed to broaden the learning experiences and job opportunities for master’s students in mathematics. The program of study incorporates fundamental applied mathematics and interdisciplinary coursework in support of an industrial internship experience.

**Doctor of Philosophy (PhD) in Mathematical Sciences.** This is a terminal degree for mathematics and statistics researchers in academe, government, and industry, as well as for prospective college teachers.

**Specializations for PhD in Mathematical Sciences**

The **College Teaching Specialization** is designed to prepare students to teach undergraduate mathematics in two- and four-year colleges and in universities. This program is less specialized than the other two options. Students in the College Teaching specialization receive broad training in pure and applied mathematics. The dissertation for this specialization includes exposition of important mathematical theories and their historical relationships in an area of mathematics of the student’s choosing.

The **Interdisciplinary Studies Specialization** offers advanced training in mathematics as a research tool. The mathematical component emphasizes areas of applied mathematics. In addition, the student receives graduate-level training in the chosen area of application. The student’s course of study and research is directed both by scholars in mathematics and by scholars in the related discipline. The dissertation involves the development and application of mathematics in the context of research problems arising in the chosen interdisciplinary area.

The **Pure and Applied Mathematics Specialization** is a traditional doctoral program in mathematics, offering broad training in the foundations of modern mathematics together with specialized training in an area of mathematical research. The dissertation represents a significant contribution to mathematics research in the chosen area of specialization.

The **Statistics Specialization** offers broad training in theoretical and applied statistics for students seeking careers in academia, industry, or government. The dissertation represents a significant contribution to statistical research.

### Course Requirements

Departmental requirements change from time to time. Check with the Department of Mathematics and Statistics for the list of requirements currently in effect. The requirements listed below are in effect for Fall Semester 2004.

**Master of Science in Mathematics.** This degree requires 30 credits of approved coursework at or above the 5000 level. At least 18 of these credits must be at the 6000 level or above, excluding MATH 6990 and 7990 (Continuing Graduate Advisement) and MATH 7910 (College Teaching Internship). Generally, most of the coursework will be in mathematics, but the student’s supervisory committee may approve courses in statistics, physics, engineering, or any other discipline, if it seems such coursework is appropriate for the student’s program of study.

The MS in mathematics has three options. The Plan A or the thesis option requires taking 6 credits of MATH 6970 (Thesis and Research) and working with a faculty member on a substantial research project. The research must be presented in a thesis, which must be approved by the student’s supervisory committee and the dean of the School of Graduate Studies. An oral defense of the thesis must be arranged through the School of Graduate Studies.

The Plan B or project option requires taking 3 credits of MATH 6970 and working with a faculty member on a smaller research project. A written report of the research must be approved by the student’s supervisory committee. An oral defense of the report must be scheduled through the School of Graduate Studies.

The third option of the MS in Mathematics requires only coursework, and is called the Plan C option.

All students in the MS program in Mathematics must pass a written qualifying examination covering the introductory analysis and advanced calculus material presented in MATH 4200, 5210, and 5220. Students may take this exam before beginning formal coursework in the MS program, and must take the exam at the end of the first full year of matriculation. The exam is typically given twice a year, in May and September. Matriculated students who fail on their first try must pass the exam at the next scheduled opportunity. A detailed exam syllabus is contained in the Graduate Handbook, available from the department.

**Master of Science in Statistics.** This degree requires 30 credits of approved coursework at or above the 5000 level. At least 18 credits must be at the 6000 level or above, excluding STAT 6990 and STAT 7990 (Continuing Graduate Advisement). All students must take STAT 6710 and 6720 (Mathematical Statistics I and II). Generally, most of the coursework will be in statistics, but the student’s supervisory committee may approve courses in mathematics, biology, economics, or any other discipline if it deems such coursework to be appropriate for the student’s program of study.

The MS in statistics has Plan A (thesis), Plan B (report), and Plan C (coursework only) options. The Plan A and Plan B options require students to work with a faculty member on a research project, taking 6 or 3 credits of MATH 6970, respectively, and presenting the results of the research in a written report. For both the Plan A and Plan B options, the report must be approved by the student’s supervisory committee. A Plan A report (thesis) must also be approved by the dean of the School of Graduate Studies. Both Plan A and Plan B reports require an oral defense that must be scheduled through the School of Graduate Studies.
Students in all three options of the MS in Statistics must pass a written qualifying examination based on the material presented in STAT 3000 (Statistics for Scientists), MATH 5710 (Introduction to Probability), and MATH 5720 (Introduction to Mathematical Statistics). Students may take the exam before beginning any formal coursework in the MS program. Students must attempt the exam by the end of the first full year of matriculation. The exam is usually given in late May and early August each year. Matriculated students who fail the exam on their first try must pass the exam at the next scheduled opportunity. A detailed exam syllabus is available in the Graduate Handbook, available from the department.

Master of Mathematics. This program requires at least 36 credits approved by the Graduate Committee within the Department of Mathematics and Statistics. At least 21 of these credits must come from mathematics classes numbered above 5000. MATH 4620 or an approved substitute must also be included. The GPA for the 36 credits and for the 21 math credits must be at least 3.0.

Master of Science in Industrial Mathematics. This degree requires 36 credits of coursework at or above the 5000 level. At least 15 of these credits must be completed in MATH courses at the 6000 level or above. Additionally, students must complete a total of 9 credits outside of Mathematics which complement their internship and final project. A maximum of 3 of these credits may be taken at the 5000-level (i.e., one 3-credit course in another department). See the departmental website or the Graduate Handbook for more detailed information about coursework requirements.

Students are required to pass the Advanced Calculus examination (see the Master of Science in Mathematics examination requirements), or the Statistics qualifying examination (see the Master of Science in Statistics examination requirements), or an examination based on material presented in four core courses chosen by the student during the first year. The exam, which can be taken before or at the beginning of the student’s second year in the program, is usually given in late May or early August. Students are also required to complete a final project based on work done during an internship, either with a company or possibly with another department on campus. The project will include a technical write-up suitable to the industry/field, and presentation to the involved faculty and students in the program. This follows the Plan B option listed for the Master of Science in Mathematics degree.

The Departmental Graduate Committee supervises all MS and MMath students until a supervisory committee for the student is established and approved. Prior to advancement to candidacy, students in Plan A and Plan B options for the MS degree in mathematics and statistics must pass an examination in English writing. This exam is administered by the Department of Mathematics and Statistics.

PhD in Mathematical Sciences. In all the doctoral specializations, a course of study consists of 90 credits beyond a bachelor’s degree or 60 credits beyond a master’s degree. The minimal course requirements described below assume that the student needs 90 credits. In all specializations, credit may be earned toward a master’s degree, as part of the 42 required credits (see below), but coursework cannot be applied to two degrees. The complete course of study must be approved by the student’s supervisory committee.

College Teaching Specialization. Seven course sequences (42 credits) in mathematics courses numbered 6000 and above, excluding MATH 7970 and including at least 6 credits in seminars and topics courses in mathematics at the 7000 level and 6 credits of MATH 7910 (College Teaching Internship), are required.

Interdisciplinary Studies Specialization. Forty-two (42) credits in courses numbered 6000 and above, excluding MATH 7970 and including at least 6 credits in seminars and topics courses at the 7000 level, are required.

Pure and Applied Mathematics Specialization. Seven course sequences (42 credits) in mathematics courses numbered 6000 and above, excluding MATH 7970 and including at least 6 credits in seminars and topics courses at the 7000 level, are required.

Statistics Specialization. Seven course sequences (42 credits) in mathematics or statistics in courses numbered 6000 and above, excluding MATH 7970 and STAT 7970 and including at least 6 credits in seminars and topics courses at the 7000 level, are required.

Common Degree Requirements

For all students in the Pure and Applied Mathematics, the Interdisciplinary Studies, and the Statistics specializations, a maximum of 30 credits of MATH 7970 (Dissertation Research) is allowed. Students in the College Teaching specialization are allowed a maximum of 20 credits of MATH 7970.

In addition to completing the coursework requirements, PhD students must:

1. Demonstrate competency in advanced calculus.
2. Pass a written PhD qualifying examination. For students in the College Teaching and Pure and Applied Mathematics specializations, the examination is on Real Analysis. For students in the Statistics specialization, the examination will be on Probability and Mathematical Statistics. Students in the Interdisciplinary Studies specialization may take the qualifying exam in Real Analysis or the exam in Probability and Mathematical Statistics, depending on the emphasis of their coursework within the Department of Mathematics and Statistics.
3. Pass a PhD comprehensive examination that is constructed by the student’s committee. This examination may have written or oral components, or both, and may require a student to prepare and defend a report.
4. Successfully complete an examination in English writing skills. Often this exam will be the student’s dissertation research proposal.
6. Pass a final oral examination defending the dissertation and demonstrating a general knowledge of core mathematics or statistics.

Research

Mathematics research opportunities within the department are many and varied, and students are urged to contact faculty about mutual interests at as early a stage as feasible. The interdisciplinary option permits and encourages study with a broad spectrum of outstanding nationally recognized University research programs.
Financial Assistance

The department offers full-time teaching assistantships, half-time paper-grading assistantships, research fellowships, and work-study assistance for students in all graduate degree programs. Stipends vary from $6,500 for a half-time paper-grading assistantship to $13,000 for teaching assistants pursuing a master’s degree. Stipends for PhD students range from $14,000 for incoming students to $16,000 for students who have passed all required comprehensive examinations. Normally, a teaching assistant has responsibility for a single course each semester. Out-of-state tuition waivers are usually given with each full-time teaching or half-time paper-grading assistantship. All tuition is usually waived for PhD students. Applications for teaching assistantships should be mailed by March 1 of each year.

Mathematics and Statistics Faculty

Professors

Ian M. Anderson, differential geometry, global analysis
LeRoy B. Beasley, matrix theory, linear algebra, combinatorics
James S. Cangelosi, mathematics education
Lawrence O. Cannon, topology, mathematics education
Chris S. Coray, numerical analysis
E. Robert Heal, analysis, statistics, mathematics education
Lance L. Littlejohn, differential equations, special functions
James Powell, applied mathematics, mathematical biology
David H. Sattinger, differential equations
Russell C. Thompson, differential equations
Zhi-Qiang Wang, nonlinear differential equations, nonlinear analysis
Stanley C. Williams, measure theory, modern analysis

Professors Emeriti

Ronald V. Canfield, multivariate and industrial statistics
Duane Loveland, geometric topology, continuum theory
Jerry Ridenhour, differential equations
Donald V. Sisson, statistical methods, experimental design
David White, categorical data analysis

Associate Professors

Daniel C. Coster, experimental design, linear models
Adele Cutler, statistical computing
D. Richard Cutler, statistics, computational fluid dynamics
Mark E. Fels, differential geometry
Joseph V. Koebe, numerical analysis, applied mathematics
Michael C. Minnotte, nonparametric density estimation, statistical visualization
Xiaofeng Ren, partial differential equations, applied mathematics
Emily F. Stone, dynamical systems
Kathryn Turner, numerical analysis, optimization, linear algebra
Dariusz M. Wilczynski, geometric and algebraic topology

Associate Professors Emeriti

Wayne R. Rich, mathematics education
E. Eugene Underwood, matrix theory, linear algebra
James D. Watson, numerical analysis

Assistant Professors

Christopher D. Corcoran, biostatistics and computational statistics
Piotr Kokoszka, probability and time series analysis
Juergen Symanzik, computational and graphical statistics
M. K. Stephen Yeung, dynamical systems, gene network structures

Principal Lecturer

David D. Bregenzer, mathematics, statistics

Senior Lecturer

Eric Rowley, mathematics, mathematics education

Lecturers

Bryan Bornholdt, mathematics, mathematics education
Claudia Mora, mathematics, mathematics education

Course Descriptions

Mathematics (MATH), pages 434-437
Statistics (STAT), pages 487-488
Mechanical and Aerospace Engineering

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Phone: (435) 797-2867
FAX: (435) 797-2417
Undergraduate/Graduate E-mail: joan.smith@usu.edu
WWW: http://www.mae.usu.edu/

Undergraduate Advisor: Kathleen E. Bayn, Engineering 310, (435) 797-2705, kathy.bayn@usu.edu

Degrees offered: Bachelor of Science (BS), Master of Engineering (ME), Master of Science (MS), and Doctor of Philosophy (PhD) in Mechanical Engineering

Undergraduate Emphases: Mechanical Engineering—Aerospace Engineering, Manufacturing Engineering

Graduate specializations: Aerospace Engineering, Manufacturing Engineering, Mechanical Engineering

Undergraduate Programs

Mission

The Department of Mechanical and Aerospace Engineering provides graduates with a foundation of knowledge and experience upon which to build successful careers in mechanical, manufacturing, or aerospace engineering, or other fields where a strong engineering background is required or desirable. Undergraduate programs emphasize mechanical engineering fundamentals and computer-based problem solving, while teaching students to learn, synthesize, and communicate engineering information. Graduate programs emphasize fundamental and applied research, providing students with enhanced preparation for engineering practice, research, and education. Students, faculty, and staff are committed to excellence in learning, discovery, and engagement in an environment that fosters diversity and mutual respect.

Undergraduate Program Objectives

(Mechanical Engineering)

1. Graduates will succeed in entry-level engineering positions with mechanical, manufacturing, or aerospace firms in regional, national, or international industries, as well as with government agencies.

2. Graduates will succeed in the pursuit of advanced degrees in engineering or other fields where a solid foundation in mathematics, science, and engineering fundamentals is required.

3. Graduates will be able to synthesize mathematics, science, engineering fundamentals, and laboratory and work-based experiences to formulate and solve engineering problems in both thermal and mechanical systems areas.

4. Graduates will have proficiency in computer-based engineering, including modern numerical methods, software design and development, and the use of computational tools.

5. Graduates will be prepared to communicate and work effectively on team-based engineering projects.

6. Graduates will recognize the importance of, and have the skills for, continued independent learning.

Undergraduate Program Outcomes

(Mechanical Engineering)

Fundamentals

Students will identify, formulate, and solve basic engineering problems utilizing:

1. linear algebra
2. calculus-based statistics
3. multivariable calculus
4. differential equations
5. calculus-based physics
6. chemistry
7. material science
8. solid mechanics
9. fluid mechanics
10. thermal science
11. manufacturing science

Communication

Students will develop and demonstrate the ability to communicate engineering information, including geometry, technical concepts, and results, by:

1. participating in oral presentations.
2. writing proposals and reports.
3. developing engineering drawings and specifications.
4. participating in team-based engineering projects.

Laboratory Experiences

Students will participate in and evaluate laboratory experiences, which:

1. include experimental design, data collection, and data analyses.
2. incorporate the use of modern laboratory and data acquisition equipment.
3. utilize statistical analysis and interpretation of data.
4. develop basic manufacturing skills.
5. may include work-based learning experiences, such as internships.
Computer-based Engineering

Students will demonstrate proficiency in the application of computer technology to engineering problem-solving through:

1. application of modern numerical methods and computational techniques.
2. design and development of engineering software.
3. integration of numerical solutions into the engineering process of design and analysis.
4. use of current commercial engineering software.

Humanities and Social Sciences

Students will acquire significant exposure to the humanities and social sciences, so as to:

1. gain an appreciation for the broad impact of engineering solutions on society.
2. demonstrate an understanding of the fundamentals of the history, principles, form of government, and economic system of the United States.
3. demonstrate a knowledge of contemporary global issues.
4. contribute to the development of the individual as a responsible well-rounded citizen.

Design and Synthesis

Students will participate in the design and realization process, in which they will:

1. develop a set of multidisciplinary engineering requirements.
2. synthesize material from mathematics, science, and engineering fundamentals to solve engineering problems.
3. design, develop, and verify software to solve engineering problems.
4. bring a system from requirements definition to concept development, then specification, prototype and testing, and production or fabrication using significant engineering analysis.
5. demonstrate the links between design, prototyping, testing, manufacturing, and other disciplines.
6. manage a project, including budgeting and detailed planning.

Independent Learning

Students will recognize the importance of, and demonstrate the skills required for, independent learning through:

1. independent study required in the engineering curriculum.
2. exposure to case studies in ethics and professional responsibility.
3. exposure to advanced topics in engineering science.
4. exposure to advanced topics in engineering research.
5. studying for and passing the Fundamentals of Engineering Examination.

Assessment and Quality Improvement

The MAE faculty and staff are committed to excellence and to continuous quality improvement. A responsive assessment and feedback process involving major constituencies, including faculty, students, alumni, and industrial employers of students and graduates, is in place and ongoing.

Options for Undergraduate Study

The Mechanical Engineering BS degree provides the broadest background of any discipline in the field of engineering. Mechanical Engineering graduates are prepared to pursue careers in such widely diverse industries as aerospace, agricultural equipment, automotive, biotechnical, chemical processing, composite materials, computer equipment, defense, electrical utilities, food processing, industrial equipment, manufacturing, materials processing, nuclear, petroleum, robotics, and solar energy. Most Mechanical Engineering graduates are prepared for graduate studies and enhanced career prospects in engineering or other areas, such as consulting, law, medicine, business management, or teaching. In addition, students who are preparing to apply for admission to medical school will find that Mechanical Engineering provides an excellent foundation for the increasingly technology-oriented field of medicine.

The Aerospace Engineering emphasis within the Mechanical Engineering BS degree serves to focus mechanical engineering fundamentals on the mechanics and dynamics of both flight within the atmosphere and space flight. Included within its scope are studies in aerodynamics, aircraft flight dynamics and control, aircraft design, spacecraft orbital mechanics, spacecraft attitude motion and control, and space systems design. Graduates who complete the aerospace engineering emphasis are prepared to pursue careers in aircraft design and development, aircraft flight testing, spacecraft and space systems design, and spacecraft trajectory design and analysis. As fully qualified Mechanical Engineers, graduates with the aerospace engineering emphasis are also well-prepared to pursue graduate studies or careers in the industries listed above under Mechanical Engineering.

The Manufacturing Engineering emphasis within the Mechanical Engineering BS degree prepares students to be proficient in the fundamentals of engineering, as well as in materials and manufacturing processes; process, assembly, and product engineering; manufacturing competitiveness; manufacturing systems design; and laboratory experience. Graduates will understand the behavior and properties of materials as they are altered and influenced by processing in manufacturing; the design of products and the equipment, tooling, and environment necessary for their manufacture; the creation of competitive advantage through manufacturing planning, strategy, and control; the analysis, synthesis, and control of manufacturing systems employing statistical and computer-based methods; and how to measure manufacturing process variables and make technical inferences about the process. Graduates will have the necessary background to pass the Certified Manufacturing Technologist and Certified Manufacturing Engineer exams. Graduates who complete the Manufacturing Engineering emphasis are prepared to pursue graduate studies or careers in any industry that manufactures a product. For example, the aerospace, automotive, electronics, machine tool, petroleum, and electronics industries all employ manufacturing engineers as product designers, process designers and managers, maintenance engineers, and quality control engineers.

The first two years of the MAE curriculum are structured to concentrate on the fundamentals of mathematics, chemistry, physics, computer science, and basic engineering science. During the second two years, students apply these fundamentals to more concentrated courses in the essentials of mechanical, aerospace, and/or manufacturing engineering. Laboratory activities and computer usage are integrated throughout the curriculum to give students opportunities for hands-on exposure to modern computer hardware and software, as well as other modern hardware and lab-
oratory facilities. Engineering design activities begin during the first two years and progress in depth as the student’s proficiency increases. The engineering design experience culminates in a capstone senior design course, integrating the engineering coursework into a focused, realistic design project.

The Mechanical Engineering degree is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC/ABET). The Aerospace Engineering emphasis and Manufacturing Engineering emphasis are included within the Mechanical Engineering degree.

**Admission and Graduation Requirements**

Freshman and transfer students must satisfy the admission policies and entrance requirements of both the University and the College of Engineering. Each new student will be assigned an advisor, who will help plan an educational program fulfilling the student’s professional goals. Placement of incoming students will depend on high school and/or prior college coursework. Those who complete a portion of the University Studies requirements by examination (CLEP) and/or by advanced placement (AP) credit may complete the requirements for a Bachelor of Science degree in less than four years.

**Curriculum.** At the beginning of each school year, each student should obtain a detailed, four-year requirement sheet. This sheet, which lists semester requirements for each of the three curricula (mechanical, manufacturing, and aerospace), may be obtained from the departmental office. All students in the department follow the preprofessional engineering curriculum for the freshman and sophomore years. Prior to the junior year, the student must apply for admission to the professional program and, in consultation with the faculty advisor, select an area of emphasis. Students who are unable to take courses during the semester indicated on the curriculum requirement sheet may develop alternative schedules, consistent with prerequisites and the timing of course offerings.

**GPA Requirement.** A 2.3 GPA in all technical courses is the minimum standard which preprofessional students must attain in order to be considered for admission to any MAE professional program.

**Course Requirements.** The specific course requirements for the MAE preprofessional program and the MAE professional programs are quite extensive and may occasionally change. For these reasons, the complete requirements are not listed here. For more information, contact the department or send an Internet e-mail request to joan.smith@usu.edu.

A passing grade on the Fundamentals of Engineering Exam, the first step in becoming a licensed professional engineer, is required for graduation. Past experience has shown that the USU Mechanical and Aerospace Engineering students are well-prepared for this locally administered, national exam.

For additional information on academic requirements, see the College of Engineering (pages 107-109) and the Undergraduate Graduation Requirements (pages 50-52) sections of this catalog.

**Financial Support**

Scholarships, assistantships, grants-in-aid, and work-study programs are available to undergraduate students through the University. In addition, the MAE Department employs undergraduates to assist in engineering research and development. Aerodynamics, design of instrumentation and payloads for the upper atmosphere and space, buried structures, and manufacturing processes and controls are some of the research programs that involve undergraduate students. Cooperative education and industrial employment opportunities for students are coordinated by the University Placement Office.

**Concurrent BS/Master’s Program**

The concurrent BS/Master’s program allows engineering students to begin taking graduate-level classes during their senior year. This permits them to complete requirements for both the BS degree and the master’s degree concurrently during two years. Students in this program have a greater selection of graduate courses, since many graduate courses are taught during alternate years. In addition, the student’s senior design project could be a start for a graduate design project or thesis. After completing their BS degree, students in the program can earn a master’s degree in only one additional year. Both the BS and the master’s degree can generally be earned with 150 total credits, although students should note that a Plan C MS requires 3 extra credits. Finally, students with a master’s degree can expect a much higher starting salary following graduation. (For more information, see College of Engineering section of this catalog, page 109.)

**Graduate Programs**

**Admission Requirements**

All students intending to pursue graduate studies at Utah State University must complete and return an Application for Admission to the School of Graduate Studies. In addition to the general graduate admission requirements listed on pages 90-91, the department requires all graduate applicants to have a bachelor’s degree from an accredited institution in Mechanical Engineering, Aerospace Engineering, Manufacturing Engineering, or a closely related engineering discipline. A minimum GPA of 3.0 for MS applicants and 3.3 for PhD applicants is required for the last 60 semester or 90 quarter credits earned. All MAE graduate students are expected to be well-acquainted with either the FORTRAN or C programming language. Those students who do not have a BS degree in an appropriate engineering discipline may be admitted with nonmatriculated status and required to complete some remedial requirements. Applicants are also required to submit evidence of potential graduate-level success through GRE scores in the verbal, quantitative, and analytical categories.

**Specializations**

The Department of Mechanical and Aerospace Engineering offers ME, MS, and PhD degrees in Mechanical Engineering, with specializations in Aerospace Engineering, Manufacturing Engineering, and Mechanical Engineering.
**Aerospace Engineering** addresses atmospheric and space flight. Included are such disciplines as computational fluid dynamics, experimental fluid mechanics, aerodynamics, aircraft flight dynamics, aircraft design, spacecraft orbital mechanics, spacecraft attitude motion and control, aircraft and spacecraft propulsion systems, space system design, thermal management of space deployed systems, and the space environment. Mechanical Engineering graduates choosing the aerospace engineering specialization may pursue careers in such areas as aircraft design and development, aircraft flight testing, spacecraft and space systems design, and spacecraft trajectory design and analysis, as well as the broader, traditional mechanical engineering fields.

**Manufacturing Engineering** concentrates on the theory of manufacturing systems, including manufacturing processes, the design of manufacturing systems, product design, productivity, quality, and life cycle analysis. Principal areas of emphasis include manufacturing automation, machining theory, and mold flow analysis, as well as flexible manufacturing systems and computer-integrated manufacturing. Manufacturing engineers are prepared to pursue product and process design careers in any electronics, food processing, and petroleum industries.

**Mechanical Engineering** deals with the creation of the mechanical systems and machines that serve society. Areas of emphasis include solid mechanics, thermal/fluids, and dynamics and control. The solid mechanics emphasis is concerned with the mechanics of displacement and stress analysis combined with material science for selection of an optimum design. Students learn to use the finite element method as well as classical methods for the determination of stresses, strains, and displacements. Included are studies of elasticity, plasticity, and failure in traditional metals and high-tech composite materials. The thermal/fluids emphasis is concerned with the transport of mass, momentum, and energy in solids, liquids, and gases. Included within its scope are the fundamental studies of thermodynamics, heat transfer, and fluid mechanics. The dynamics and control emphasis is concerned with describing and controlling the motion of mechanical systems. Included within its scope are the fundamental studies of dynamics, kinematics, vibrations, control theory, hydraulics and pneumatics, electromechanical systems, and machine design. Graduates who select the broad mechanical engineering specialization are prepared to pursue careers in such widely diverse disciplines as aerospace, automotive, building, chemical, defense, electronics, environmental engineering, food processing, heating and air conditioning, heavy equipment, machine tools, manufacturing, nuclear, petroleum, public utilities, and solar energy.

**Degree Programs**

The **Plan A MS Degree** requires 6 credits of graduate-level coursework in Mechanical Engineering fundamentals; 12 credits of 6000-level (or above) engineering coursework, exclusive of MAE 6930, 6950, 6970, 6990; a minimum of 3 credits of 5000-level (or above) coursework in approved mathematics; and 12 credits selected from any one of five declared areas of emphasis or 15 credits selected from any two of the areas. A minimum of 30 credits is required beyond the BS, which includes a 3-credit report written to thesis standards.

The **Plan B MS Degree** requires 6 credits of graduate-level coursework in Mechanical Engineering fundamentals; 24 credits of 6000-level (or above) engineering coursework, exclusive of MAE 6930, 6950, 6970, 6990; a minimum of 3 credits of 5000-level (or above) coursework in approved mathematics; and either 12 credits selected from any one of five declared areas of emphasis, or 15 credits selected from any two of the areas. A minimum of 33 credits is required beyond the BS, which may not include a thesis (MAE 6970), but may include up to 3 credits of Design Project (MAE 6950). MAE 6950 requires a report written to thesis standards.

The **Plan C MS Degree** requires 6 credits of graduate-level coursework in Mechanical Engineering Fundamentals; 15 credits of 6000-level (or above) engineering coursework exclusive of MAE 6930, 6950, 6970, 6990, 7930, 7970, and 7990; a minimum of 3 credits of 5000-level (or above) coursework in approved mathematics; and either 15 credits selected from Group A or at least 9 credits from Group A and the remainder chosen from Group B. A minimum of 30 credits is required beyond the BS, which may not include a thesis (MAE 6970), but may include up to three credits of Design Project (MAE 6950). MAE 6950 requires a report written to thesis standards. Students are not required to defend the report. However, the report must be approved by the major professor.

The **PhD Degree** requires 12 credits of graduate-level coursework in Mechanical Engineering fundamentals; 24 credits of 6000-level (or above) engineering coursework, exclusive of MAE 6930, 6950, 6970, 6990, 7930, 7970, and 7990; a minimum of 6 credits of 5000-level (or above) coursework in approved mathematics; and 18 credits selected from any one of five declared areas of emphasis. A minimum of 90 credits is required beyond the BS, including a dissertation (MAE 7970). The dissertation must meet School of Graduate Studies requirements and be at least 24 credits, but no more than 39 credits. A Qualifying Exam is required and must be passed before completing 18 credits at the PhD level. A paper with the student as author or co-author, submitted for publication in a refereed journal, is also required.

**GPA Requirement.** A 3.0 GPA is the minimum acceptable for an ME or MS degree from USU. A PhD degree from USU requires a minimum GPA of 3.3.

**Course Requirements.** The specific course requirements for the ME, MS, and PhD degrees offered through the department may occasionally change. For this reason, prospective students are advised to seek current details concerning graduate degree requirements and program coursework by contacting the department or sending an Internet e-mail request to: joan.smith@usu.edu.

**Research**

The Department of Mechanical and Aerospace Engineering is conducting research in all three of the areas of specialization listed above. Departmental research projects are funded by both government agencies and private industry. Current research topics include analytical and experimental structural dynamics, computational and experimental fluid dynamics, aerodynamics, plastics
and composite materials, numerical modeling and design of composite structures, buried structures, thermodynamics, heat transfer, cryogenics, intelligent control systems, manufacturing automation, spacecraft control, design and analysis of space systems, orbital mechanics, remote sensing, robotics, life-cycle engineering, design theory and methodology, and production modeling and simulation.

Financial Assistance

A number of teaching and research assistantships are available to graduate students through the department, and are awarded on a competitive basis each year. In addition, scholarships covering the nonresident portion of tuition are available each semester, on a competitive basis, to nonresident students who hold a graduate assistantship paying at least $250 per month. Students interested in working part time as teaching or research assistants should apply to the department by March 31 for the coming academic year.

Acceptance to pursue graduate studies in the Department of Mechanical and Aerospace Engineering does not imply a commitment to any type of financial aid. All awards for financial aid are made on a competitive basis after applicants are admitted to graduate school. All students who receive any type of financial support from the University or who are supplied University space for study or research must carry a minimum of 9 credits of approved coursework for an MS or ME degree or a minimum of 12 credits of approved coursework for a PhD degree each semester while receiving such support.

Mechanical and Aerospace Engineering Faculty

Professors
Alma P. Moser, engineering mechanics, piping systems
Warren F. Phillips, aerodynamics, flight mechanics
Robert E. Spall, thermal/fluids
Byard D. Wood, solar energy for heating and cooling, heat and mass transfer

Professors Emeriti
P. Thomas Blotter, structural dynamics
Ralph H. Haycock, mechanics, manufacturing
Russell M. Holdredge, heat transfer, fluid mechanics
Owen K. Shupe, nuclear, material science
Carl D. Spear, material science
Edward W. Vendell, Jr., cryogenics, heat transfer, thermal systems design

Associate Professors
Steven L. Folkman, applied mechanics, structural dynamics, space structures
Thomas H. Fronk, mechanics of composites and materials
R. Rees Fullmer, manufacturing, controls, robotics, dynamics, spacecraft

Assistant Professors
Ning Fang, manufacturing
Thomas Hauser, computational fluid dynamics
Leijun Li, manufacturing
Todd J. Mosher, space engineering
Barton L. Smith, thermal/fluids
Brent E. Stucker, advanced manufacturing and materials
Wenbin Yu, advanced structures, solid mechanics, computational solid mechanics (FEM)

Adjunct Assistant Professors
Scott M. Jensen, thermal management of space systems
Paul J. Mueller, thermal science, propulsion
Steven B. Wassom, controls, dynamic spaceflight

Principal Lecturer
Carl G. Wood, design, manufacturing

Adjunct Lecturer
Angie Minichiello, thermal/fluids

Course Descriptions
Mechanical and Aerospace Engineering (MAE), pages 431-434
Military Science

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Undergraduate Programs

Objectives

Military Science (Army ROTC) focuses on leadership development. Students pursue the major of their choice while studying Military Science, and graduate with the ability to function effectively as leaders. Upon completion of Army ROTC and graduation from college, students become commissioned officers in the active Army, Army Reserve, or National Guard.

Instructors, textbooks, uniforms, and equipment are provided at no cost to the student or the University. All contracted students receive between $250-400 per month (up to 10 months per academic year). Army ROTC also covers the cost of tuition and fees for Army ROTC scholarship students and provides a $800-per-year book allowance.

The Margin of Difference

Army ROTC cadets learn to be leaders and receive hands-on experience in managing physical, financial, and human resources. They develop self-confidence and superior decision-making skills. Employers value these leadership qualities and recognize associated potential.

Four-Year Program

The traditional Army ROTC program covers four years consistent with normal undergraduate progression (freshman-senior). The four-year program is divided into two parts: the basic course and the advanced course. The basic course is usually taken during the first two years of college. It covers subjects such as mountaineering, land navigation, wilderness survival, leadership development, small unit tactics, weapons marksmanship, and military history. This program is designed for high-performing students who wish to try Military Science without obligation, while enhancing their leadership skills and self-confidence. Upon successful completion of the basic course, students are eligible to enter the advanced course.

Advanced course requirements are normally completed during the junior and senior years. The advanced course further develops and refines leadership competencies, and qualifies the student for a commission in the United States Army. Advanced course students receive a $350-400 per month tax-free subsistence allowance (up to $3,000-4,000 per year), and attend a paid five-week leader development camp between their junior and senior years.

Two-Year Program

This is a special program for junior and community college transfer students or for students who did not take Army ROTC during their first two years of college. To enter the two-year program, a student must have completed Basic Training in a military service or participate in five weeks of basic leadership instruction. This instruction usually takes place between the sophomore and junior year. Students are paid for attending this instruction, have the opportunity to compete for two-year scholarships, and may receive academic credit. Students who qualify for the two-year program are enrolled directly in the advanced course.

Scholarships

Army ROTC provides numerous scholarship opportunities. High school seniors may qualify for the four-year Army ROTC scholarship. College students may qualify for three- or two-year scholarships. These scholarships pay the cost of tuition and fees, a flat rate for textbooks and classroom supplies, and a monthly cash stipend between $2,500-4,000 per year. The Green to Gold scholarship allows soldiers serving on active duty to leave the Army early and attend college/ROTC full time while receiving scholarship benefits. Other scholarship opportunities include: room and book grants and the Western Undergraduate Exchange (WUE) program. Call or visit the Department of Military Science for details.

Placement Credit For Veterans

Veterans may qualify for advanced course placement based on prior military experience. They can take full advantage of veteran’s benefits and receive financial aid from Army ROTC concurrently.

Simultaneous Membership Program (SMP)

This program is available to advanced course cadets who wish to serve in the Army Reserve or National Guard while attending college and pursuing a commission through Army ROTC. SMP students are eligible to receive reserve drill pay, tuition assistance, other monetary incentives, and $350-400 per month (up to $3,000-4,000 per academic year) from Army ROTC. Call or visit the Department of Military Science for details.

Leave of Absence

If students (including scholarship recipients) wish to take a leave of absence to serve a mission for their church, they can do so conveniently between their freshman and sophomore years.

Commission Requirements

In order to qualify for a commission as a Second Lieutenant in the United States Army, each student must:

1. Complete all required Military Science instruction while attending college as a full-time student, and obtain a baccalaureate degree.
or higher degree prior to age 27 (age waiver can be granted for prior military service or other extenuating circumstances).
2. Meet medical and physical fitness standards.
4. Successfully complete the advanced summer camp.
5. Be recommended by a professor of Military Science.

Service Obligation
There is no military service obligation for basic course students, unless they have received an Army ROTC scholarship. Advanced course (contracted) and scholarship students incur an obligation to serve in the active Army, Army Reserve, or National Guard.

Minor in Military Science

Grade Requirements. Students must obtain a grade of C or better in all courses used toward the minor, as well as maintain a cumulative GPA of 2.5 for these courses.

Credit Requirements. A minimum of 21 credits must be earned in Military Science and related courses, as follows:

Required Courses (15 credits). MS 3010, 3020, 4010, and 4020; HIST 4810 or MS 4610.

Elective Courses (6 credits). These courses must be coordinated with and approved by the department head of the Military Science Department.

Military Science Faculty
Assistant Professor
Captain Reece D. Roberts

Personnel Specialist
Marie Behling

Instructors
Sergeant First Class Scott Womack
Sergeant First Class LaWrell D. Cook

Course Descriptions
Military Science (MS), pages 439-440
Music

Department Head: Bruce M. Saperston
Location: Fine Arts 107
Phone: (435) 797-3036
FAX: (435) 797-1862
E-mail: musicdep@cc.usu.edu
WWW: http://www.usu.edu/music/

Assistant Department Heads:
Gary Amano, Fine Arts 201, (435) 797-3028, gamano@hass.usu.edu
Cindy J. Dewey, Fine Arts 208B, (435) 797-3055, cdewey@hass.usu.edu

Undergraduate Advisors:
Music Education/Choral: Lane M. Cheney, Fine Arts 204, (435) 797-3052, lcheney@hass.usu.edu
Music Education/Instrumental: Thomas P. Rohrer, Fine Arts 106, (435) 797-3004, rohrer@hass.usu.edu
Music Therapy: Elizabeth York, Fine Arts 220B, (435) 797-3009, eyork@hass.usu.edu
Brian Abrams, Fine Arts 219, (435) 797-3030, babrams@hass.usu.edu
Guitar: Michael K. Christiansen, Fine Arts 124, (435) 797-3011, mchristiansen@hass.usu.edu
Perussion: Dennis D. Griffin, Fine Arts 114, (435) 797-3008, dgriffin@cc.usu.edu
Organ: James M. Drake, Fine Arts 210, (435) 797-3029, septerz@yahoo.com
Piano:
Gary Amano, Fine Arts 201, (435) 797-3028, gamano@hass.usu.edu
R. Dennis Hirst, Fine Arts 101, (435) 797-3257, dennis.hirst@usu.edu
Ralph H. van der Beek, Fine Arts 203, (435) 797-3033, rarvdb@aol.com
Strings: Sergio Bernal, Fine Arts 218A, (435) 797-0487, sergio.bernal@usu.edu
Violin:
Jessica Guideri, Fine Arts 104C, (435) 797-0083, jguideri@hass.usu.edu
Rebecca J. McFaul, University Reserve 21, (435) 797-3052, rebeccamcfaul@hass.usu.edu
Viola: Russell Fallstad, University Reserve 21, (435) 797-3092, russellfallstad@hass.usu.edu
Cello/String Bass: Anne Francis, Fine Arts Visual 129, (435) 797-3086, afrancis@hass.usu.edu
Woodwinds: Nicholas E. Morrison, Fine Arts 103, (435) 797-3506, nicholas.morrison@usu.edu
Voice: Cindy J. Dewey, Fine Arts 208B, (435) 797-3055, cdewey@hass.usu.edu
Music (Undecided): Bruce M. Saperston, Fine Arts 107, (435) 797-3036, bsaperston@hass.usu.edu

Degrees offered: Bachelor of Arts (BA) and Bachelor of Music (BM) in Music; Bachelor of Science (BS) and BA in Music Therapy. The Master of Education (MEd) in Secondary Education includes a specialization in Music Education.

Undergraduate emphases: BM degree in Music—Music Education, Performance, Piano Pedagogy

Two-year Certificate Programs: Piano, Organ, Guitar, Music Therapy Equivalency

Two-year Diploma Programs: Organ and Church Music, Piano Pedagogy, Guitar

(Certificates and diplomas are issued directly through the Music Department.)

Undergraduate Programs

Objectives

The Department of Music provides instruction in music by: (1) offering service courses which contribute to the Liberal Arts and Sciences major in the College of Humanities, Arts and Social Sciences and the College of Science, and to the University Studies Program of the University; (2) offering specific sequences of courses leading to professional preparation in music education, music therapy, and performance/pedagogy; and (3) providing public musical service to the University and the community.

The specific objectives of the programs in music for the music major are fourfold: (1) to prepare licensed music teachers to serve effectively in elementary and secondary schools; (2) to prepare musically talented students for careers as professional performers and/or studio teachers; (3) to prepare board-licensed music therapists to serve in educational and therapeutic settings; and (4) to prepare music students for graduate study in their areas of specialization.

Requirements

Admission Requirements. Admission requirements for the Department of Music include those described for the University in this catalog (see pages 15-18). In addition, transfer students must have a minimum 3.00 GPA in music courses and a minimum 2.75 GPA overall. All students interested in majoring in Music or Music Therapy will be given pre-music major status until they have completed the required audition/interview process, as verified by their area advisor through the Change of Major Form. It is strongly recommended that prospective majors complete their audition/interview during the department’s scholarship auditions in February preceding matriculation at USU. To schedule an audition/interview, contact the department at (435) 797-3015.

Prospective majors in Music Therapy should complete the audition/interview prior to May 1 of the year of admission.
GPA Requirement. Students majoring in music, music education, or music therapy must maintain a minimum GPA of 3.00 in music courses and a minimum 2.75 GPA overall. All core curriculum classes must be completed with a C- or higher in order to progress to the next courses in sequence. A student receiving a grade lower than C- is placed on probation, and may repeat the course once to raise the grade to C- or higher. If the grade received on the repeat is lower than C-, the student is no longer a music, music education, or music therapy major.

Degree Requirements. All majors in the department must complete the music core curriculum. Although it is possible to complete the degree if these courses are begun after the first year of study, the department strongly recommends that students begin the core curriculum during the first year, completing the courses in the following recommended sequence. **Freshman Year:** fall semester—MUSC 1110, 1130, 1150; spring semester—MUSC 1120, 1140, 1160. **Sophomore Year:** fall semester—MUSC 2130, 2150, 2170, 2180; spring semester—MUSC 2160, 3110, 3140; **Junior Year:** fall semester—MUSC 3120, 3170; spring semester—MUSC 3130, 3180. Students should note that MUSC 2180, 3170, and 3180 may be taken during different semesters, if necessary. Also, since MUSC 2160 is not required for all music areas, students should contact their advisor to determine whether or not they should enroll in this course. Additional requirements for specific emphasis areas are available from the Music Department Student Services Office, Fine Arts 102.

Recital and Concert Attendance. Recital and concert attendance is required and will be monitored. Students should turn in programs after attending concerts and recitals. A summary of attendance will be kept in the student’s file. To graduate, students are required to attend a minimum of 10 concerts and 10 recitals each year.

Individual Performance and Jury Requirements. Music majors enroll in individual instruction each semester and practice regularly outside of lessons. Jury exams are held at the end of each semester to assess individual progress. To determine specific jury requirements for their area, students should contact their advisor.

Recital Participation. Each music education, performance, and pedagogy major is encouraged to appear in a departmental recital each semester. Four such appearances are required for graduation. Since junior and senior recital requirements vary, students should consult program advisors and degree requirement sheets for specific information.

Piano Proficiency Requirements. Music, Music Education, and Music Therapy majors must meet a minimum standard of piano proficiency before graduation. The specific requirements are detailed in the department’s Student Handbook.

Music Theory Proficiency. Music, Music Education, and Music Therapy majors must meet a minimum standard of theory proficiency before entering third-year core music courses. This theory exam is administered upon completion of the theory sequence and is also required for all transfer students. It serves as a placement exam for those who have not completed the theory sequence at their previous schools. For details, contact the Music Department Student Services Office, (435) 797-3015, Fine Arts 102.

Music Certificates, Diplomas, and Minors. Requirements for two-year certificate programs in piano, organ, guitar, and music therapy equivalency; for two-year diploma programs in organ and church music, piano pedagogy, and guitar; and for minors in music are available in the Music Department Student Services Office, Fine Arts 102. Certificates and diplomas are issued directly through the Music Department.

Additional Information and Updates

Degree requirements not listed above are listed on the Music Major Requirement Sheet and the Music Therapy Major Requirement Sheet. Additional requirements, including appropriate sequencing of courses, are listed in the **Department of Music Student Handbook**. For the most recent information regarding degree requirements and course sequencing, contact advisors over specific programs. Further information can also be obtained by contacting the Music Department Office, Fine Arts 102, or by visiting the department’s website.

Financial Support

Scholarships, grants, and work-study programs are available through the University. Information about these programs can be obtained by calling the Admissions Office, (435) 797-1129 or 1-800-488-8108. In addition, the Department of Music offers talent-based scholarships to undergraduate students and employs students as part-time workers. For scholarship information or to arrange an audition, contact the department at (435) 797-3015 or visit the department’s website.

Music Faculty

**Professors**

Gary Amano, piano  
Michael L. Ballam, opera  
Michael K. Christiansen, guitar program  
James M. Drake, organ program  
Todd L. Fallis, instrumental music education, student advising, low brass  
F. Dean Madsen, music theory, twentieth century music, composition  
Nicholas E. Morrison, clarinet, associate director of bands

**Adjunct Professor**

Michael Martin Murphey, songwriting, American studies

**Professors Emeriti**

Warren L. Burton, introduction to music  
Max F. Dalby, bands, woodwind, conducting  
Glen A. Fifield, elementary music, cornet and trumpet  
Larry G. Smith, jazz program, musicianship program, staff arranger, saxophone, jazz piano  
Alvin Wardle, music education, low brass

**Associate Professors**

Cindy J. Dewey, voice, opera, pedagogy  
Mark A. Emile, string performance and pedagogy, violin/viola  
Dennis D. Griffin, percussion, electronic music, composition  
Lynn Jenison-Keisker, opera coach  
Bruce M. Superston, music therapy  
Leslie Timmons, elementary music education, flute  
Elizabeth York, director of music therapy
Associate Professor Emeritus
Mildred Johnson, music history and literature, musicianship program, viola

Assistant Professors
Brian Abrams, music therapy
Sergio Bernal, orchestra conductor, string program
Jon Gudmundson, jazz, saxophone
R. Dennis Hirst, piano, Youth Conservatory
Thomas Rohrer, director of bands
Ralph van der Beek, piano, Youth Conservatory

Assistant Professor Emeritus
Betty Beecher, piano

Temporary Instructors
Lane Cheney, choral music education
R. Cory Evans, choral music

Lecturers (Fry Street Quartet)
Russell Fallstad, viola
Anne Francis, cello
Jessica Guideri, violin
Rebecca McFaul, violin

Course Descriptions
Music (MUSC), pages 440-446
National Environmental Policy Act (NEPA)

Director: Joanna Endter-Wada,
Department of Environment and Society
Location: Natural Resources 355B
Phone: (435) 797-2797
FAX: (435) 797-3526
E-mail: joanna.endter-wada@usu.edu
WWW: http://www.cnr.usu.edu/policy/nepa.html

Program Administrator: Judith A. Kurtzman,
Natural Resources 322, (435) 797-0922

Graduate Program Description
The Natural Resource and Environmental Policy Program (NREPP) at Utah State University and the Shipley Group, Inc. have formed a partnership to provide a graduate-level certificate program that offers training related to the National Environmental Policy Act (NEPA). NEPA is an important environmental law that requires analysis of impacts, alternatives, and mitigation measures for all major federal actions affecting the environment, both within the territorial boundaries of the U.S. and at foreign military installations. Government agencies, private businesses, public interest organizations, and other groups involved in the NEPA process need individuals who have been trained in decision-making, analysis, and documentation aspects of NEPA, as well as in the accompanying Council on Environmental Quality (CEQ) regulations and various agencies’ NEPA implementing procedures.

The NEPA Certificate Program was designed to prepare natural resource and environmental professionals to meet the challenges of complying with the act and working effectively on NEPA documents. Participants who successfully complete the program should have a solid understanding of both the spirit and the letter of the law, and will be more effective members of interdisciplinary teams responsible for developing NEPA documents.

Certificate
Students who complete the program will receive a graduate-level certificate in the National Environmental Policy Act. Their Utah State University transcript will list the courses they attended to complete the program.

Admission Requirements
To apply and gain acceptance into the program, a person must complete and submit a NEPA Certificate Program application form to the Natural Resource and Environmental Policy Program (NREPP) at USU, as well as provide a transcript documenting the completion of a bachelor’s degree. Students pursuing the NEPA Certificate are not required to be enrolled in a graduate degree program. However, credits obtained from the program may be applied toward a graduate degree.

Course Requirements
To receive the certificate, a participant must complete the following set of requirements:

1. apply and be accepted into the NEPA Certificate Program;
2. register for and successfully complete seven graduate-level courses taken for grades (four required courses and three elective courses);
3. undertake an individual capstone experience for graduate credit that involves a negotiated project;
4. maintain a minimum 3.0 GPA for program courses (grades below C will not be accepted);
5. abide by the Code of Policies and Procedures for Students at Utah State University.

NEPA Certificate Program Courses
Courses for the program will be offered at USU and at other locations around the country. Courses will be offered on a short-course basis through Continuing Education. A two-credit course requires a minimum of three full days in class; a one-credit course requires two full days in class. To receive graduate credit that can be applied toward completion of the certificate, all NEPA courses must be taken for a letter grade, which requires completion of a written examination in addition to class attendance. All courses offered as part of the NEPA Certificate Program may be taken for University graduate credit, whether or not a participant in the course is enrolled in the NEPA Certificate Program.

Curriculum
Students must complete four core courses (2 credits each), three elective courses (1 credit each), and a capstone experience (1 credit) in order to fulfill the requirements for the NEPA Certificate.

Core Courses
Participants are required to take four of the following courses. The first three listed are required. However, participants may choose between the last two courses to fulfill the core course requirements.

- NEPA 6200 How to Manage the NEPA Process and Write Effective NEPA Documents (2)
- NEPA 6210 Clear Writing for NEPA Specialists (2)
- NEPA 6220 Reviewing NEPA Documents (2)
- NEPA 6230 Risk Communication for NEPA Specialists: Strategies and Implementation (2)
- NEPA 6260 Cultural and Natural Resource Management (2)


**Elective Courses**

Participants are required to take three courses of their choosing from the following list.

- NEPA 6270 Environmental Compliance Overview (1)
- NEPA 6280 Interdisciplinary Team Building (1)
- NEPA 6300 Effective Environmental Contracting (1)
- NEPA 6310 NEPA Writing for Technical Specialists (1)
- NEPA 6320 NEPA: Cumulative Impacts (1)
- NEPA 6330 Conflict Management in the NEPA Process (1)
- NEPA 6340 Content Analysis and Public Response Management (1)
- NEPA 6350 Socio-economic Impact Analysis for NEPA Specialists (1)
- NEPA 6360 Overview of the Endangered Species Act (1)

**Capstone Experience**

After completing the coursework, participants are required to complete a NEPA Capstone Experience (NEPA 6370) before being awarded the NEPA Certificate. This experience will be individualized for each participant, will consist of a project that has been negotiated between the participant and the program faculty, and may be subject to oversight from the NEPA Certificate Program Advisory Board.

**Course Descriptions**

National Environmental Policy Act (NEPA), page 447
Natural Resources and Environmental Education (NREE)

Director: Steven W. Burr, Environment and Society
Location: Biology-Natural Resources 289
Phone: (435) 797-7094
E-mail: steve.burr@usu.edu

Program Office: Department of Environment and Society
Location: Natural Resources 201
Phone: (435) 797-1790
FAX: (435) 797-4048
WWW: http://www.cnr.usu.edu/envs

Graduate Program Description

The Natural Resources and Environmental Education (NREE) Program offers an Interdisciplinary Graduate Certificate Program to provide graduate students with a comprehensive educational foundation for understanding and communicating natural resources and environmental information, and for developing the analytical skills needed to effectively implement appropriate environmental education and communication techniques for varying audiences. The NREE Certificate Program is administered by the Department of Environment and Society, College of Natural Resources. The certificate program consists of three components, for a total of 15-17 credits: (1) the NREE Core that includes two foundation courses, a NREE graduate seminar, and an “integrating” capstone experience; (2) one Human Dimensions of Natural Resources/Environment course, and (3) one Natural Resources/Environmental Management course.

The purpose of the certificate is to meet an identified need expressed by graduate students with interests in working professionally in the field of natural resources and environmental education and interpretation. The certificate program provides an interdisciplinary perspective on environmental education, and provides graduate students with the ability to teach people how to think critically and creatively in understanding, interpreting, and dealing with environmental issues and challenges. This approach enables students to focus on a broad spectrum of issues and content related to natural resources and the environment.

The structure of the certificate program emphasizes: (1) processes and skills necessary to present and integrate information across a broad spectrum of delivery systems; (2) interdisciplinary information and technical content across many areas, including natural resources, ecology, human resources, history, education, sociology, etc.; and (3) development of an interest area of personal/professional inquiry. The program provides a mechanism to support graduate student project development and research, emphasizing scholarship, discovery, and application of findings in applied settings in order to contribute to the professional field of natural resources and environmental education and interpretation.

Completion of the certificate program will provide graduate students with a working knowledge of the depth and breadth of the professional field of environmental education and interpretation. Moreover, it will prepare them for a job market demanding innovative and creative approaches for incorporating environmental education and interpretation in natural resource management agencies, in both formal (K-12 school-based) and nonformal (youth, community, and outdoor) education programs, in nonprofit organizations, and in the for-profit commercial sector. Although professionals working in natural resources and environmental education may work in a wide range of settings, they share one objective: to help people appreciate and understand the relationship between humans and the natural world around them. Thus, the value of the NREE Certificate Program goes far beyond more traditional approaches associated with education-oriented certificate programs.

Certificate

Students who complete the program receive a certificate in Natural Resources and Environmental Education. Notification of this certificate appears on the student’s transcript.

Admission Requirements

To apply for admittance into the NREE Interdisciplinary Graduate Certificate Program, a graduate student must: (1) be accepted by the School of Graduate Studies at Utah State University for graduate study (current or provisional), (2) complete an NREE Interdisciplinary Graduate Certificate Program Application, and (3) submit a resume with references, along with a narrative describing personal interest in completing the NREE Certificate Program with respect to his or her professional goals. The NREE Program Director reviews the application and makes a recommendation for admittance into the certificate program, if appropriate, to the NREE Certificate Advisory Committee.

Student Advisement

An NREE Certificate Advisory Committee, comprised of the NREE Program Director, NREE Program Associate, and two NREE-affiliated faculty from participating departments and colleges, will assist in reviewing graduate student applications for admission into the certificate program, identifying major advisors, identifying funding opportunities, recommending courses to meet the NREE Certificate requirements, and advising graduate students. Graduate students accepted into the NREE Certificate Program will work with their major faculty advisor, as well as with the NREE Certificate Advisory Committee, to support them in understanding and meeting the requirements of the NREE Graduate Certificate Program.

Course Requirements

The NREE Interdisciplinary Graduate Certificate Program consists of three curriculum components, for a total of 15-17 credits: (1) the NREE Core, (2) one Human Dimensions of Natural Resources/Environment course, and (3) one Natural Resources/Environmental Management course. Many of the identified courses in the latter two categories will also satisfy the
requirements for a specific degree program in different departments. Therefore, students can select courses in these two categories to complete their specific degree requirements, while at the same time satisfying the requirements of the NREE Certificate Program.

I. Natural Resources and Environmental Education

Core Courses (10 credits)

For the NREE Interdisciplinary Graduate Certificate Program, students are required to take the following two foundation courses, participate in the Graduate Seminar, and complete an “integrating” capstone experience, for a total of 10 credits, to fulfill the requirements of the NREE Graduate Certificate Program Core.

NREE Graduate Core:    Credits

Foundation Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVS 5110</td>
<td>Environmental Education (Sp)</td>
<td>(3)</td>
</tr>
<tr>
<td>ENVS 6600</td>
<td>Advanced Natural Resource Interpretation (F)</td>
<td>(3)</td>
</tr>
</tbody>
</table>

The Environmental Education course and the Advanced Natural Resource Interpretation course serve as Foundation Courses. Environmental Education covers teaching about the environment, as well as using the environment and natural world to teach other subjects, with a strong emphasis on participation and on practicing techniques. Advanced Natural Resource Interpretation examines the planning processes, techniques, and evaluation procedures for using information and education to influence human behavior and increase benefits to visitors in natural settings, and also focuses on the leadership of teams involved in producing interpretive plans and materials.

Graduate Seminar

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVS 6800</td>
<td>Environment and Society Departmental Seminar (F or Sp)</td>
<td>(1)</td>
</tr>
</tbody>
</table>

The Graduate Seminar requires student attendance at a number of different speaker seminars, occurring during the fall or spring semester, that are related to NREE, along with occasional meetings with NREE affiliated faculty to discuss connections and relevance of the seminars to NREE.

Capstone Experience

Students must complete 3 credits in a capstone experience, developed in consultation with a faculty advisor. Credits may be completed in the following types of courses:

- Graduate Internship/Co-op
- Graduate Special Topics
- Graduate Directed Study
- Thesis Research
- Dissertation Research

The Capstone Experience requirement may be fulfilled in a number of ways, based on each student’s interest, through an internship/co-op/special field experience, an investigation of a special topic and/or development of a project, directed readings/study, or a research project. In meeting this requirement, it will be important for students to be able to demonstrate they are getting an “integrating” capstone experience in natural resources and environmental education. Depending on the topic and its relationship to natural resources and environmental education, the completion of a student’s Plan A thesis or Plan B project at the master’s level may also fulfill this requirement. A student’s doctoral dissertation research may qualify as a Capstone Experience. The student’s graduate advisor, graduate committee, and NREE Advisory Committee will approve the “capstone” experience. A final “integrative” paper or thesis/dissertation will be the product for the “capstone” experience, emphasizing scholarship and discovery, as well as application of findings in applied settings in natural resources and environmental education.

II. Human Dimensions of Natural Resources/Environment Courses (2-3 credits)

For the NREE Interdisciplinary Graduate Certificate Program, students are required to take one of the following courses, in order to gain a human dimensions’ orientation toward natural resources and the environment, and to gain a human dimensions’ orientation toward natural resources and environmental education in a broader context of human-environment relationships.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 5560</td>
<td>Natural Resources and Environmental Economics</td>
<td>(3)</td>
</tr>
<tr>
<td>ENVS 5150</td>
<td>Conflict Management in Natural Resources</td>
<td>(2)</td>
</tr>
<tr>
<td>ENVS 5300</td>
<td>Natural Resources Policy and Law</td>
<td>(2)</td>
</tr>
<tr>
<td>ENVS 5320</td>
<td>Water Law and Policy in the United States</td>
<td>(3)</td>
</tr>
<tr>
<td>ENVS 6000</td>
<td>Theoretical Foundations in Human Dimensions</td>
<td>(3)</td>
</tr>
<tr>
<td>ENVS 6110</td>
<td>Fisheries and Wildlife Policy and Administration</td>
<td>(3)</td>
</tr>
<tr>
<td>ENVS 6350</td>
<td>Wildlife Damage Management Policy</td>
<td>(3)</td>
</tr>
<tr>
<td>HIST 6460</td>
<td>Seminar in Environmental History</td>
<td>(3)</td>
</tr>
<tr>
<td>PHIL 5510</td>
<td>Ethics and the Environment</td>
<td>(3)</td>
</tr>
<tr>
<td>POLS 5180</td>
<td>Natural Resource Policy</td>
<td>(3)</td>
</tr>
<tr>
<td>POLS 5200</td>
<td>Global Environment</td>
<td>(3)</td>
</tr>
<tr>
<td>SOC 6620</td>
<td>Environment, Technology, and Social Change</td>
<td>(3)</td>
</tr>
<tr>
<td>SOC 6630</td>
<td>Natural Resources and Social Development</td>
<td>(3)</td>
</tr>
</tbody>
</table>

There may be another course that can satisfy this requirement, but the course will need to be approved by the student’s graduate advisor and the NREE Advisory Committee.

III. Natural Resources/Environmental Management Courses (3-4 credits)

For the NREE Interdisciplinary Graduate Certificate Program, students are required to take one of the following courses in order to gain a management perspective toward natural resources and the environment.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADVS 5030</td>
<td>Sustainable Agricultural Production Systems with Animals</td>
<td>(3)</td>
</tr>
<tr>
<td>AWER 5150/6150</td>
<td>Fluvial Geomorphology</td>
<td>(3)</td>
</tr>
<tr>
<td>AWER 5330/6330</td>
<td>Large River Management</td>
<td>(3)</td>
</tr>
</tbody>
</table>
AWER 5640/7640  Riparian Ecology and Management  (3)
AWER 5660  Watershed and Stream Restoration  (2)
AWER 6530  Water Quality and Pollution  (3)
AWER 6650  Principles in Fishery Management  (3)
ENVS 5000  Collaborative Problem-Solving for Environment and Natural Resources  (3)
FRWS 5000  Predator Ecology and Management  (3)
FRWS 5070/6070  Range Wildlife Relations  (3)
FRWS 5300/7300  Wildlife Damage Management Principles  (3)
FRWS 7000  Theory and Applications of Rangeland Ecosystem Management  (3)
PLSC 5550/6550  Weed Biology and Control  (4)
SOIL 5350/6350  Wildland Soils  (3)

There may be another course that can satisfy this requirement, but the course will need to be approved by the student’s graduate advisor and the NREE Advisory Committee.

IV. Personal/Professional Inquiry

Although not formally required, a number of courses exist that can support students’ interest in natural resources and environmental education, and support student efforts in completing individual degree requirements. These courses include the following:

ASTE 5260/6260  Environmental Impacts of Agricultural Systems  (3)
ASTE 6070  Program and Curriculum Development in Applied Technology Education  (3)
ASTE 6110  Applied Technology Education Program Planning and Evaluation  (3)
ASTE 6170  Supervision and Administration of International Extension Programs  (3)
ASTE 6240  Strategies for Teaching Adults  (3)
BIOL 5550  Freshwater Invertebrates  (3)
BIOL 5560  Ornithology  (3)
BIOL 5570  Herpetology  (3)
BIOL 5580  Mammalogy  (3)
BIOL 6510  Insect-Plant Interactions  (2)
ELED 6400  Multiple Talent Approach to Teaching  (2)
ELED 6700  Improvement of Science Instruction  (3)
ENGL/HIST 6610  Seminar on the American West  (3-4)
ENGL/HIST 6620  Seminar in Native American Studies  (3-4)

ENGL/HIST 6700  Folklore Theory and Method  (3)
ENGL/HIST 6720  Folklore Fieldwork  (3)
ENGL/HIST 6730  Public Folklore  (3)
ENGL/HIST 6740  Folk Narrative  (3)
ENGL/HIST 6760  Cultural and Historical Museums  (3)
GEOG 5650/6650  Developing Societies  (3)
GEOG 5810/6810  Geography Education Inservice Workshop  (3)
GEOG 5970  Classroom Technology in Geography Education  (3)
GEOG 6800  Teaching Geography  (3)
HIST 6460  Seminar in Environmental History  (3)
LAEP 5400/6400  Low Water Landscaping  (3)
LAEP 6110  Landscape Planning for Wildlife  (3)
MHR 6620  Training and Organizational Development  (3)
MHR 6650  Team and Interpersonal Effectiveness  (3)
PLSC 5100/6100  Landscape Irrigation Management  (3)
POLE 5180  Natural Resource Policy  (3)
POLE 5200  Global Environment  (3)
PSY 6660  Cognition and Instruction  (3)
PSY/EDUC 7670  Literature Reviews in Education and Psychology  (1)
PSY 7700  Grant Writing  (3)
SCED/ELED 6150  Foundations of Curriculum  (3)
SCED/ELED 6310  Content Area Reading and Writing  (3)
SPCH 5250  Environmental Rhetoric  (3)
THEA 6030  Storytelling  (3)

NREE Affiliated Faculty

Professors
Clifford B. Craig, Environment and Society
Melody Graulich, English
Leona K. Hawks, Environment and Society
Jack M. Payne, Environment and Society, and Vice President for University Extension
Terry L. Sharik, Environment and Society
Gary S. Straquadine, Agricultural Systems Technology and Education
Richard E. Toth, Environment and Society

Associate Professors
James J. Barta, Elementary Education
Dale J. Blahna, Environment and Society
Mark W. Brunson, Environment and Society
Steven W. Burr, Environment and Society
Christopher A. Call, Forest, Range, and Wildlife Sciences
Christopher A. Conte, History
Michael R. Kuhns, Forest, Range, and Wildlife Sciences
Rebecca M. Monhardt, Elementary Education
Jan E. Roush, English
Robert H. Schmidt, Environment and Society

Assistant Professors
Christopher Cokinos, English
Nancy O. Mesner, Aquatic, Watershed, and Earth Resources

Jennifer A. Peeples, Languages, Philosophy, and Speech Communication
Bonnie L. Pitblado, Sociology, Social Work and Anthropology

Senior Lecturer
Michael F. Butkus, Environment and Society

Lecturers
Barbara Middleton, Environment and Society
Susan K. Morgan, Geology

Other Affiliated Individuals
David T. Anderson, Project Director, Utah Botanical Center
John Haskin, Director of Education and Dean of Faculty, Teton Science School
Darren J. McAvoy, Extension Program Associate, Forest, Range, and Wildlife Sciences
Kay Rhees, Principal, Edith Bowen Laboratory School
Jack Shea, Director, Teton Science School
Debra M. Spielmaker, Director, Utah Agriculture in the Classroom
Karla VanderZanden, Director, Canyonlands Field Institute
Douglas G. Wachob, Research Director, Teton Science School
Natural Resource and Environmental Policy

Coordinator: Michael S. Lyons
Location: Main 330D
Phone: (435) 797-1312
E-mail: m.lyons@usu.edu

Lead Department: Political Science
Location: Main 320
Phone: (435) 797-1306
FAX: (435) 797-3751

Graduate Program Description

The Natural Resource and Environmental Policy Certificate is designed to prepare resource and environmental professionals to meet current public policy challenges. Many of the problems confronting natural resource and environmental managers are social, as well as technical, in nature. Public involvement in decision making, equity concerns, and conflict management is becoming a critical issue. Resource professionals are increasingly challenged to design management strategies and public policies that maximize human well-being, environmental quality, and ecological integrity. The policy certificate is an interdisciplinary program to train students for careers in government, education, consulting, and conservation.

The Certificate Program provides students with a comprehensive educational framework for understanding complex natural resource and environmental concerns and to develop the critical thinking and analytical skills needed to address these issues. Students develop familiarity with both disciplinary and interdisciplinary concepts and principles of the natural, social, and physical science approaches to natural resource policy. Students engage in educational activities and thesis projects designed to apply this training to current policy issues. The primary objective is to prepare students to develop innovative, creative, and feasible natural resource and environmental policies and management strategies.

All seven colleges, as well as fifteen departments, at Utah State University participate in the Natural Resource and Environmental Policy Program and are represented on the Policy Program Advisory Committee.

Certificate

Students who complete the Policy Program receive a certificate in Natural Resource and Environmental Policy. Notification of this certificate appears on the student’s transcript.

Admission Requirements

Admission to the Certificate Program is open to students accepted into a Plan A (thesis) master’s degree program or a doctoral degree program at Utah State University who have satisfied the prerequisites outlined in the next paragraph. Admission is also available for students accepted into Plan B or Plan C master’s degree programs, provided their degree program requirements include development of a written research paper or project report that will be presented to and defended before the student’s graduate committee. In all cases, the thesis, research report, or dissertation must contain a significant component addressing natural resource or environmental policy dimensions of the research.

Prerequisites for acceptance into the Natural Resource and Environmental Policy Graduate Certificate Program are (1) undergraduate or other experience in the natural and social sciences; and/or (2) demonstrated understanding of general ecological principles, earth processes, and social systems. A standing Admissions Subcommittee of the Policy Program Advisory Committee reviews graduate student requests for admission to the program to determine whether prerequisites have been met.

To meet the natural sciences prerequisite, students must have taken an upper-division course focusing on the operation of natural systems, such as a course in ecology, biological systems, ecosystem management, or earth processes. Professional experience equivalent to such a course is also considered as having met the natural sciences prerequisite. Students without sufficient natural science backgrounds are required to take an equivalent course at USU to fulfill the prerequisites prior to certificate coursework. Students should contact the Natural Resource and Environmental Policy Program coordinator for a current list of suggested courses.

To meet the social sciences prerequisite, students must have taken an upper-division course focusing on the operation of social systems, such as a course from the fields of economics, political science, sociology, or anthropology. Professional experience equivalent to such a course may also be considered as having met the social sciences prerequisite. Students should contact the Natural Resource and Environmental Policy Program coordinator for a current list of suggested courses.

Graduate Committee

The student’s graduate committee must include one faculty member affiliated with the Policy Program to advise the student on meeting the program requirements and in selecting core courses.

Course Requirements

The Graduate Certificate Program draws on a variety of courses to provide an integrated, interdisciplinary program. An integrative cornerstone seminar offered every other year as a team-taught course (NR 6430, Natural Resource and Environmental Policy Cornerstone Seminar), is normally taken in the student’s first year. Students are expected to take at least nine credits from the core policy courses listed below to gain perspective on different disciplinary approaches to natural resource policy. Another program activity is the Natural Resource and Environmental Policy Seminar, NR 6440, which features invited speakers and must be attended by students for credit. In another required seminar,
NR 6450, graduating students make a presentation on the policy dimensions of their thesis or dissertation.

The following are the Natural Resource and Environmental Policy Certificate core courses. Other courses may be included in the list of core courses by action of the Policy Program Faculty Advisory Committee.

ASTE 6260  Environmental Impacts of Agricultural Systems
AWER 6330  Large River Management
BA 6540     ST: Sustainable Marketing
ECON 6500  Introduction to Natural Resource Economics
ECON 6510  Introduction to Environmental Economics
ENVS 5150  Conflict Management in Natural Resources
ENVS 5300  Natural Resources Law and Policy
ENVS 5320  Water Law and Policy in the United States
ENVS 6000  Theoretical Foundations in Human Dimensions of Ecosystem Science and Management
ENVS 6110  Fisheries and Wildlife Policy and Administration
ENVS 6130  Policy Aspects of Wildland Recreation
ENVS 6350  Wildlife Damage Management Policy
ENVS 6440  Stegner Center Annual Symposium
ENVS 6530  Natural Resources Administration
ENVS 6550  Environment, Resources, and Development Policy
ENVS 6900  ST: Natural Resources Partnerships
FRWS 6900  ST: Restoration and Rehabilitation Economics
HIST 6460  Seminar in Environmental History
LAEP 6900  Special Problems: NEPA Course
POLS 5180  Natural Resource Policy
POLS 5200  Global Environment
SOC 6620  Environment, Technology, and Social Change
SOC 6630  Natural Resources and Social Development
SOC 7620  Sociology of Environmental Hazards and Risks
SPCH 5000  Studies in Speech Communication: Protest and the Environment

Approved core courses may be part of a student’s departmental requirements; however, only one core course taught in the student’s home department may be applied toward the certificate.
Master of Natural Resources (MNR)

Degree Coordinator: Todd A. Crowl
Location: Natural Resources 108
Phone: (435) 797-7565
FAX: (435) 797-2443
E-mail: facrowl@cc.usu.edu
WWW http://www.cnr.usu.edu

Degree offered: Master of Natural Resources (MNR)

Objectives
The Master of Natural Resources (MNR) is a professional degree designed to prepare students to work in the interdisciplinary context of the 21st Century. It is a nonthesis program, intended for students and practicing professionals with a career orientation in natural resource management.

Admission Requirements
All MNR students are admitted through one of the three College of Natural Resources departments, following School of Graduate Studies standard procedures and policies (see pages 90-91). As with other USU master’s degrees, each student must be accepted by a faculty member (major professor) who agrees to guide the student in the MNR program.

Undergraduate prerequisites include courses in chemistry, physics, botany, zoology, ecology, economics, political science, algebra, and statistics; and at least three courses in natural resources disciplines. Students without undergraduate degrees in natural resources or similar majors will be required to make up deficiencies in undergraduate preparation prior to beginning MNR degree coursework.

Course Requirements
The degree program includes two required core courses, courses in specified topic areas, and elective courses. The specific coursework required for each student will be determined by the major professor and the two other members of the student’s graduate supervisory committee.
Nursing Program

Weber State University/Utah State University

Coordinator: Joanne Duke
Location: Lundberg Building 201
Phone: (435) 797-1515
FAX: (435) 797-3649
E-mail: jduke@cc.usu.edu
WWW: http://colleges.weber.edu/chp/programs/nursing.asp

Advisor: Susan L. Haddock, Biology-Natural Resources 101, (435) 797-2577, susanlh@biology.usu.edu

Undergraduate Programs

Associate Degree Program Objectives

Weber State University and Utah State University jointly offer an Associate of Science degree or an Associate of Applied Science degree in Nursing at Logan.

All nursing theory, University Studies, and laboratory practice classes are offered on the Utah State University campus and in health service agencies within Box Elder and Cache Counties.

Weber State University admits the prospective student and grants the Associate of Science degree or the Associate of Applied Science degree upon the student’s completion of the course. The student participates in pinning ceremonies held on the Utah State University Campus and graduation ceremonies held on the Weber State University campus.

Departmental Admission Requirements for Associate Degree Program

Students apply for admission to the Cooperative Nursing Program by contacting the coordinator of the program, Lundberg Building, Room 201, 3250 Old Main Hill, Utah State University, Logan UT 84322-3250.

The student’s application is handled through the Office of Nursing Admissions, Weber State University, Ogden UT 84408. Applicants have until February 1 to complete their application process. All application forms must be completed and sent to the Nursing Program admissions advisor at Weber State University. Notifications of status are sent to applicants around April 15.

A graduate of this program is eligible to write the State Board licensing examination to become a registered nurse. The program is accredited by the Utah State Board of Nursing and the National League of Nursing Accrediting Commission.

Students admitted to the program have the prerogative of taking the licensing examination for Practical Nursing upon an equivalency basis with the completion of the first year’s course of studies.

Curriculum for Associate Degree Program

The curriculum for the associate degree is planned over a six-semester period, using two academic years plus two summer semesters. It is planned to include a broad University Studies program concurrently with courses in Nursing. A grade of B or higher is required for all lower-division nursing courses, and a grade of C or higher is required for all support classes.

Nursing Program Faculty

Assistant Professors
Joanne Duke
Debra Haas
Lori Hart
Jonny Kelly
Joyce Murray
Julie O'Brien
Kelly Shoell

Course Descriptions

Nursing (NURS), pages 451-452
Nutrition and Food Sciences

Department Head: Charles E. Carpenter
Location: Nutrition and Food Sciences 213
Phone: (435) 797-2126
FAX: (435) 797-2379
E-mail: nfs@cc.usu.edu
WWW: http://www.usu.edu/nfs
Undergraduate Advisor: Marianne I. Rich,
Nutrition and Food Sciences 321, (435) 797-2131,
maring@cc.usu.edu

Degrees offered: Bachelor of Science (BS), Master of Science (MS), and Doctor of Philosophy (PhD) in Nutrition and Food Sciences; Master of Food Microbiology and Safety (MFMS); Master of Dietetics Administration (MDA)

Undergraduate emphases: BS—Food Science, Nutrition Science, Biotechnology, Food Technology Management, Culinary Arts/Food Service Management, and Dietetics

Graduate specializations: MS, PhD—Dietetics, Food Biotechnology, Food Chemistry, Food Engineering, Food Microbiology, Food Processing, Human Nutrition, and Nutrient Metabolism

Undergraduate Programs

Objectives

The Department of Nutrition and Food Sciences has the following three objectives:

1. To provide students with the scientific/academic background necessary to function well in further academic pursuits or future work environments.
2. To provide students with the critical thinking and problem solving skills necessary to enhance further academic pursuits or future work environments.
3. To provide students with practical application and work experience credentials to provide personal and employment satisfaction.

Dietetics. The Dietetics emphases prepare students to become registered dietitians. To become a registered dietitian, a student must complete a bachelor’s degree program, complete a supervised internship, and pass a national registration exam. Registered dietitians, who have professional skills in clinical nutrition, community/public health nutrition, and food service management, are in great demand in the job market.

USU offers two programs in dietetics: the Coordinated Program in Dietetics (CPD) and the Didactic Program in Dietetics (DPD). The CPD and the DPD are both accredited by the Commission on Accreditation for Dietetics Education of The American Dietetic Association, 20 South Riverside Plaza Suite 2000, Chicago IL 60606-6995, (312) 899-0040.

Coordinated Program in Dietetics (CPD). The CPD includes coursework and supervised internship experience. The graduate is eligible to take the national registration exam upon completion of the BS degree. Students must complete prerequisites and make application to the CPD by March 15 of the sophomore year. Ten to twelve students are accepted annually into the junior-level coursework and clinical work. Students are required to complete 1,000 hours of internship experience during their junior and senior years. Senior students must relocate to Salt Lake City during fall semester, in order to obtain extensive internship experiences in clinical and community settings.

Didactic Program in Dietetics (DPD). The DPD is a four-year academic program meeting all requirements enabling the graduate to apply for a supervised internship following graduation. Internships are located throughout the USA. USU Extension also sponsors an internship.

Food Science. Students receive an excellent background in chemistry, engineering, food processing, statistics, sensory evaluation, and microbiology. The Food Science program is approved by the Institute of Food Technologists. Graduates are in demand by industry for positions in research, quality control/assurance, product development, and processing. Government laboratories and regulatory agencies also hire food science graduates. With a food science degree, students can also qualify to enter graduate school.

Nutrition Science. The Nutrition Science emphasis is for students who are interested in studying the molecular and cellular bases of human health and disease. This is a multi-disciplinary program in which students learn to apply techniques from the fields of molecular and cellular biology, physiology, genetics, and biochemistry to issues in nutrition. Students will gain experience in laboratory, clinical, and epidemiological methods, and may have the opportunity to gain laboratory research experience in nutrition studies being conducted by faculty members. The undergraduate Bachelor of Science degree qualifies a student with the Nutrition Science emphasis to find employment in industry or academic laboratories, as well as in government agencies. It can also be used as preparation for medical or graduate school.

Biotechnology. The Biotechnology emphasis gives students a specialized background in biotechnology with depth training in either Food Science or Nutrition Science. Graduates of the program will be well-qualified to pursue biotechnology-related positions related to their depth area of choice.

Food Technology Management. The Food Technology Management program gives students a broad background in basic food science and in business administration to be applied to the business-oriented aspects of the food industry. Students also qualify for a Business Production Minor. Graduates are sought by private food industry and public institutions in management positions.

Culinary Arts/Food Service Management. This emphasis prepares students in the art and science of culinary arts, and provides the management principles needed to effectively manage a
food service operation, including human resource management, financial management, time management, communications, etc. Students are required to obtain a minor in BA Marketing, MHR Management, or MHR Human Resource Management.

Completion of courses required for the Food Science Emphasis, Nutrition Science emphasis, or Dietetics emphasis may be suitable preparation for students planning to apply to medical school.

For more emphasis information about course sequences and requirements for admission, see major requirement sheet, available from the Department of Nutrition and Food Sciences, or visit the departmental home page at:
http://www.usu.edu/nfs.

Requirements

Departmental Admission Requirements. Admission requirements for the Department of Nutrition and Food Sciences are the same as those described for the University on pages 15-18. Students in good standing may apply for admission to the department. Students planning to major in Nutrition and Food Sciences should take algebra, chemistry, and biology in high school.

Graduation Requirements. All graduates from the department must have completed one of the six emphasis areas in the department and must meet the following minimum requirements:

1. Grade point average (GPA) must be 2.5 or higher in all courses required for the major.

2. A grade of C or better must be received in all courses required for the major.

3. Courses required for the major may be repeated only once to improve a grade.

4. Courses required for the major may not be taken as Pass-D-Fail credits.

Minor in Food Sciences. Students with majors outside of the Nutrition and Food Sciences Department may graduate with a minor in Food Sciences by completing NFS 1020, 3110, 4070, 5020, 5030, 5110, 5500, 5550, 5560, 5920; PHYX 2110; PLSC 4600; SPCH 3330; STAT 3000, 5200; USU 1320, 1330, 1340.

Bachelor of Science Requirements

Specific requirements for each emphasis are listed below. Requirements change periodically, and sequence of courses is important. Current course requirements and the order in which they should be taken can be obtained from the Department of Nutrition and Food Sciences.

Food Science. The following courses are required: BIOL 1210, 3300; CHEM 1210, 1220, 1230, 1240, 2300, 2330, 3700, 3710; MATH 1050, 1060, 1210; NFS 1000, 1020, 1240, 3110, 3250, 4020, 4070, 4450, 4990, 5210, 5220, 5300, 5370; STAT 2000; USU 1320, 1330, 1340; 20 elective credits (see Nutrition and Food Sciences Department for list of approved electives).

Nutrition Science. The following courses are required: BIOL 1210, 1220, 2000; CHEM 1210, 1220, 1230, 1240, 2300, 2330, 3700, 3710; ECON 1500; ENGL 1010, 2010; MATH 1050, 1060, 1210; NFS 1000, 1020, 2020, 3110, 3250, 4020, 4070, 4550, 4990, 5210, 5220, 5300, 5370; STAT 2000; USU 1320, 1330, 1340; 20 elective credits (see Nutrition and Food Sciences Department for list of approved electives).

Dietetics (Coordinated Program). The following courses are required: BIOL 2000, CHEM 1210, 1220, 2300, 3700, 3710; ECON 1500; MATH 1050; MHR 3110; NFS 1020, 1240, 1250, 2020, 3020, 3600, 4020, 4050, 4060, 4070, 4420, 4480, 4550, 4560, 4570, 4580, 4660, 4710, 4720, 4730, 4740, 4750, 4780, 4990, 5210, 5300, 5750; PSY 1010 (or SOC 1010); STAT 2000 (or 3000).

Dietetics (Didactic Program). The following courses are required: ACCT 2010; BA 3500; CHEM 1010; ECON 1500; ID 1750; MATH 1030 (or 1050); MHR 2350, 2990, 3110, 3710; NFS 1000, 1020, 1240, 1250, 2030, 2050, 3000, 3030, 3060, 3110, 3500, 3510, 4250, 4810, 4990; SPCH 2600. Students are required to complete a minor in BA Marketing, MHR Management, or MHR Human Resource Management.

Biotechnology (Depth Training in Food Science). The following courses are required: ADVS 3200; BIOL 1210, 1220, 3200, 3300, 5150, 5210, 5260; CHEM 1210, 1220, 1230, 1240, 2300, 2330, 3300, 3700, 3710; ECON 1500; ENGL 1010, 2010; MATH 1050, 1100; MHR 3110; NFS 1000, 1020, 2040, 3100, 3110, 3250, 4990, 5020, 5030, 5110, 5500, 5550, 5560, 5920; PHIL 4410; PHYX 2110; PLSC 4600; SPCH 3330; STAT 3000, 5200; USU 1320, 1330, 1340.

Biotechnology (Depth Training in Nutrition Science). The following courses are required: ADVS 3200; BIOL 1210, 1220, 3200, 3300, 5150, 5210, 5260; CHEM 1210, 1220, 1230, 1240, 2300, 2330, 3300, 3700, 3710; ECON 1500; ENGL 1010, 2010; MATH 1050, 1100, 1210; CHEM 1110, 1120, 1130; MATH 1050, 1100; MHR 3110; NFS 1000, 1020, 2040, 3100, 3110, 3250, 4070, 4990, 5020, 5030, 5110, 5500, 5550, 5560, 5920; PHYX 1200; SPCH 2600; STAT 3000, 5300.

Food Technology Management. The following courses are required: ACCT 2010; BA 3500; CHEM 1010; ECON 1500; ID 1750; MATH 1030 (or 1050); MHR 2350, 2990, 3110, 3710; NFS 1000, 1020, 1240, 1250, 2030, 2050, 3000, 3030, 3060, 3110, 3500, 3510, 4250, 4810, 4990; SPCH 2600. Students are required to complete a minor in BA Marketing, MHR Management, or MHR Human Resource Management.

Culinary Arts/Food Service Management. The following courses are required: ACCT 2010; BA 3500; CHEM 1010; ECON 1500; ID 1750; MATH 1030 (or 1050); MHR 2350, 2990, 3110, 3710; NFS 1000, 1020, 1240, 1250, 2030, 2050, 3000, 3030, 3060, 3110, 3500, 3510, 4250, 4810, 4990; SPCH 2600. Students are required to complete a minor in BA Marketing, MHR Management, or MHR Human Resource Management.

Financial Support

The Department of Nutrition and Food Sciences and the College of Agriculture award scholarships in addition to those available through the University Financial Aid Office. Information and application forms may be obtained from the department office. Students may also contact the department for assistance in finding employment that will enhance their academic studies. Many students are employed by the department and by private firms near the University.
Graduate Programs

Master of Food Microbiology and Safety (MFMS)

The MFMS degree is a professional degree designed to provide students with depth training in food safety assurance and the use of management systems such as HACCP. The degree is primarily intended for individuals planning careers in food quality assurance or other food safety-related positions in the food industry.

MFMS Admission Requirements

Students seeking entry into the MFMS program must satisfy the minimum admission requirements of the USU School of Graduate Studies and the NFS Department, and must also achieve a score of 3 (equivalent to the 40th percentile) or higher on the newly administered GRE Written Examination. Applications will be reviewed by the MFMS Advisory Committee, which is responsible for accepting students into the MFMS program and assigning them an advisor. The advisor will then consult with the student to select two additional graduate committee members.

MFMS Program of Study

The MFMS program of study has been tailored for students with undergraduate training in (1) food science or (2) microbiology or biology. Students who lack prerequisite competencies in food science, microbiology, or biology will be required to address those deficiencies during the MFMS program of study. Course requirements to meet specific deficiencies will be designated by the student’s advisory committee and, in accordance with School of Graduate Studies policy, may or may not count toward course requirements for the MFMS program of study.

The MFMS program of study, outlined below, requires a minimum of 32 semester credits, including (1) 10 semester credits of core coursework in food safety assurance, microbiology, and epidemiology; (2) at least 19 semester credits of coursework based on the student’s career goals and undergraduate competencies; and (3) the written preparation and oral presentation of a substantive literature review on a food safety topic.

MFMS Program Requirements (32 credits minimum). Students must complete all of the following courses (12 credits): NFS 6170, 6200, 6900 (2 credits), 7800 (2 credits); BIOL 6810 (or 6890); and PUBH 5010. During NFS 6900 (Special Problems), students will prepare a substantive written literature review of a food safety topic. NFS 7800 (Seminar) must be taken during two semesters; during the final seminar, students must make an oral presentation on the food safety topic used for their literature review.

Students with a BS degree in Food Sciences must demonstrate competency equivalent to a USU BS degree in Nutrition and Food Sciences with a Food Science emphasis. These students must also select a minimum of 10 credits from the following: ADVS 6400; BIOL 5150 (offered biennially), 5300, 5330. The remaining credits should generally be selected from the following, although additional course substitutions may be made with approval of the student’s advisory committee: NFS 6020, 6030, 6120, 6140 (offered biennially), 6210, 6500, 6510, 6600 (offered biennially), 6610; ASTE 6260; CHEM 6730.

Minimum program prerequisites for students with a BS in biology, microbiology, or an equivalent degree include the following (the USU equivalent course is listed in parentheses): biochemistry (CHEM 3700), general microbiology (BIOL 3300), microbial physiology (BIOL 5300), and statistics (STAT 3000). In addition, these students must complete both NFS 6110 and 6500, and must take at least one of NFS 6020 and 6030. The remaining credits should generally be selected from the following, although additional course substitutions may be made with approval of the student’s advisory committee: NFS 6120, 6140 (offered biennially), 6210, 6510, 6600 (offered biennially), 6610; ADVS 6400; ASTE 6260; BIOL 5150 (offered biennially); CHEM 6730.

Master of Dietetics Administration (MDA)

The MDA degree is a professional degree designed to provide dietitians with in-depth training in management and leadership in food and nutrition program administration. The skills emphasized in the MDA program will enhance career options and pathways for graduates. Nationwide, there is a need for professionally trained managers at local, district, state, and federal levels in food and nutrition programs, including school, university, and hospital food services; public health programs; and clinical management. This program provides expertise in financial management, human resource management, marketing, entrepreneurship, employment laws, and more.

MDA Admission Requirements

Candidates for the MDA program must qualify for one of the following categories: Option 1: Must have completed the USU Extension Dietetics Internship; or Option 2: Must be currently registered as a dietitian with at least two years of work experience. Students seeking entry must also satisfy: (1) admission requirements of the USU School of Graduate Studies; and (2) admission requirements of the NFS Department.

The MDA Advisory Committee is responsible for reviewing applications, accepting students into the MDA program, and assigning students to an advisor.

MDA Program of Study

Option 1 is tailored for applicants who have completed the USU Extension Dietetics Internship. Students must complete a minimum of 41 credits and a Plan B thesis. The completed USU Extension Dietetics Internship provides 26 of the 41 credits. Following the internship, 15 additional credits are required including: NFS 6780, 6900 (3 credits), 6970 (2 credits), 7800 (1 credit), and two elective courses to be determined by the MDA candidate and the Advisory Committee.

Option 2 is tailored to the registered dietitian with at least two years of work experience. A minimum of 30 credits is required for this Plan B option. Students must complete 18 credits from the NFS Department and a minimum of 6 credits each in two of the three related disciplines. These disciplines include overall management, financial management, and human resource management. Coursework will be based on the student’s career goals and competencies. The following courses are required: NFS 4750, 5200, 5210, 5510, 6750, 6780, 6900 (3 credits), 6970 (2 credits), and 7800 (1 credit). The remaining courses must be selected from the following: ACCT 6010; BA 3400, 6350, 6440, 6520; INST 6490; MHR 6350, 6370, 6410, 6500, 6510, 6550, 6630, 6760.
MS and PhD Admission Requirements

Candidates for graduate study in the Department of Nutrition and Food Sciences need a background in chemistry, physics, mathematics, bacteriology, and physiology. Prior coursework in food science or nutrition is desirable. If deficient in these areas, a student may be accepted with the understanding that the supervisory committee will require competence equivalent to a BS degree in nutrition and food sciences in the preliminary (MS) or comprehensive (PhD) examination.

Students must meet some departmental requirements in addition to requirements of the School of Graduate Studies. A minimum score at the fortieth percentile in Verbal, Quantitative, and Analytical Writing on the Graduate Record Examination is required for admission.

One year of general chemistry, one semester of organic chemistry, and math at least equivalent to college algebra must be completed before matriculation. If taken as a graduate student, these courses will not be counted as graduate credit.

Before being accepted to work toward a PhD degree, a student must have obtained an MS degree or have a manuscript reporting original research accepted for publication in a refereed journal.

Before being accepted into the department, potential graduate students must be accepted by a faculty member who is willing to add them to his or her research team.

MS and PhD Procedures

Progress toward an advanced degree is outlined in the School of Graduate Studies section (pages 94-97). Students are responsible to see that all requirements are fulfilled, and should read these procedures carefully.

Graduate students in the Department of Nutrition and Food Sciences should complete the following steps:

1. Choose Major Professor. Students are accepted into the department with a temporary advisor. Although this person must guarantee, at the time of acceptance, that the student may work in his or her research program, students may choose as their major professor any faculty member who can and is willing to accommodate them.

2. Establish Supervisory Committee. Faculty members who may serve on the student’s supervisory committee should be considered in consultation with the major professor. A minimum of three members (at least two from the department), including the major professor, must be suggested for the MS program. At least five (three or more from the department and one or more from outside the department) must be suggested for a PhD program.

When the student and major professor have agreed on the committee members, a Supervisory Committee Assignment form must be prepared. The department head must approve the committee and may add members. It is the student’s responsibility to meet with proposed committee members to make certain they are able and willing to serve. The Supervisory Committee Assignment form is then forwarded to the dean of the School of Graduate Studies for final approval.

The committee should be selected and the Supervisory Committee Assignment form submitted to the School of Graduate Studies no later than the second semester of an MS program or the third semester of a PhD program.

3. Select and Define Research Program. In consultation with the major professor, the student must choose a research area suitable for the MS thesis or PhD dissertation and prepare a Thesis or Dissertation Proposal. The proposal should include the following:
   a. Title
   b. Description of the problem based on the most current literature
   c. Statement of the purpose of the intended research
   d. Research plan
   e. List of the references cited in a form acceptable for publication in a scientific journal in the student’s field

4. Define Course Schedule. Students must decide, in consultation with their major professor, the courses they will take that will be on their Program of Study. They must fulfill the following minimum requirements for all graduate students in Nutrition and Food Sciences and take other courses to provide the background necessary to conduct their research.
   a. Biochemistry (CHEM 5700, 5710)—3 credits required for MS; 6 credits required for PhD.
   b. Statistics (STAT 5100, 5120, 5200, 5600)—3 credits required for MS; 6 credits required for PhD.
   c. Graduate-level NFS courses—PhD students must include 3 credits from NFS 6200, 6210, 6220, 6300, 6370; and 3 credits from NFS 6020, 6030, 6110, 6560.
   d. Additional graduate-level courses (from NFS or elsewhere)—3 credits required for MS; 10 credits required for PhD.
   e. Graduate Seminar (NFS 7800)—2 credits required for MS; 4 credits required for PhD.
   f. Graduate seminars in other departments—1 credit required for MS; 2 credits required for PhD.
   g. Teaching experience (NFS 6900)—2 credits required for PhD.
   h. Research (NFS 6970, 7970; assigned at discretion of the major professor)—6-12 credits required for MS; approximately 30 credits required for PhD.

The PhD program includes 30 Master of Science credits. For more information, see the School of Graduate Studies requirements in this catalog.

5. Meet with Supervisory Committee. Before the first meeting of the supervisory committee, the student must complete the Program of Study form. A copy of the form and the research proposal should be given to each committee member several days before the meeting. The purpose of this meeting is to:
   a. Secure the committee’s approval of the Program of Study. Deficiencies in academic background will be discussed and plans made to resolve them.
   b. Obtain the committee’s approval of the research plan.
   c. Discuss regulated aspects of the research (hazardous materials, experimental animals, or human subjects).
   d. Allow the committee to determine the topic areas listed on the Program of Study form as other requirements of the program. All members of the committee and the department head must sign the Program of Study form before it is sent to the School of Graduate Studies.
6. Begin Research and Continue Courses. Students must take the approved courses and conduct the research as outlined in the approved research proposal.

7. Take Oral Preliminary (MS) or Comprehensive (PhD) Examination. The oral examination tests general knowledge that the student should have at this stage of academic training, as well as the student’s ability to synthesize information in relation to nutrition and food science. Material to be included is determined by the committee, but emphasis is on knowledge applicable to the research.

8. Complete Application for Candidacy Forms. PhD candidates must submit the Application for Candidacy form to the School of Graduate Studies. It must be signed by all members of the committee at the end of the comprehensive examination, and then signed by the department head. This form must be received by the School of Graduate Studies at least three months before the dissertation defense.


   10. Departmental Seminar. Each student must present a seminar in the department to report the results of his or her research. This must be done before the defense, but is typically given on the day of the defense.

11. Final Examination (Thesis or Dissertation Defense). When both the student and the major professor are satisfied that the thesis is editorially correct, copies are given to the members of the committee. This should be done several weeks before the examination. Students must realize that committee members will review the thesis only as their schedules permit. Students should plan adequate time for thesis review and revision before their defense, so as to meet the deadlines. The final examination is scheduled with the School of Graduate Studies. The signed appointment form must be submitted to the School of Graduate Studies at least ten business days before the defense, by all committee members, verifying that they have read the thesis or dissertation and it is ready to be defended at the scheduled day and time.

   The dean of the School of Graduate Studies will appoint one committee member, usually from outside the department, to serve as chair of the final examination. The School of Graduate Studies will also provide forms to be signed by the committee and returned to the School of Graduate Studies at the end of the defense.

12. Submit Thesis or Dissertation. After all changes suggested during the defense have been made, the thesis or dissertation is submitted to the departmental thesis reviewer, who will check to ensure that the thesis is in the correct format. The thesis or dissertation is submitted to the School of Graduate Studies for review by the thesis coordinator only after all corrections suggested by the departmental reviewer have been made.

Registration Requirements for Graduate Students

Once admitted, students are required to maintain enrollment as follows: at least 3 credits to use University facilities and receive direction (including thesis or dissertation direction) from their major professor; at least 6 credits if on a Graduate Teaching or Research Assistantship (9 credits if employed less than 15 hours per week); at least 9 credits if on a Research Fellowship or unsupported; at least 6 credits if receiving tuition waivers, student loans, or other University-administered financial aid; and no more than 6 credits if employed full time by the University.

Financial Assistance

Some teaching assistantships and research fellowships and many research assistantships are available to graduate students in the Department of Nutrition and Food Sciences. Teaching assistantships are used to cover the teaching needs of the department. Research fellowships and research assistantships are available through individual faculty members. Most research assistantships are tied to specific research projects.

The Gandhi Scholarship is available, on a competitive basis, to support outstanding students during their graduate education in food science. Each incoming student may select any advisor who fits his or her area of interest in food science. Awards are available for entering master’s degree students, as well as for PhD candidates. Applications are due February 1. To obtain an application, visit the Department of Nutrition and Food Sciences website or contact the departmental staff.

Career Opportunities

There is a continuing shortage of MS and PhD graduates in nutrition and food sciences. Many MS graduates go on to obtain a PhD, but all graduates have a wide choice of career opportunities.

Additional Information

Additional information and updates may be obtained by writing or telephoning the Department of Nutrition and Food Sciences directly or by checking out the departmental website at: http://www.usu.edu/nfs.

Graduation requirements described in this catalog are subject to change. Students should check with the Department of Nutrition and Food Sciences concerning possible changes.

Nutrition and Food Sciences Faculty

Professors
Jeffery R. Broadbent, food science, microbial genetics
Charles E. Carpenter, food science, muscle biochemistry and physiology, meat processing
Daren P. Cornforth, food science, meat and muscle chemistry
Conly L. Hansen, food science, food engineering
Deloy G. Hendricks, nutrition, food storage
Donald J. McMahon, food science, dairy chemistry and technology
Ronald G. Mungar, nutrition, epidemiology, and public health
Ann W. Sorenson, nutrition
Bart C. Weimer, food science, microbial physiology

Adjunct Professors
Gary M. Chan, pediatrics
Michael J. Glass, microbial detection
Craig J. Oberg, microbiology

Distinguished Professor Emeritus
R. Gauthier Hansen
Professors Emeritus
Georgia C. Lauritzen
Von T. Mendenhall
Gary H. Richardson
D. K. Salunkhe
Bonita W. Wyse

Associate Professors
Charlotte P. Brennand, food science, food flavor and sensory evaluation
Nedra K. Christensen, nutrition, dietetics
Ilka Nemere, nutrition, molecular nutrition
Marie K. Walsh, food science, dairy chemistry

Clinical Associate Professors
Janet B. Anderson, dietetics, food science management, food safety
Noreen B. Schvaneveldt, dietetics, clinical nutrition

Adjunct Associate Professors
Barbara Chatfield, pediatric pulmonology
Wayne G. Geilman, dairy processing and technology
Paul A. Savello, dairy processing and food science, food laws and regulations, milk ultra high temperature and whitening

Adjunct Research Associate Professor
Laurie J. Moyer-Mileur, pediatric nutrition

Research Assistant Professors
Dong Chen, molecular structure and biochemistry
Heidi J. Wengreen, nutrition, clinical dietetics, epidemiology

Clinical Assistant Professors
Ann M. Mildenhall, dietetics
Tamara S. Vitale, dietetics, community nutrition

Assistant Professor Emeritus
Frances G. Taylor

Adjunct Assistant Professors
Deborah R. Gustafson, nutrition
Bradley J. Haack, molecular pathogenesis
Robert Miceli, molecular assay development, biosensor development, infectious disease, antibody engineering, immune regulation

Adjunct Clinical Assistant Professor
W. Daniel Jackson, pediatrics

Clinical Instructor
Kim McMahon, dietetics/food service management

Adjunct Instructors
Catherine McDonald, pediatric nutrition, clinical dietetics
Rachel T. Rood, nutrition, registered dietitian

Lecturers
Randall T. Bagley, dairy processing
Virginia C. Bragg, culinary arts
Erik T. Burlile, culinary arts/food service management, chef
Grace B. Harvell, culinary arts
Marianne I. Rich, clinical dietetics
John L. Simpson, culinary arts/food service management, chef
Dick R. Whittier, meat processing

Adjunct Clinical Lecturer
Rebecca S. Cole, dietetics/food service management

Course Descriptions
Nutrition and Food Sciences (NFS), pages 447-451
Physics

Department Head: W. John Raitt
Location: Science Engineering Research 250A
Phone: (435) 797-2848
FAX: (435) 797-2492
E-mail: physics@cc.usu.edu
WWW: http://www.physics.usu.edu/

Assistant Department Head: David Peak,
Science Engineering Research 240, (435) 797-2884,
david.peak@usu.edu

Departmental Advisor: Deborah Reece,
Science Engineering Research 250D, (435) 797-4021,
deborah.reece@usu.edu

Degrees offered: Bachelor of Science (BS), Bachelor of Arts (BA), Master of Science (MS), and Doctor of Philosophy (PhD) in Physics; BS and BA in Physics Teaching; BS and BA in Composite Teaching—Physical Science (Physics)

Undergraduate emphases: BS—Professional Emphasis or Applied Emphasis

Graduate specialization: MS—Upper Atmospheric Physics

Undergraduate Programs

Objectives

The Physics Department embraces undergraduate students from all quarters of the University—in introductory courses required for majors by various departments, in courses for more general audiences that are part of the University Studies Program, and in upper-level courses designed primarily to fulfill bachelor’s degree requirements in Physics. These courses, and the degree programs offered, are strongly impacted by the department’s central goals:

1. to communicate the beauty and utility of the fundamental principles of the physical universe and the power of describing nature in quantitative terms,
2. to create new knowledge,
3. to foster critical and creative thinking,
4. to enhance the ability of citizens to participate in a technological democracy,
5. to assist in the preparation of elementary and secondary school teachers,
6. to provide opportunities for students to sharpen their communication and interpersonal skills, and
7. to develop new tools and texts to improve physics pedagogy.

The degree programs of the department are constructed to be rigorous, yet flexible, and are intended to help students prepare for careers in academia, government and industrial laboratories, medicine, law, teaching, and business. Required course and laboratory work in these programs carefully balances theory and experiment. Because the department believes that one must participate in discovery to understand science, undergraduates are encouraged to engage in departmental research early in their studies, and a formal research experience is integral to most departmental programs. The department’s Get Away Special activities provide excellent opportunities for students of all backgrounds to participate in space related research.

Requirements

Departmental Admission and Graduation Requirements.
New freshmen admitted to USU in good standing qualify for admission to the degree programs in Physics. Admission in good standing for students transferring from another institution requires a minimum transfer GPA of 2.2, while students transferring from another USU major are required to have a minimum total GPA of 2.0. Students wishing to complete the Teaching Major in Physics must apply for admission to the Secondary Education program as well. Requirements for admission to the Secondary Teacher Education Program (STEP) include a minimum GPA of 2.75 in either PHYX 2110 and 2120, or PHYX 2210 and 2220; and at least 60 total credits completed with a minimum GPA of 2.75. A Composite Teaching Major in Physical Science is available through either the Physics or the Chemistry and Biochemistry departments. Students applying for admission to the STEP with the Composite major must satisfy the latter requirements, plus a minimum GPA of 2.75 in CHEM 1210, 1220, 1230, and 1240.

Students may use no more than one course with the P-D-F option to satisfy a major or minor requirement in Physics. All other courses used to satisfy major or minor requirements must be completed with at least a C- grade, and the total GPA in all required Physics courses must be at least 2.3. The Teaching Major and Teaching Minor in Physics and the Composite Teaching Major in Physical Science require a 2.75 minimum GPA in Physics courses and a minimum 2.75 overall GPA for graduation.

College of Science Requirements. The College of Science requires a year of mathematics (8 credits) and a year sequence in science (6-8 credits) for all of its majors. For Physics majors, the College of Science requirements are MATH 1210 and 1220; and one of the following pairs of courses: BIOL 1210 and 1220, CHEM 1210 and 1220, or GEOL 1150 and 3200.

Bachelor’s Degrees and Core Requirements. The Physics Department awards the following degrees: BS in Physics, BA in Physics, BS in Physics with a Professional Emphasis, BS in Physics with an Applied Emphasis, BS in Mathematics and Physics Dual Major Option, BS in Physics Teaching, and BS in Composite Teaching—Physical Science.

Except for the two Teaching Majors, all degrees require a common core: College of Science requirements; MATH 2210; PHYX 2210 and 2220 (preferred) or PHYX 2110 and 2120; PHYX 2500, 2710, 3550, 3600, 3870, and 4900. The specific requirements beyond this core for the various bachelor degrees are:

1. Bachelor of Science in Physics: MATH 2250; PHYX 3650 or 3700; 8 credits in Physics at the 3500 level and above (excluding USU Depth courses).

Dual Major Option, BS in Physics Teaching, and BS in Composite Teaching Minor in Physics and the Composite Teaching Major in Physical Science is available through either the Physics or the Chemistry and Biochemistry departments. Students applying for admission to the STEP with the Composite major must satisfy the latter requirements, plus a minimum GPA of 2.75 in CHEM 1210, 1220, 1230, and 1240.

College of Science Requirements. The College of Science requires a year of mathematics (8 credits) and a year sequence in science (6-8 credits) for all of its majors. For Physics majors, the College of Science requirements are MATH 1210 and 1220; and one of the following pairs of courses: BIOL 1210 and 1220, CHEM 1210 and 1220, or GEOL 1150 and 3200.

Bachelor’s Degrees and Core Requirements. The Physics Department awards the following degrees: BS in Physics, BA in Physics, BS in Physics with a Professional Emphasis, BS in Physics with an Applied Emphasis, BS in Mathematics and Physics Dual Major Option, BS in Physics Teaching, and BS in Composite Teaching—Physical Science.

Except for the two Teaching Majors, all degrees require a common core: College of Science requirements; MATH 2210; PHYX 2210 and 2220 (preferred) or PHYX 2110 and 2120; PHYX 2500, 2710, 3550, 3600, 3870, and 4900. The specific requirements beyond this core for the various bachelor degrees are:

1. Bachelor of Science in Physics: MATH 2250; PHYX 3650 or 3700; 8 credits in Physics at the 3500 level and above (excluding USU Depth courses).
2. Bachelor of Arts in Physics: University language requirements; MATH 2250; 6 credits in Physics at the 3500 level and above (excluding USU Depth courses); PHIL 4310, 4320.

3. Bachelor of Science in Physics with a Professional Emphasis: MATH 2250; PHYX 3650, 3700, 3750, 3880, 4550, 4600, 4700, 4710, 4900.

4. Bachelor of Science in Physics with an Applied Emphasis: MATH 2250; PHYX 3650, 3700, 3880; 12 credits in other technical departments at the 3000 level or above (excluding USU Depth courses). The latter courses must have a coherent theme and must be approved by the Physics advisor.

5. Mathematics and Physics Dual Major Option: MATH 2270, 2280, 4200, 4310, 5210, 5710; 6 credits in Mathematics above the 4600 level, excluding MATH 5570 and 5580 (Actuarial MATH I and II); PHYX 3650 or 3700; 8 credits in Physics at the 3500 level and above (excluding USU Depth courses).

Minor in Physics. Majors in other departments may obtain a minor in Physics by successfully completing PHYX 2110 and 2120, or PHYX 2210 and 2220; plus 10 additional credits selected from PHYX courses at the 2500 level and above (not to include PHYX courses designated as USU Depth courses). Note that MATH 1100 or 1210 is a prerequisite for PHYX 2110, MATH 1210 is a prerequisite for PHYX 2210, and MATH 1220 is a prerequisite for PHYX 2710.

Bachelor of Science in Physics Teaching. Courses required for the Bachelor of Science in Physics Teaching are: College of Science requirements; MATH 1210, 1220, 2250; STAT 3000; PHYX 2210 and 2220 (preferred) or PHYX 2110 and 2120; PHYX 1000, 2500, 2710, 3550, 3870; 5 credits in Physics above the 3000 level (including USU Depth courses); SCI 4300; and 6 credits in science, with 3 in each of the two areas not covered by the College of Science science sequence requirement. Students seeking this degree must complete the requirements for the Secondary Teacher Education Program (STEP).

Teaching Minor in Physics. Students who complete the Secondary Teacher Education Program (STEP) are eligible to obtain a Teaching Minor in Physics by successfully completing PHYX 2110 and 2120, or PHYX 2210 and 2220; PHYX 1000; 6 additional credits in Physics chosen from PHYX 2500 and/or courses above the 3000 level (including USU Depth courses); SCI 4300 or, if SCI 4300 is required by the student’s major, 2 credits in science (not including Physics) not required by the major. Note that MATH 1100 or 1210 is a prerequisite for PHYX 2110, MATH 1210 is a prerequisite for PHYX 2210, and MATH 1220 is a prerequisite for PHYX 2710.

Bachelor of Science in Composite Teaching—Physical Science. Courses required for the Bachelor of Science in Composite Teaching—Physical Science are: MATH 1210, 1220; STAT 3000; PHYX 2210 and 2220 (preferred), or PHYX 2110 and 2120; PHYX 1000, 1030 or 3030; 5 credits in Physics from PHYX courses at the 2500 level and above (including USU Depth courses); CHEM 1210, 1220, 1230, 1240, 2300 or 2310, 2330; BIOL 1010; GEOL 1150; BMET 2000; and SCI 4300. Students seeking this degree must complete the requirements for the Secondary Teacher Education Program (STEP).

Additional Information

Information concerning degree programs, recommended schedules of courses, career opportunities, and opportunities to participate in the Get Away Special activities and in other areas of undergraduate research may be obtained by consulting the Physics advisor in SER 250. Also see the department’s website at: http://www.physics.usu.edu/.

Financial Support

The Physics Department has several small scholarship funds available for physics majors with excellent academic records. In addition, there are a number of Get Away Special (GAS) scholarships for students interested in designing and constructing experiments to be flown on the Space Shuttle and in participating in other GAS activities. Inquiries should be made with the Physics advisor in SER 250.

Graduate Programs

Admission Requirements

In addition to the general requirements for admission established by the School of Graduate Studies (see pages 90-91), the department admission committee bases its decisions for offering admission on the following criteria: review of applicants’ undergraduate records, letters of recommendation, performance in graduate courses (if any), performance in research (if any), and scores on the General portion of the Graduate Record Examination. Students whose native language is not English are strongly encouraged to submit to the School of Graduate Studies results of the Test of Spoken English (TSE). Regardless, nonnative English speakers must submit a score for the Test of English as a Foreign Language (TOEFL). If a satisfactory score on the TSE is not provided, such students will be required to take a test given by the Intensive English Language Institute (IELI) at USU. The purpose of this test is to guide the selection of remedial language courses, if needed, to help with physics coursework comprehension. (See also Financial Assistance, page 289.)

Placement

Prior to registering for graduate courses for the first time, each student will consult with the Graduate Student Tracking Committee and the departmental advisor. Based on these discussions, the student will be advised to register for courses in either the Physics Department standard curriculum or advanced curriculum. Continuing advisement concerning courses will be provided by the Graduate Student Tracking Committee, the departmental advisor, and the student’s graduate supervisory committee.

Qualification Requirements

Each student enrolled in the PhD program will be evaluated for qualification for PhD work. Consideration of qualification will occur no later than the end of the second semester after the student has been admitted for study in the PhD program and has taken a first graduate course in physics. Evaluation will be based on whatever relevant information the student wishes to have presented on his or her behalf (coursework, research, TA performance, subject GRE, etc.), but must include a faculty evaluation.
of coursework in physics for courses taken at USU. Normally, the student should present the results of at least four physics courses. Students admitted to the PhD program with considerable coursework from another institution, who have not taken at least four courses in physics at USU, must present a qualification seminar to the Department of Physics on research he or she has done during the preceding year at USU. Based on the various pieces of information presented on behalf of the student, the department will judge whether or not the student is qualified to continue in the PhD program. If not, a student already having an MS in physics from USU will be asked to leave. A student without an MS in physics from USU will be invited to finish his or her MS degree. Upon completion, the student can reapply to the PhD program, but acceptance will be contingent on the evaluation of the student’s graduate work to that point.

**Degree Programs**

**Master of Science.** In addition to the above general requirements, students completing a Plan A MS degree must complete four of the nine required PhD courses listed below (see Doctor of Philosophy). Plan B MS students must complete five of the nine courses, and Plan C MS students must complete six of the nine courses. Each student is required to pass PHYX 5800 (Physics Colloquium) for four consecutive semesters, beginning with the first semester after matriculation. The student must also submit and orally defend either a thesis (Plan A) or a research report (Plan B) at the discretion of the student’s supervisory committee. Plan A and Plan B MS candidates must present a colloquium to the department on the research topic during the time the thesis or research report is being written. The department also accepts Plan C, which has no research component. For Plan C, the student must complete 33 credits of graduate-level coursework, the composition of which shall include the required courses listed above. In addition, the student must present a seminar and a paper to his or her supervisory committee on a topic related to educational or managerial aspects of physics graduate education, which is chosen by his or her supervisory committee.

**Master of Science (Upper Atmospheric Physics Specialization).** The department offers a specialization in Upper Atmospheric Physics for MS students. This degree is a Plan A MS. In consultation with his or her advisor, the student selects a minimum of 18 credits of coursework from the following courses: PHYX 4600, 6240, 6310, 6320, 6330, 6340, 7210, 7500; 3 to 6 additional credits may be chosen from courses in electrical engineering, computer science, mathematics, and biometeorology. The student may gain from 6 to 12 credits by research, to be written up as a thesis that must be defended orally. In addition, the student must present a colloquium on the topic of his or her research.

**Doctor of Philosophy.** In addition to the general requirements, a total of nine courses (27 credits) are required for all PhD students. The required courses are: PHYX 5340, 5350, 6010, 6110, 6210, and 6410; one State of Matter course; and two courses in Advanced Topics. The State of Matter requirement can be fulfilled by taking any one of PHYX 6330, 6530, or 6930. These courses must be completed no more than one year after PhD qualification. Each student is required to pass PHYX 5800 (Physics Colloquium) for four consecutive semesters, beginning with the first semester after matriculation. The student must also take an oral candidacy examination, consisting of a presentation made by the student, then followed by questions from departmental faculty. The presentation and questions will be based upon a research topic set by the student’s supervisory committee. The candidacy oral examination will normally occur no later than the fifth semester after the student begins graduate coursework. The student will have at least two months to prepare for the examination.

The student must also complete a research dissertation and give an oral defense of the dissertation. Furthermore, the PhD candidate is expected to give two colloquia to the department. The first of these will normally be given at the time of submission of the research proposal, with the other given at the time the dissertation is completed.

**Research**

**Space Science.** The Physics Department is active in the field of atmospheric and space science, in close association with the Interdisciplinary Center for Atmospheric and Space Sciences and the Space Dynamics Laboratory. Atmospheric and space science involves many areas of physics, in addition to such disciplines as engineering, chemistry, and meteorology. At USU, these groups enjoy a strong cooperative relationship and, as a result, the atmospheric and space science program has flourished for many years. Once the departmental requirements have been met, students may select courses from the offerings of the associated departments suited for their particular interests and needs while they gain research experience on challenging problems in atmospheric and space science. Opportunities are available for students in both experimental and theoretical projects. These include participation in instrument development and data analysis related to rocket, satellite, and space shuttle projects and projects in experimental design and data analysis related to incoherent-scatter and coherent radars, ground-based magnetometer, and ground-based optical instruments including a LIDAR system. Opportunities also exist in theoretical modeling of physical processes occurring in both the neutral atmosphere and the plasma in the solar-terrestrial environment.

**Plasma Theory and Confinement.** Research in the field of magnetic confinement fusion at Utah State University includes the theoretical development and experimental realization of minimum-energy confinement configurations possessing substantial electric fields. These configurations hold promise as neutron and energy sources and are being developed as a collaborative effort between Dr. Farrell Edwards and Dr. Eric Held. In addition, Dr. Held is involved in developing improved hybrid fluid/kinetic models for terrestrial and astrophysical plasmas. This work provides theoretical support for next-step fusion experiments such as the International Thermonuclear Experimental Reactor (ITER).

**Surface Physics.** The surface physics group has an active experimental research program studying the structure, growth, dynamics, electronic properties, and optical properties of surfaces, interfaces, and adsorbed layers. The group has expertise in the interactions of electrons, ions, and photons with materials. Experimental techniques used within the group include atomic force microscopy (AFM), Auger electron spectroscopy (AES), infrared spectroscopy, ion scattering spectroscopy, ion implantation, low-energy electron diffraction (LEED), photoemission spectroscopy, scanning electron microscopy (SEM), scanning tunneling microscopy (STM), secondary ion mass spectroscopy (SIMS), thermal deflection spectroscopy, ultrafast femtosecond laser spectroscopy, vapor pressure adsorption isotherms, and x-ray diffraction. This interdisciplinary research brings together the fields of solid-state physics, surface physics and chemistry, optics, physical chemistry, and electrochemistry through active collaborations between Physics, Chemistry and Biochemistry, Mechanical and Aerospace Engineering, and other departments. It includes both basic and applied research.
Physics of Quantum Devices. The rapid advance of technology has made quantum physics an indispensable foundation of the nanoscale devices. The Physics Department is positioned to explore this new field with two complementary research themes. The first theme is to study the growth of novel electronic/photonics materials involving group III-V elements using a commercial, state-of-the-art molecular beam epitaxy machine. Also, novel semiconductor quantum nanostructures are studied using an in-situ scanning tunneling microscope directly attached to the machine. The second theme is to use the most advanced surface science techniques to fabricate nanoscale structures on semiconductor surfaces. The interdisciplinary nature of this field provides a stimulating research environment for faculty and students with backgrounds in physics, electrical engineering, material sciences, and chemistry.

Theoretical Physics. The department maintains an active research program in theoretical physics via its Field Theory Group. The principal focus of this group is on unified field theories, gravitational theory, classical and quantum field theory, and geometric methods in mathematical physics. Current research projects include: conformal and scale invariant gravity theories and unified field theories, Weyl-geometric quantization, exact solutions in Gauss-Bonnet extended gravity, classical and quantum dynamics of the gravitational field, symmetries and conservation laws in relativistic field theories, Lagrangian and Hamiltonian formulation of field theory, and application of geometrical methods in physics. Weekly seminars and ongoing collaborations with members of the USU Mathematics and Statistics Department and the University of Utah Physics Department provide an active research environment that allows for substantial interaction between students and faculty.

Physics Education. The USU Physics Department is engaged in the study of how to improve the teaching and learning of physics. The program currently emphasizes introductory and general education courses and involves development of hands-on, inquiry-based curricula for lecture and laboratory, development of associated laboratory and multimedia equipment and modules, preparation of new texts and workbooks, sponsorship of undergraduate research, and outreach to the pre-college community.

Complex Materials and Dynamics. Current work at USU in the interdisciplinary area of complex systems includes theoretical and experimental studies of the physical properties of granular materials, liquid flow in fractured media, and development of new data analysis techniques for uncovering evidence for determinism and computation in biological systems.

Financial Assistance

Financial assistance in the form of teaching assistantships and fellowships is awarded by the department. Research assistantships are available from research groups or individuals. Some support for teaching laboratory sections or grading papers is available. To be eligible for a teaching assistantship (TA), a student must successfully complete a graduate TA workshop. Nonnative English-speaking students must pass a test of spoken English (or submit a satisfactory TSE score) administered by the Intensive English Language Institute before being admitted to the TA workshop. The MS specialization in Upper Atmospheric Physics is a Western Regional Graduate Program (see page 89).

Career Opportunities

Master’s degree holders in physics are generally employed by industrial or government laboratories as either physicists or engineers. Some are hired as teachers by high schools and by two-year colleges. Holders of the PhD in physics will generally be hired as research and development physicists by industrial or government laboratories and as professors in universities (though usually only following an appointment as a postdoctoral fellow for one to three years).

Additional Information

Regularly updated information about Physics Department activities and programs may be obtained via the Web at: http://www.physics.usu.edu/.

Physics Faculty

Professors

J. R. Dennison, surface physics
W. Farrell Edwards, electromagnetic and plasma theory
Bela G. Fejer, space plasma physics
David Peak, nonlinear dynamics, complex materials
W. John Raitt, space plasma physics
Robert W. Schunk, space plasma physics
Jan J. Sojka, atmospheric and space physics
Charles G. Torre, mathematical physics and general relativity
Vincent B. Wickwar, atmospheric and space physics

Research Professors

F. Tom Berkey, atmospheric and space physics
Kent L. Miller, atmospheric physics
Thomas D. Wilkerson, atmospheric and space physics

Adjunct Professors

Stephen E. Blaikowski, nonlinear optics and laser spectroscopy
Yeaton H. Clifton, mathematical physics
Leonard F. Hall, structure forming systems
Allen Q. Howard, electromagnetic theory
R. Gilbert Moore, space physics
David Rees, atmospheric physics
Ray W. Russel, astronomy
Neal D. Shinn, surface interface physics
John R. Tucker, device physics and super conductivity

Professors Emeriti

Wilford N. Hansen, reflection spectroscopy, surface physics
Eastman N. Hatch, nuclear physics
Don L. Lind, space physics
V. Gordon Lind, medium energy nuclear physics
William R. Pendleton, Jr., atomic and molecular physics
John K. Wood, spectroscopy
Associate Professors
D. Mark Riffe, surface physics
Tsung-Cheng Shen, surface physics, nanotechnology
Michael J. Taylor, atmospheric and space physics
James T. Wheeler, mathematical physics and general relativity

Research Associate Professors
Abdallah R. Barakat, space plasma physics
Howard G. Demars, space physics
J. Steven Hansen, image processing
Lie Zhu, space physics

Adjunct Associate Professors
K. S. Balasubramanian, solar physics
I. Lee Davis, condensed matter physics
Hugo deGaris, artificial intelligence
James S. Dyer, space contamination and outgassing
Ti-Ze Ma, space plasma physics
Jill A. Marshall, physics education
Joseph W. Moody, astrophysics

David J. Vieira, nuclear physics
Vladimir Zavyalov, condensed matter physics

Associate Professor Emeritus
Robert E. McAdams, nuclear physics

Assistant Professors
Eric D. Held, plasma physics
Haeyeon Yang, surface physics, nanotechnology

Adjunct Assistant Professors
Jeremy R. King, astrophysics
Greg M. Swain, surface chemistry

Lecturer
Tonya B. Caldwell, physics education

Course Descriptions
Physics (PHYX), pages 458-461
Plants, Soils, and Biometeorology

Department Head: Larry A. Rupp
Location: Agricultural Science 322C
Phone: (435) 797-2233
E-mail: larry.rupp@usu.edu
WWW: http://www.psb.usu.edu

Undergraduate Advisor: M. Cathryn Myers-Roche,
Agricultural Science 322, (435) 797-5560,
cmyers@mendel.usu.edu

Undergraduate Off-Campus Advisor: Donna B. Minch,
Farmington, (801) 451-4604, minch@sisna.com

Graduate Program Coordinator: Janis L. Boettinger,
Agricultural Science 354, (435) 797-4026, jiboett@cc.usu.edu

Degrees Offered: Bachelor of Science (BS) and Bachelor of Arts (BA) in Crop Science, Horticulture, Environmental Soil/Water Science; Master of Science (MS), and Doctor of Philosophy (PhD) in Biometeorology, Plant Science, Soil Science, and Ecology; Master of Professional Studies in Horticulture (MPSH)

Undergraduate emphases: Crop Science BS, BA—Agronomy, Research/Biotechnology; Horticulture BS, BA—Ornamental Horticulture, Landscape Maintenance and Construction, Turfgrass Management, Business, Science; Environmental Soil/Water Science BS, BA—Soil, Water, Plant


Certificate and Associate Degree Program:
Ornamental Horticulture

Undergraduate Programs

Objectives
The departmental curricula emphasize understanding the physical, chemical, and biological mechanisms that operate in the continuum of the soil, plants, and the atmosphere; and how they impact management of a wide range of agricultural and natural systems.

The undergraduate teaching program facilitates the acquisition and application of knowledge, understanding, and skills by students within their chosen field of study. The program also prepares students to develop lifelong learning skills, understand and appreciate diversity, be productive citizens of the world, and be professionals in their vocations.

The department also provides training of undergraduates for graduate school and maintains a strong graduate program in biometeorology, plant science, and soil science. The research that underlies the graduate program is conducted in biometeorology (micro- and meso-scale), crop biotechnology, crop ecology, crop physiology, crop science, horticulture (general and ornamental), plant breeding, soil microbiology, pedology, soil chemistry, soil physics, soil fertility, environmental soil and water science, and arid landscaping.

A major effort is directed at extending research and teaching programs to all citizens of the State of Utah.

Departmental Facilities
To support these objectives, departmental facilities include well-equipped laboratories and greenhouses on campus. The University has significant acreage for field research at strategic locations throughout the state. In addition, the University is developing a botanical garden, which will offer opportunities to a broad spectra of clientele. The department maintains state-of-the-art analytical equipment for the measurement of critical soil, plant, and climatic variables.

Requirements
Departmental Admission Requirements. Persons meeting the admission requirements for the University (see pages 15-18) are admitted to the Department of Plants, Soils, and Biometeorology by listing the department major code on the University admission application form. A change of major form is used when students in good standing wish to transfer from another department to the Department of Plants, Soils, and Biometeorology.

ARCPACS Certification. Students who meet specific requirements are eligible, after five years of work experience, for professional certification as an Agronomist, Crop Scientist, Crop Specialist, Horticulturist, Soil Scientist, Soil Specialist, Soil Classifier, or Weed Scientist through the American Registry of Certified Professionals in Agronomy, Crops, and Soils (ARCPACS). General information about ARCPACS certifications can be found at http://www.agronomy.org/certification. Students interested in becoming certified should inform their advisor of their intent.

Applied Ornamental Horticulture Certificates and AAS Degree. This program provides practical training in greenhouse and nursery management, turf production, floral design, and maintenance of home and commercial grounds. Coursework encompasses pest control, plant identification, construction of landscapes, small business management, and the operation and maintenance of equipment, including small engines. As an integral part of their training, students are required to complete an internship in the industry. Students may work toward a one-year certificate or an Associate of Applied Science Degree.
Bachelor of Science Degree. The department offers the Bachelor of Science Degree in three areas: (1) Crop Science, which deals with agronomic (commonly called field) crops, such as forages, grains, corn, pasture, etc.; (2) Horticulture, which deals with tree fruits, berries, vine fruits, vegetables, and ornamental plants (ornamental includes all aspects of floriculture and landscape plant production and use); and (3) Environmental Soil/Water Science, which deals with soil and water in relation to plant growth and environmental quality. In all three majors, there are science-oriented emphases intended to prepare students for research or professional studies, and degree emphases that emphasize a practical, applied approach to application of information. All courses used to fill major requirements must be taken on an A-B-C-D-F basis. A minimum 2.5 GPA is required for courses used for the major. Transfer students are required to take at least 18 credits of major subject courses in residence at USU. A minor may be earned in Agronomy, Crop Biotechnology, Horticulture, Ornamental Horticulture, and Soil Science. A minimum of 16 approved credits are required (see lists below). All courses must be taken on an A-B-C-D-F basis and passed with a grade of C- or better. For information about receiving a Bachelor of Arts degree, consult the departmental undergraduate advisor.

The course requirements for the Crop Science Major are designed to prepare students for a career related to the production of agronomic crops. These courses allow students to function well in a rapidly changing technological environment and to acquire new skills and understanding as their career evolves. Each of the emphases within this major has been designed to allow students the flexibility to add courses or a minor to meet their own goals. The Agronomy Emphasis is designed for students interested in learning more about the applied aspects of crop production. Some courses emphasize production techniques and systems, while others provide the student with an understanding of the principles underlying crop production. The Research/Biotechnology Emphasis is designed for students who wish to participate in the development of plant-oriented technologies at any level of employment, and for those who intend to pursue a career in private or public research requiring graduate degrees. Courses provide the fundamental tools for a twenty-first century career in agriculture.

The Horticulture Major prepares students for production of fruits, vegetables, turf, or ornamentals and for landscape construction and maintenance. Course topics include biology, chemistry, and control of insects, diseases, and weeds. The Ornamental Horticulture Emphasis adds courses in production management techniques, such as pruning, spraying, and landscaping (materials, design, and maintenance); and greenhouse management. In the Landscape Maintenance and Construction Emphasis, students learn design, construction, and maintenance through a joint program with the Landscape Architecture and Environmental Planning Department. In the Turfgrass Management Emphasis, students complete courses in turfgrass management to prepare them for careers in golf course, park, athletic field, and landscaping management. The Science Emphasis prepares students for graduate study and for employment in technical occupations. The Business Emphasis joins courses necessary for a minor in Business with those necessary for obtaining expertise in horticulture.

The Environmental Soil/Water Science Major is intended to provide each student with a fundamental understanding of the basic sciences and mathematics, as well as a strong background in both soil and water sciences. Preparatory requirements include chemistry, physics, mathematics, biology, geology, and statistics. The core courses for Environmental Soil/Water Science emphasize the interactive soil/water processes in the soil’s plant-rooting zone—from the microscopic to the landscape perspective. From this base, each student can design his or her own program of specialization in one of the many aspects of soil science, water science, or the integration of both soil and water sciences. Students may choose complementary classes in the Soil Emphasis, Water Emphasis, or Plant Emphasis in preparation for a variety of career opportunities. The Environmental Soil/Water Science Major is complementary to existing undergraduate programs at Utah State University in Geology, Environmental Studies, Watershed and Earth Systems, and Environmental Engineering.

Course Requirements

Crop Science Major

Agronomy Emphasis. Students complete the following courses: BIOL 1210, 1220, 4400, CHEM 1110, 1120, 1130, ECON 1500, MATH 1050, PHYX 1200, PSB 1050, 4890 (two semesters), SOIL 3000. In addition, students must select at least 36 credits from the following crop-related courses, including at least 9 credits selected from pest management courses identified with an asterisk (*): BIOL 3200, 4410, 4500*, 5410*, FRWS 5100*, PLSC 2650, 3500, 3700, 3800, 4280, 4300, 4320, 4600, 5200, 5210, 5550*, 5700, 5750, PSB 4250, 5200. Students must also select at least 11 credits from the following soils-related courses: SOIL 4000, 4700, 5050, 5130, 5310, 5320, 5550, 5560, 5650.

Research/Biotechnology Emphasis. Students must complete the following courses: BIOL 1210, 1220, 3200, 4400, CHEM 1210, 1220, 1230, 1240, 2310, 2320, 2330, 2340, 3700, 3710, ECON 1500, MATH 1050, 1060, PHYX 1200, PLSC 5200, 5210, 5750, PSB 1050, 4890 (two semesters), SOIL 3000, 5550. In addition, students must select at least 18 credits from the following crop-related courses: PLSC 2650, 3700, 4280, 4300, 4320, 4600, 5550, 5700, PSB 5160, 5240, 5260, SOIL 5560. The following courses are also recommended: BIOL 4200, 4410, 4500, 5410, MATH 1210, PHYX 2110, PLSC 4300, 5440, 5450.

ARCPACS Certification. For general information, students should refer to the American Society of Agronomy website at http://www.agronomy.org, or http://www.agronomy.org/certification

For specific course information, contact the departmental undergraduate advisor.

Horticulture Major

Core Courses. BIS 1400, CHEM 1110 or 1210, FRWS 2200, MATH 1050, PLSC 2250 (or PSB 4250), 2650, PSB 1050, 4890 (two semesters), SOIL 3000, and one departmental elective.

Ornamental Emphasis. In addition to the Core courses, select 36 credits from the following. Those marked with an asterisk (*) are required. ASTE 3080, BIOL 1210*, 1220*, 3200, PLSC 2600*, 2610*, 2620*, 3050, 3300, 3400, 3700, 3800, 4400*, 4500*, SOIL 5550*. Select two courses from the following: BIOL 4500, 5410, FRWS 5100, PLSC 5550. Select two of the following courses: BIOL 4400, 4410, CHEM 1120, 1130, PLSC 3500, 5200, 5210.

Landscape Maintenance and Construction Emphasis. In addition to the Core courses, students must complete all of the following: BIOL 1210, LAEP 1200, 2600, 3500, 3610, PLSC 2200, 2600, 2620, 3400, 3500, 3800, 4400 or 4500, 5550, SOIL 4700. Suggested electives include: ASTE 3200, PLSC 2100, 2610, 3700, 4800, 5200, SOIL 5550.
**Turfgrass Management Emphasis.** In addition to the Core courses, students must complete all of the following: BIOL 1210, 1220, 3200, PLSC 2620, 3400, 3800, 4400, 4500, 4800. In addition, students must complete two horticulture courses, two science courses, and two business courses, selected from those listed on the *Horticulture Major Requirement Sheet*, which is available from the department.

**Business Emphasis.** In addition to the Core courses, select 24 credits from the following. Those marked with an asterisk (*) are required. BIOL 1210*, PLSC 2200*, 2600, 2620, 3050, 3300, 3400, 3500*, 3700, 3800, 4400*, 4500*, 5200, 5210, 5550*, SOIL 4700, 5550. The following courses are required for a *Business Minor*: ACCT 2010, BA 3460, 3500, ECON 2010, MHR 2990 or BIS 3100, MHR 3110.

**Science Emphasis.** In addition to the Core courses, select 41 credits from the following. Those marked with an asterisk (*) are required. BIOL 1210*, 1220*, 2220, 3200, 4400, 4410, 5400, CHEM 1120, 1210, 1220, 1230, 1240, 2310, 2320, 3700, 3710, MATH 1060, 1100*, PHYX 1200, PLSC 3700, 4400*, 4500*, any ornamental horticulture class*, PLSC 5200*, 5210, 5760, SOIL 5550*, Stat 3000. Select one of the following: BIOL 4500, 5410, FRWS 5100, PLSC 5550.

**Environmental Soil/Water Science Major**

**Core Courses.** BIOL 1210, 1220; CHEM 1110, 1120, 1130, or CHEM 1210, 1220, 1230, 1240, 2300; FRWS 2200 or BIOL 2220; GEOL 1150; MATH 1050, 1060, 1210, or MATH 1210, 1220; PHYX 2110, 2120, or PHYX 2210, 2220, Stat 2000 or 3000.

**Professional Core Courses.** SOIL 3000, 5050, 5130; SOIL 5310 or 5550 (SOIL 5550 is required for the plant emphasis); SOIL 4600, 5560, 5650, 5750, PSB 4890 (two semesters). *Emphases:* Students must select 12 credits from one or a combination of the following emphases:

- **Soil Emphasis.** AWER 4750, 4930, 5930; BMET 5250; CEE 5190; CHEM 3600; FRWS 5750; GEOL 3500, 3550, 3600, 5410, 5600, 5630; PSB 5200; SOIL 3100, 4000, 5310, 5320, 5350, 5550.

- **Water Emphasis.** ASTE 5260; AWER 3700, 4500, 4510, 4530, 5330, 5660; BIE 5010, 5110, 5150; BMET 4300, 5250, 5500, 5700; CEE 3430; CHEM 3600; GEOL 5150, 5510, 5520; PLSC 5200, 5210; SOIL 4000, 4700.

- **Plant Emphasis.** BIOL 2410, 3400, 4400, 4410, 5400; BMET 5500; FRWS 3220, 3250, 3600, 3700, 3710, 4450; PLSC 2600 and 2610, or 2620; PLSC 2100, 3400, 3800, 4280, 4300, 4320, 4400, 4500, 5200, 5210, 5430, 5550, 5760; SOIL 4700.

**Applied Ornamental Horticulture Certificate and AAS Degree**

**One-Year Certificate (27 credits required).** PLSC 2600 and 2620 are required; 18.5-20 additional PLSC credits must be completed from applied core courses emphasizing floriculture or landscape horticulture; and 3-5 credits from approved electives.

**Associate of Applied Science degree (64 credits required).** Students must complete all applied core courses; 11-19 credits of approved electives; and 14-16 credits of University Studies, including ENGL 1010 and 2100; 5-7 credits Breadth Social Sciences (BSS)/Breadth Humanities (BHU) courses; 3-5 credits Breadth Life Sciences (BLS)/Breadth Physical Sciences (BPS) courses.

**Applied Core Courses.** BIS 1400, PLSC 2200, 2250, 2600, 2610, 2620, 2650, 3050, 3300, 3400, 3700, 3800, PSB 1050.

**Approved Electives.** Choose any courses that are part of a BS degree in horticulture or PLSC 2900, 3010, 3020 (11-19 credits required).

**Minors**

- **Crop Biotechnology Minor (16 credits required).** The following courses are required. PLSC 3700, 5750. Select the balance of credits from the following courses. At least one of the production courses, marked with an asterisk, (*) is required. PLSC 3500, 4280*, 4300*, 4320*, 4400*, 4500*, 5200, 5550, 5700, PSB 5160, 5240, 5260.

- **Agronomy Minor (16 credits required).** A minimum of 6 credits of Soil Science courses must be taken, including SOIL 3000. A minimum of 6 credits of Plant Science courses must be taken, including at least two of the following three courses: PLSC 4280, 4300, 4320. Select the balance of credits from the following courses: SOIL 4000, 4700, 5130, 5310, 5550, 5560, 5650, PLSC 2200, 3800, 4400, 5200, 5550, 5700.

- **Soil Science Minor (16 credits required).** The following course is required: SOIL 3000. Select 12 credits from the following courses: SOIL 4000, 4700, 5050, 5130, 5310, 5350, 5550, 5560, 5650, 5700.

- **Ornamental Horticulture Minor (16 credits required).** The following courses are required: SOIL 2000, PLSC 2200. Select the balance of credits from the following courses: PLSC 2100, 2600, 2610, 3050, 3300, 3400, 3700, 3800, 4400, 4500.

**Additional Information**

For more information about Bachelor of Science requirements and the sequence in which courses should be taken, see major requirement sheets available from the Plants, Soils, and Biometeorology Department.

**Graduate Programs**

**Admission Requirements**

See general admission requirements, pages 90-91. Departmental admission committees and potential graduate student advisors (major professors) consider previous work experience, undergraduate and graduate records and curriculum, and formal recommendations in their decisions concerning acceptance of applicants. Students without an undergraduate or graduate degree in plants, soils, biometeorology, or a closely related field may be required to complete selected undergraduate courses prior to admission as fully matriculated graduate students in the Plants, Soils, and...
Biometeorology Department. Qualified applicants are occasionally denied admission because faculty members in the applicant’s area of interest do not have the time or funds to advise additional students. The serious applicant is encouraged to discuss his or her goals with appropriate members of the graduate faculty prior to preparing an application.

Graduate student candidates must have scores on the verbal and quantitative portions of the Graduate Record Examination (GRE) at or above the 40th percentile. TOEFL scores of 550 or higher are required for candidates from abroad. International students with a prior degree from an English-speaking university are exempted from the TOEFL exam.

Degree Programs and Specializations

The Master of Science and Doctor of Philosophy degrees are offered as follows: (1) Plant Science with specializations in crop physiology, crop production and management, molecular biology, plant breeding and cytology, plant biotechnology and tissue culture, plant nutrition, space biology, and weed science; (2) Soil Science with specializations in molecular biology (interdepartmental program), soil and water chemistry, soil biochemistry and ecology, soil conservation systems, soil fertility and plant nutrition, soil physics, soil-plant-water relations, soil taxonomy and genesis, and soils and irrigation; (3) Biometeorology with specializations in agricultural meteorology, climatology, micrometeorology, remote sensing, and turbulence in plant canopies; and (4) Ecology. A Master of Professional Studies in Horticulture (MPSH) is also offered.

Course Requirements

Course requirements leading to MS or PhD degrees are developed jointly by the student and the student’s advisory committee. Course selections reflect areas of specialization. There are, however, specific departmental requirements regarding physical sciences, biological sciences, and mathematics courses, which differ depending on the area of specialization.

Research

Research projects vary over time, depending on funding and other factors. Students are encouraged to visit the home page websites of the graduate faculty to determine research interests and lists of recent publications. Some of the research interests in the department include (1) the control of diseases, nematodes, weeds, and other hazards to fruit, vegetable, ornamental, and field crops; (2) physiological and genetic improvement of fruit, vegetable, ornamental, and field crops (breeding and biotechnology); (3) the evolution, genetic regulation, and utilization of apomixis and other developmental phenomena of higher plants; (4) management of agronomic and horticultural production systems; (5) horticultural landscape water management; (6) soil formation and landscape evolution; (7) soil, plant, water, and nutrient relationships; (8) management of saline and sodic soils; (9) alternative land uses; (10) improved management of animal wastes and biosolids; (11) management of soil microbial processes; (12) drainage and irrigation systems; (13) adaptations to weather and weather modification; (14) analyses and modification of large-scale surface evaporation from atmospheric boundary layer measurements; (15) spatial and temporal properties of sun flecks in plant canopies; and (16) spatial variation in surface fluxes of heat and water vapor in semiarid regions.

Financial Assistance and Assistantships

The financial awards provided by the School of Graduate Studies are listed on pages 89-90 of this catalog. The Department of Plants, Soils, and Biometeorology does not have a formal application form for financial assistance. Most monies used to assist students in the department come from research grants controlled by individual faculty members. Negotiations for financial assistance (research assistantships or part-time employment) are made between faculty members and students. The department provides a few part-time teaching assistantships (a semester at a time). Graduate teaching assistants are responsible to their major professor and to the instructor whom they assist. The MS and PhD in Biometeorology are Western Regional Graduate Programs (see page 89).

Career Opportunities

A broad range of career opportunities exists for students completing the MS or PhD degree from the Department of Plants, Soils, and Biometeorology. Graduate students specializing in the plant sciences may expect to find employment as consulting scientists, or in the private sector as plant breeders, weed scientists, etc. Graduate students specializing in the soil sciences may expect to find employment as soil scientists with government agencies or in the private sector, where they may pursue careers in environmental consulting, fertilizer retail, irrigation system design, waste management, mineland reclamation, or related environmental or agricultural pursuits. Graduate students specializing in biometeorology may expect to find employment with government agencies, as consulting scientists, or with the private sector. Graduate students specializing in ecology may expect to find employment as research scientists, consulting ecologists, or with environmental agencies. Graduate students completing the PhD may also find career opportunities in academia.

Additional Information and Updates

Additional information and updates concerning graduate faculty and graduate student opportunities can be obtained from the web at: http://www.psb.usu.edu.

Plants, Soils, and Biometeorology Faculty

Professors
Bruce G. Bugbee, crop physiology
John G. Carman, plant reproduction and development
Steven A. Dewey, weed science
Lynn M. Dudley, soil physical chemistry
John O. Evans, weed science
Lawrence E. Hips, biometeorology
H. Paul Rasmussen, horticulture
V. Philip Rasmussen, sustainable agriculture
Larry A. Bupp, ornamental horticulture
Schuyler D. Seeley, pomology
Ralph E. Whitesides, agronomy

Research Professor
Stanford A. Young, seed production
Adjunct Professors
Michael C. Amacher, soil chemistry
Gail E. Bingham, micrometeorology
N. Jerry Chatterton, forage/range physiology/biochemistry
Wilford R. Gardner, soil physics
Henry F. Mayland, soil science
Charles W. Robbins, soil science
Edward J. Souza, plant breeding and genetics
Dale R. Westermann, plant physiology
James L. Wright, soil science

Professors Emeriti
Rulon S. Albrechtsen, plant breeding
Keith R. Allred, forage physiology
J. LaMar Anderson, pomology
Gaylen L. Ashcroft, micrometeorology
William F. Campbell, crop stress physiology
Paul D. Christensen, soil science
Wade G. Dewey, plant breeding
Alvin R. Hamson, horticulture
R. John Hanks, soil physics
Anthony H. Hatch, horticulture
David W. James, soil fertility
Donald T. Jensen, climatology
Jerome J. Jurinak, soil chemistry
R. Paul Larsen, horticulture
Devere McAllister, plant breeding
Frank B. Salisbury, plant physiology
John J. Skujins, soil microbiology
R. L. Smith, soil science
Alvin R. Southard, soil classification
James H. Thomas, international agronomy
H. Grant Vest, Jr., vegetable breeding
David R. Walker, pomology

Associate Professors
Janis L. Boettinger, soil genesis, classification and mineralogy
Daniel T. Drost, vegetable production
Robert R. Gillies, micrometeorology
Paul R. Grossi, biogeochemist
David J. Hole, cereal breeding
Roger K. Kjelgren, urban horticulture
Jennifer W. MacAdam, forage production and physiology
Jeanette M. Norton, soil microbiology

Research Associate Professor
Esmail Malek, micrometeorology

Adjunct Associate Professors
Ari M. Ferro, phytoremediation
Kevin B. Jensen, forage breeding
John M. Stark, microbial ecology and biogeochemistry
Helga Van Miegroet, forest soils

Assistant Professors
David G. Chandler, surface hydrology
Thomas C. Griggs, agronomy
Paul G. Johnson, turfgrass science
Kelly L. Kepp, water conservation/turfgrass science
Dominique J. F. Roche, small grains, breeding/genetics
Yajun Wu, plant stress physiology, cell wall proteins

Research Assistant Professors
Raymond L. Cartee, soils and irrigation
Scott B. Jones, soil physics

Adjunct Assistant Professors
Jayne Belnap, biological soil crusts
Richard T. Lamar, environmental microbiology
Steven R. Larson, research geneticist
Michael Peel, plant breeding
Blair L. Waldron, research geneticist

Senior Lecturer
D. Craig Aston, ornamental horticulture

Lecturer
M. Cathryn Myers-Roche

Research Associates
Susan Buffler, irrigated pasture production
Shyrl M. Clawson, plant breeding
Robert L. Newhall, soil conservation and sustainable agriculture

Director, Utah Botanical Gardens
William A. Varga, ornamental horticulture

Director, Soil Testing Lab
Janice Kotuby-Amacher, soil chemistry

Course Descriptions
Plant Science (PLSC), pages 461–463
Soil Science (SOIL), pages 479–481
Biometeorology (BMET), page 357
Plants, Soils, and Biometeorology (PSB), page 467
Political Science

**Department Head:** Randy T. Simmons  
**Location:** Main 320A  
**Phone:** (435) 797-1310  
**FAX:** (435) 797-3751  
**E-mail:** rsimmons@hass.usu.edu  
**WWW:** http://websites.usu.edu/politicalscience

**Assistant Head and Graduate Program Director:**  
Peter McNamara, Main 320D, (435) 797-1318, peterm@hass.usu.edu

**Undergraduate Advisors:**  
**Political Science:** Randy T. Simmons, Main 320C, (435) 797-1310, rsimmons@hass.usu.edu  
**Political Science Teaching:** Peter F. Galderisi, Main 324D, (435) 797-1313, peterg@hass.usu.edu  
**Law and Constitutional Studies:** Anthony A. Peacock, Main 341, (435) 797-1314, apeacock@hass.usu.edu  
**Certificate in International Relations:** Veronica Ward, Main 324E, (435) 797-1319, vward@hass.usu.edu

**Degrees offered:** Bachelor of Science (BS), Bachelor of Arts (BA), Master of Science (MS), and Master of Arts (MA) in Political Science; BS and BA in Law and Constitutional Studies; Administers BA in International Studies; Participates in a pilot program of Master of Social Sciences (MSS), with an emphasis in Public Administration, administered through Continuing Education.

**Undergraduate Programs**

**Objectives**

The Department of Political Science offers a flexible program to accomplish the following objectives:

1. to provide students with theoretical and factual understanding of government, politics, and political philosophy, nationally and internationally;

2. to develop students’ analytic ability, communication skills, and facility with political research methods;

3. to prepare students for effective participation in civic affairs, careers in government and the teaching of government, and graduate study in political science, law, and other fields related to the public sector; and

4. to further the liberal arts education mission of the University and to enrich the educational experiences of students in all programs of study.

**Admission and Prerequisite Requirements**

**Departmental Admission Requirements.** Admission requirements for the Department of Political Science include a minimum 2.0 GPA for Political Science majors and a minimum 3.0 GPA for Law and Constitutional Studies majors. Students in good standing may apply for admission to the department.

**Prerequisites.** It is assumed that students registered for upper-division political science courses have acquired the basic knowledge and information taught in the lower-division courses required for the major. Anyone who wishes to take an upper-division course, but has not had the appropriate prerequisites, should consult with the instructor before registering. Faculty members reserve the right to drop from upper-division courses students who do not meet these requirements.

**Graduation Requirements**

**Political Science Major.** Students must have at least 36 semester credits in the field. These must include POLS 1100; POLS 2100 or 2200; POLS 2350, 3000, and 4990. POLS 4990 is a senior seminar and may be taken as early as the final semester of the junior year. In addition, students must take a minimum of 6 upper-division credits in each of two depth areas (U.S. Government, Comparative Politics, International Relations, or Political Theory). Internship credit does not count toward the depth requirement. A minimum 2.5 GPA in political science courses and a minimum 2.0 overall GPA are required.

**Law and Constitutional Studies Major.** This is a rigorous program designed for students interested in leadership roles in business, public communications, government, education, or the study or practice of law. Students must have at least 36 credits in political science. These must include POLS 1100, 2350, 3120, 3170, 4120, and 5130, as well as one of POLS 3320, 4130, or 4140. A minimum 3.0 GPA in political science courses and a minimum 3.0 overall GPA are required.

**Minor.** Students can obtain a minor in political science by completing a total of 18 credits in the field. POLS 2100 or 2200; POLS 2350 must be included. The remaining credits must be from upper-division courses.

**Teaching Major.** This program is intended exclusively for students seeking careers in secondary education. Students must have at least 36 credits in political science courses chosen from a list available from the department and in the Guide to the Undergraduate Program in Secondary Education at USU, available at the USU Bookstore. A minimum 2.5 GPA in political science courses and a minimum 2.75 overall GPA are required.

**Teaching Minor.** This minor is designed specifically for students seeking careers in secondary education. Students must have at least 18 credits in political science chosen from a list available from the department and in the Guide to the Undergraduate Program in Secondary Education at USU, available at the USU Bookstore.
International Studies Major. The Political Science Department administers the International Studies Major. Students enrolled in this major select either a Breadth Option or a Depth Option. The Breadth Option is intended for students who want to have a broad exposure to international studies. Students must take 24 credits of core and elective international studies courses, complete a departmental minor, complete three years of foreign language study, spend at least eight weeks living in a foreign country or countries, and complete a 3-credit senior thesis or project. The Depth Option is intended for students who want to tie their disciplinary skills to an in-depth study of a particular area of the world. This track of the International Studies major would be pursued as a dual major. The student’s disciplinary program (first major) must be an approved major at USU other than the International Studies major. Courses may not be double-counted between the primary major and the International Studies major. Further information about this major is on page 236. For assistance with course selection, program planning, and meeting graduation requirements, contact the Political Science Department (Main 320A, 797-1306).

Certificate in International Relations. Certificates are intensive programs of study similar to majors, but involving courses in more than one academic discipline. Political science, economics, and business, for example, may be combined. The Political Science Department participates in the International Relations certificate program. It is designed for those planning careers in international business or diplomacy. Information on this certificate is available from Veronica Ward, Main 324E, (435) 797-1306.

Internships
The department places approximately 40-45 students in government or related internships each year. Most of these interns work with a member of the Utah delegation to the U.S. Congress in Washington, D.C., a member of the Utah Legislature in Salt Lake City, a political campaign, a state or local administrative agency, or a lobbying group. Students in any major, of at least junior class standing, and having a minimum GPA of 3.0 are eligible to apply.

Pi Sigma Alpha
Pi Sigma Alpha is the national honorary political science society. A member must have at least 15 credits of political science with a minimum 3.0 GPA and a minimum 3.0 GPA overall.

Financial Support
The Political Science Department offers a number of scholarships yearly to students. Contact the College of Humanities, Arts and Social Sciences dean’s office for applications (usually available around the first week of January and due back the first week of March) at (435) 797-1195 or visit the college office in Main 338.

Graduate Programs
Departmental Admission Requirements
Applicants must have a BS or BA degree. An undergraduate GPA of 3.0 or better, or a GPA of 3.5 or better over the last 90 semester credits of undergraduate coursework is required. Students must have quantitative, verbal, and analytical GRE scores at or above the 50th percentile. Applicants with very high GPAs and other exceptional supporting materials may petition for admission with deficient GRE scores. The graduate admissions committee will review petitions individually.

International students must receive a score of 550 or better on the TOEFL exam.

Due to limited space, acceptance into Political Science graduate programs is not guaranteed, even for students who meet admission requirements. Moreover, all students are expected to perform at high levels throughout their program. Any student receiving a C grade or lower for any course at any level or a grade point average below 3.0 for a given semester will be placed on academic probation. Receipt of two grades of C or lower or a grade point average below 3.0 for two semesters will result in termination from the program. In addition, students must meet the requirements of the School of Graduate Studies. Applicants not meeting minimum requirements may be allowed to correct deficiencies concurrently with graduate coursework.

Applications will be considered throughout the year. However, students who wish to be considered for financial aid outside of the department must submit applications by March 15 for the coming academic year.

No application will be considered until all required information arrives in the office of the School of Graduate Studies.

Assistantships
The department appoints a number of teaching assistants, each with a $7,000 annual stipend. Appointments are for one year, but are renewable for a second year. Research assistantships and government internships are sometimes available as well. Applications are available from the Political Science Department and are due on March 1.

Course Requirements
Students must choose between two tracks: (1) Public Choice and Public Policy or (2) Comparative and International Change. Course requirements differ according to the track chosen. All students, however, must take POLS 6010, which is the foundation course for the program.

Public Choice and Public Policy. Students in this track must complete the following courses: POLS 6030 and 6040. In addition, students must complete 3 credits chosen from the following list: POLS 5110, 5130, 5180, and ECON 5500. Students must also take at least one course from the Comparative and International Change track.

Comparative and International Change. Students in this track must complete POLS 6220. In addition, students must complete 6 credits chosen from the following list: POLS 5200, 5210, 5230, 5270, 5290, 5350, and 6030. Students must also take at least one course from the Public Choice and Public Policy track.

For both tracks, the remaining 15 credits needed for the graduate degree may be comprised of: (1) up to 6 credits of POLS 6910 (subject to approval); (2) up to 3 credits of POLS 6920 (subject to approval); (3) up to 3 credits of approved graduate courses outside of Political Science; and (4) other Political Science graduate courses. No more than 15 semester credits of 5000-5990 coursework may be used for a graduate degree.
Political Science Faculty

Professors
William L. Furlong, Latin America, Central America, democratization, development
Amal Kawar, comparative politics, Middle East, women and politics
Carolyn Rhodes, international relations, comparative politics, European union, trade
Randy T. Simmons, environmental politics and policy, public choice

Adjunct Professors
Larry Boothe, national security policy
Charles E. Kay, environmental policy ecology
James L. Waite, European policy, comparative European government, methodology, public opinion

Professor Emeritus
Stanford Cazier, U.S. government, public law

Associate Professors
Peter F. Galderisi, parties, elections, interest groups, research methods, statistics
David B. Goetze, human cooperation and conflict, ethnic conflict, evolutionary theory

Robert Q. Herzberg, public choice, health policy, public policy
Jing Huang, Asian political thought, comparative politics, development
Michael S. Lyons, U.S. government, Congress, public policy, elections
Peter McNamara, political theory
Anthony A. Peacock, public law
Veronica Ward, international relations, social choice, global environmental issues, conflict and cooperation

Assistant Professor
Patria D. Julnes, public administration, organization theory, information technology management, quantitative and statistical methods

Lecturers
Jeannie L. Johnson, international relations, the Balkans
Carol L. McNamara, political theory, presidency
Shannon Peterson, international relations, foreign policy

Course Descriptions
Political Science (POLS), pages 463-465
Psychology

Department Head: David M. Stein
Location: Emma Eccles Jones Education 487E
Phone: (435) 797-1460
Department Mailing Address: Department of Psychology, Utah State University, 2810 Old Main Hill, Logan UT 84322-2810
FAX: (435) 797-1448
E-mail: psydept@cc.usu.edu
WWW: http://www.coe.usu.edu/psyc/

Graduate Program Coordinators:
Combined Clinical/Counseling/School PhD:
    Susan L. Crowley, Education 479, (435) 797-1251, susanc@cc.usu.edu
Research and Evaluation Methodology PhD:
    Karl R. White, Education 430, (435) 797-3013, karl.white@usu.edu
School Psychology MS: Gretchen A. Gimpel, Education 490, (435) 797-0721, ggimpel@cc.usu.edu
School Counseling MS: Camille J. Odell, Education 434, (435) 797-5576, codell@usu.edu

Undergraduate Program Faculty Coordinator:
    Tamara J. Ferguson, Education 499, (435) 797-3272, tjferguson@cc.usu.edu

Undergraduate Advisors:
    Karen R. Ranson, Education 475, (435) 797-1456, karen.ranson@usu.edu
    Tressa M. Haderlie, Education 477, (435) 797-0097, thaderlie@cc.usu.edu
    Pat Preston, Education 477, (435) 797-1456, pat.preston@usu.edu

Degrees offered: Bachelor of Science (BS), Bachelor of Arts (BA), Master of Science (MS), and Doctor of Philosophy (PhD) in Psychology

Graduate specializations: MS—School Psychology, School Counseling; PhD—Combined Clinical/Counseling/School Psychology, Research and Evaluation Methodology

Undergraduate Programs

Objectives

Psychologists endeavor to scientifically understand the thought processes, emotions, and behavior of both humans and animals. Psychologists specialize in diverse areas. Some psychologists seek to better understand the interactions among genetic, biological, social, and psychological determinants of behavior. Other psychologists are concerned with how the body and brain create emotions, memories, and sensory experiences, and how these are perceived and interpreted. Still others are concerned with how we learn observable responses and how we process, store, and retrieve information. Additionally, psychologists focus their careers on the causes, assessment, and/or treatment of emotional and behavioral disorders. Psychologists utilize research methods to understand the causes of behavior, emotion, and thought processes.

The Department of Psychology at USU offers a rich undergraduate program in psychology with the primary objectives being:

1. To provide students with substantive knowledge in the basic discipline of psychology, such as history/systems, basic behavior processes, biological bases of behavior, development, personality, learning and cognition, social influences on individuals, research methods, and psychological disorders and treatment.

2. Teaching students how to critically analyze and solve problems pertaining to human interaction, communication, and relationships.

3. Student mastery of principles relating to the causes of behavior, basic learning processes, and the measurement and analysis of behavior.

4. Training students to use scientific and quantitative methods to better understand and apply social science research.

5. Preparing students to compete successfully for entry into nationally and internationally recognized graduate programs in the social sciences.

6. Preparing majors and minors to compete successfully for postbachelor employment opportunities in private/public education, human services, government, and corporations.

The courses in Psychology and the electives available in related departments allow students to tailor their education to meet specific career goals. Some students who major in psychology may qualify for admission to unique specialty tracks: (1) the (secondary education) Teaching Major; (2) Behavior Analysis Skill Track; (3) Interpersonal Relationships Skill Track; and (4) Graduate School Preparation Track. A human services/caseworker training option may also be available to majors.

Students can complete the major or minor in psychology either on-campus (Logan), or through the USU Distance Education system (all required courses and selected electives are offered every 1-2 years) available throughout the State of Utah. The specific requirements for the skill tracks, the Apprenticeship, the on- and off-campus (distance education) options, and for how psychology electives can be used to advance students’ career goals can be obtained from the Psychology Advisement Office, Eccles-Jones Education Building, Room 475, (435) 797-1456.

Requirements

Departmental Admission Requirements. Students are admitted to the Department of Psychology as Prepsychology majors by meeting the Utah State University admission requirements (see pages 15-18). To be a Psychology major, a student must make written application to the department, after meeting the following prerequisites: (1) completion of at least 40 semester credits with a cumulative GPA of 2.75 or higher; (2) completion of at least 18 credits of the University Studies requirement with a GPA of 2.75
or higher; and (3) completion of PSY 1010, 1100, 1400, and 1410 with a GPA of 3.0 or higher. Application to the department should be made during the semester in which these prerequisites will be completed.

General Undergraduate Psychology Major:
Required Courses (22 credits), plus
Primary Electives (16 credits),
Secondary Electives (3 credits), and
Apprenticeship (6 credits)

Requirements for a psychology major consist of a broad preparation of 22 credits of specified coursework, plus a minimum of 19 credits of approved Psychology elective courses, and 6 credits of an apprenticeship, which allows for integration of coursework knowledge (theory) through application, for a total of 47 credits. At least 20 Psychology credits must be upper-division, 12 of which must be taken at USU. The specific courses required are: PSY 1010, 1100, 1400, 1410, 2800, 3500, 5100, 5330 (22 credits). Primary electives are: PSY 3510, 4210 (choose 3 credits); PSY 3450 or 3460 (choose 3 credits); PSY 3400, 4420/4430 (choose 4 credits); PSY 3110, 3120, 3210, 5200 (choose 6 credits). Secondary electives are: PSY 1210, 2100, 3660, 4230, 4240, 4510, 5020, PSY/PEP 4000, PSY/PEP 5050, PSY/COMD 4790, PSY/SPED 5720 (choose 3 credits). Required Apprenticeship courses are: PSY 5950, 5960 (6 credits). A minor in another area is required. A minimum overall USU GPA of 2.75 is required for graduation, with a minimum GPA of 3.0 in Psychology. Students must receive a grade of C- or higher in all psychology courses (USU and transfer) in order to have them counted toward major requirements. (Students desiring licensure for teaching in secondary schools must also meet the requirements of the Secondary Education Department.)

To graduate with a major in psychology, students must meet a minimum end-of-level competency in all of the Psychology courses that they have been required to (or have elected to) take to fulfill the requirements of the psychology major. Students’ end-of-level competencies are demonstrated by verifying how much information they have actually retained in given subject areas later in their college careers. Currently, students demonstrate their end-of-level competency by completing appropriate area tests within the context of PSY 5950 and 5960. It is recommended that students enroll for PSY 5950 the semester immediately following admission to the psychology major.

Undergraduate Psychology Minor:
Required Courses (10 credits), plus
Elective Courses (8 credits minimum)

For a Psychology Minor, students must complete the following courses (10 credits): PSY 1010, 1100, 1400, 1410. Also, at least 8 credits must be selected from courses listed as required or primary electives for the Psychology Major. The student’s grade point average for all psychology courses, USU or transfer, must average 3.0 or above to qualify for credit toward the minor. At least 12 credits of the 18 required credits must be completed at USU. Students must receive a grade of C- or higher in all psychology courses (USU and transfer) in order to have them counted toward minor requirements.

Psychology Teaching Major:
Required Psychology Courses (27 credits), plus
Elective Psychology Courses (16 credits)

Requirements for a Teaching Major in Psychology broadly consist of 27 credits of specified psychology coursework and 16 credits of elective psychology coursework, for a total of 43 credits in psychology. Only 16 of these 43 psychology credits may be taken in lower-division courses. The remaining 27 credits must be received in 3000- or 4000-level psychology courses. At least 12 of the upper-division credits must have been earned in courses completed at USU. A minor in another field of study is also required. Prospective teachers must complete 35 credits of the Secondary Teacher Education Program (STEP) in the Department of Secondary Education. Required GPA for psychology courses is 3.0. Students must receive a grade of C- or higher in all psychology courses (USU and transfer) in order to have them counted toward major requirements.

Undergraduate Psychology Teaching Minor
Required Psychology Courses (15 credits), plus
Elective Psychology Courses (3 credits)

Students who choose to pursue a psychology teaching minor must complete PSY 1010, 1100, 1400, 1410, 2100, and 3660, for a total of 15 semester credits. At least 12 credits of the 18 required credits must be completed at USU. In addition, they must select at least one 3-credit class from the list of courses required for or serving as primary electives for the psychology major. Required GPA for psychology courses is 3.0. Students must receive a grade of C- or higher in all psychology courses (USU and transfer) in order to have them counted toward minor requirements. Finally, they need to fulfill the 35-credit requirement for the Secondary Teacher Education Program (STEP) in the Department of Secondary Education.

Skill Tracks for Undergraduate Majors in Psychology

The following skill tracks can be completed as part of a student’s major in Psychology. A skill track represents a cluster of courses that help provide more comprehensive knowledge and practical skill in particular areas. After admission as a major in Psychology, students may apply for admission to a skill track. Completing a skill track requires careful planning, so that skill track courses and all other required and elective courses for the major are fulfilled. Enrollment in a skill track is entirely optional for majors.

Behavior Analysis Skill Track. The following cluster of courses will provide psychology majors with a basic foundation in experimental and applied behavior analysis: PSY 1400, 1410, 3400, 4910, 5720; SPED 5010, 5050; BIOL 3010; and PHIL 4320 or 4900.

Interpersonal Relationships Skill Track. The following cluster of courses will assist psychology majors in systematically developing a broad range of interpersonal relationship skills, such as listening, assertiveness, negotiation, conflict resolution, anger management, etc.: PSY 1210, 3210, 3510, 4210, 4510, 5200; MHR 3710.

Graduate School Preparation Track. The major in Psychology has been designed so that students take classes that will help them compete in applying for graduate school. Students completing the graduate school track need to become actively involved with faculty research, form an association with Psi Chi, and enroll in independent research and readings courses. Students should also take a course covering use of statistical software (e.g., SPSS), offered through FCHD or Sociology. Furthermore, it is recommended that students take at least one upper-division course in statistics from Psychology, FCHD, or Sociology.
Psychology Courses Fulfilling University Studies Requirements

The following Psychology courses may be used to fulfill University Studies requirements, in the areas indicated:

**Breadth Social Sciences (BSS):** PSY 1010.

**Depth Social Sciences (DSS):** PSY 3120, 3210, 3400, 3500, 3510, 4210, 4230, 4240, 4420.

**Communications Intensive (CI):** PSY 4510, 5200, 5950, 5960.

**Quantitative Intensive (QI):** PSY 2800.

Although these courses may be applied toward fulfilling the University Studies breadth, depth, communications intensive, and quantitative intensive requirements, students must be prepared to complete additional writing or library assignments, as required for University Studies.

**Important Contingencies for Psychology Courses**

Prerequisites for Psychology courses are strictly enforced. The prerequisites are indicated, at the end of course descriptions, within the Psychology course listings (see pages 467-472).

A student must be admitted as a psychology major or must complete at least 45 semester credits with a GPA of 3.0 or higher prior to taking psychology courses numbered 3000 or above. However, students who have been admitted to the Teacher Education program may take PSY 3660, provided they have met the prerequisites. A student must be admitted as a psychology major or must complete at least 60 semester credits with a GPA of 3.0 or higher prior to taking psychology courses numbered 4000 or above.

Students desiring to receive credit for courses taken previously at other institutions will need to assure the Undergraduate Advising Office that the substitute class contained the requisite laboratory experience (where applicable).

Students who can complete a baccalaureate degree within seven years of enrollment at USU can qualify for graduation by meeting (1) the General Education/University Studies requirements in effect when they initially enrolled and (2) the major requirements in effect when they officially declared their major, even though there may have been changes in General Education/University Studies and major requirements since that time. Students who have not completed the baccalaureate requirements within seven years of their initial enrollment at USU must have their General Education/University Studies and major requirements evaluated and approved by their department head and dean. However, exceptions to this seven-year policy may be necessary for mandated changes in degree requirements.

Undergraduate psychology coursework (USU or transfer) that is more than eight years old may not be used toward meeting the specific psychology coursework requirements for a psychology major or psychology minor. However, the Psychology Department Undergraduate Committee may allow revalidation through testing. Testing arrangements may be made by contacting Karen Ranson at karen.ranson@usu.edu.

**Graduate Programs**

**Admission Requirements**

Admissions requirements vary somewhat across Psychology graduate programs. However, applications submitted to the School of Graduate Studies must include the following: (1) transcript showing completion of undergraduate course prerequisites, plus any recommended coursework; (2) report of (GRE) test scores from ETS; (3) GPA of at least 3.2, covering the last 60 semester credits; (4) three letters of recommendation; and (5) a statement of professional goals and intent. The department requires a minimum GRE combined (Verbal and Quantitative) score of at least 1,100 for all programs.

The deadline for submitting applications for the Combined Clinical/Counseling/School Psychology PhD program is **January 15**. Applications for the Research and Evaluation Methodology PhD program are reviewed throughout the year. The application deadline for the MS School Psychology program is **March 1**. Applications for the MS program in School Counseling must be submitted by **June 1** during odd-numbered alternate years (e.g., 2003, 2005, etc.). With the exception of the PhD program in Combined Clinical/Counseling/School, applications for programs may be accepted after these dates if openings still exist.

Students are admitted to Psychology master’s degree programs, including School Psychology and School Counseling, following completion of a bachelor’s degree. Prospective PhD program students can compete for admission to the Combined Clinical/Counseling/School program or the Research and Evaluation Methodology program if they possess either a bachelor’s or a master’s degree.

**Prerequisites for Admission to Graduate Programs**

Applicants to the Master of Science (MS) and Doctor of Philosophy (PhD) program are advised that they should possess a broad base of knowledge at the undergraduate level in a substantive subgroup of the following: general psychology, human development, learning theory, cognition, personality theory research, psychometrics, elementary statistics, history and systems, physiological, sensation and perception, and social psychology. The absolute prerequisites for each graduate program are outlined below, along with a listing of graduate program course requirements for each program.

**Psychology MS Programs**

**School Psychology, NASP-accredited**

USU’s nationally accredited program in school psychology emphasizes child development issues, assessment and treatment of emotional and behavioral disorders, and traditional psychoeducational assessment and consultation activities appropriate to school settings. The program is approved by the Utah State Office of Education for licensure of school psychologists. Students are required to complete either a research thesis (Graduate School Plan A option), or a major literature review/synthesis paper (Plan B).

Absolute undergraduate course prerequisites for admission to the MS in School Psychology are as follows: (1) Elementary Statistics; (2) Theories/Research in Learning or Applied Behavior Analysis; (3) Abnormal Psychology; and (4) Theories/Research in Personality.
School Counseling

This program has been designed to help students earn an MS degree in psychology, with appropriate coursework for certification as a school counselor. School counselors are commonly employed by public and private elementary and secondary schools to provide educational/vocational guidance and counseling services. The program is approved by the Utah State Office of Education. It is offered via a live, video distance education system (EDNET). This program is not designed to meet the requirements for the Professional Counselor license (mental health).

**Absolute undergraduate course prerequisites** for admission to the MS in School Counseling are as follows: (1) Developmental Psychology; (2) Abnormal Psychology; (3) Theories/Research in Personality; and (4) Psychological Statistics (or equivalent).

The MS in School Counseling requires **40 total semester credits**. The following courses are required: PSY 6150, 6220, 6240, 6250 (10 credits), 6330, 6350, 6410, 6450, 6460, 6530, 6570, 6600, 6660, 6880, 6890, 6970 (2-6 credits).

**PhD Programs**

**Combined and Integrated (C-I) Clinical/Counseling/School Psychology, (APA-accredited)**

This program integrates the theory and practice of psychology common to the disciplines traditionally denoted as clinical, counseling, and school psychology. It subscribes to the scientist-practitioner model, and students completing the program will commonly enter professional practice in VA hospitals, mental health centers, hospitals, clinics, and academic settings. The program provides an excellent balance of research and practitioner skill training. Entering BS students can opt to earn an MS degree in either counseling psychology or school psychology prior to the PhD. A research thesis and dissertation are required of all students. The combined program provides generalized training, along with three areas of specialization. The emphasis areas are designed for students to begin systematically developing a specialty area in line with their future career goals. The three areas of specialization, which mirror faculty interest and expertise, are health psychology/neuropsychology, child clinical (with or without a school psychology emphasis), and rural and minority psychology. The program is also affiliated with the American Indian Support Project, one of the nation’s most successful programs for training and mentoring American Indian PhD psychologists.

Complete information on accreditation guidelines and principles is available through the Committee on Accreditation (CoA) at Education Directorate, American Psychological Association, 750 First Street NE, Washington DC 20002-4242, (202) 336-5979, or on the web at: http://www.apa.org/ed/accreditation/.

**Absolute undergraduate prerequisites** for admission to the PhD program in Combined Clinical/Counseling/School are as follows: (1) Elementary Statistics; (2) Theories/Research in Learning; (3) Abnormal Psychology; and (4) Theories/Research in Personality.

The Combined Clinical/Counseling/School Psychology PhD requires **107 total semester credits**, including the following: (1) MS counseling psychology degree curriculum: PSY 6290, 6310, 6320, 6350, 6360, 6570, 6600, 6880, 6970; and (2) PhD program courses: PSY 6220, 6510, 6530, 6610; PSY 6650 or 6660; PSY 7100, 7250, 7270, 7350, 7360, 7370, 7670, 7910, 7950, 7970; 6 credits of electives. **Note:** The MS counseling psychology degree is available only to students matriculated into the PhD Clinical/Counseling/School program.

**Research and Evaluation Methodology (REM)**

The department offers a PhD program in research and evaluation methodology. The program is designed to produce specialists in research and evaluation methodology capable of contributing to the knowledge base in psychology and education, and of evaluating programs, products, and processes employed in these two fields. While satisfying the department’s general requirements, students may design their programs to become specialists in a variety of areas, such as program evaluation, applied research, psychometrics, statistics, or similar areas. A research thesis and/or dissertation are required of all students.

**Absolute undergraduate prerequisites** for admission to the PhD program in Research and Evaluation Methodology are as follows: (1) Elementary Statistics; (2) Psychometrics; and (3) History and Systems of Psychology.

The Research and Evaluation Methodology PhD requires a **minimum of 64 total credits** past the MS degree, including the following: (1) REM MS degree curriculum: PSY 6010, 6570, 6600, 6660; PSY 6970 (8 credits); (2) REM PhD degree curriculum: EDUC 6770; PSY 7020, 7030, 7050, 7060, 7070, 7080, 7090, 7610, 7670, 7700; PSY 7970 (12 credits).

**Additional Requirements for Psychology PhD Programs**

All PhD candidates must meet the following general core requirements, regardless of specialty emphasis: (1) submission of an article for publication in a recognized journal; (2) presentation of research findings at a regional or national convention or professional meeting; (3) completion of the doctoral dissertation; (4) a comprehensive literature review; (5) completion of the research core; and (6) completion of an apprenticeship or internship. Students in the combined PhD program must also complete a formal case presentation, and compete nationally for admission to an APA-approved, 2,000-hour predoctoral internship. The REM program has an additional requirement of a grant proposal.

**Research Opportunities for Students**

Departmental faculty are heavily involved in basic and/or applied research. A sampling of the diverse research interests of tenured and tenure-track faculty available to students includes: *Ascone*—prosocial, moral development, domestic violence, relation between cruelty to animals and psychopathology; *Bates*—adolescent problem behavior prevention, community-level prevention, higher education teaching and learning; *Chenberg*—behavioral pharmacology, basic operant learning; *Cory*—anxiety, depression, supervision and training; *DeBerard*—health psychology, behavioral medicine, spinal surgery outcome and technique efficacy; *Domenez Rodriguez*—Latino family dynamics, parent training programs; *Ferguson*—social skills, guilt/shame development, social cognition; *Galluher*—social and dating relationship processes and dynamics in adolescence and rural mental health.
service delivery; Gilbertson—early intervention and prevention of behavior problems, school psychology; Gimpel—ADHD, behavioral disorders of children; Julnes—evaluation theory, human service delivery, family; Lehman—Web/Internet learning variables and efficacy, educational psychology; Masters—exercise and health, health psychology, therapy outcome, religion and health; Odum—experimental analysis of behavior, behavior pharmacology; Osborne—experimental and applied behavior analysis; Roberts—early intervention with families of young children, community-based systems of services; Schroder—sexual risk behavior, models of health behavior, stress and coping; Shah—experimental analysis of behavior, drug self-administration, behavior momentum, conditioned reinforcement, behavior economics; Stein—addictive behaviors and models, drug and alcohol prevention/treatment; J. Tschanz—neuropsychology of Alzheimer’s disease and other dementias; White—educational research, hearing loss detection in infancy, and program evaluation.

Graduate Student Financial Assistance

Financial support for students enrolled in terminal MS programs is limited. MS students should meet with their academic advisor for information about possible assistantship opportunities.

PhD students are guaranteed an assistantship for at least their first year. However, for at least the last 15 years, 100 percent of PhD students have continued to enjoy assistantship support beyond their first year, if they desired it. The department has available a number of teaching assistantships. Though these are generally awarded to students matriculated in psychology PhD programs, they are occasionally given to exceptional MS students. Also, faculty in the department and college regularly offer research assistantships to graduate students, as does the Counseling Center and a variety of on- and off-campus facilities (e.g., Center for Persons with Disabilities, Bear River Mental Health Center, Head Start, and Early Head Start). Additionally, first-year psychology PhD students typically compete extremely well for several University Fellowships, which were established to attract top student scholars to USU. Furthermore, the department has some scholarship support specifically available to psychology graduate students (e.g., Walter Borg and Elwin Nielsen scholarships). Finally, in accordance with current School of Graduate Studies policy, PhD students may qualify for full tuition remission for up to 70 credits within their program.

Psychology Faculty

Professors
Frank R. Ascione, developmental
Carl D. Cheney, physiological
Tamara J. Ferguson, social and developmental psychology
Cecilia H. Foxley, counseling, human relations
Juan N. Franco, Vice President for Student Services, counseling and educational psychology
Richard N. Roberts, developmental
Charles L. Salzberg, applied behavior analysis
David M. Stein, clinical psychology
Karl R. White, research and evaluation

Research Professor
Byron R. Burnham, qualitative evaluation methods

Professors Emeriti
Michael R. Bertoch, counseling
Glendon W. Casto, developmental
Keith T. Checketts, school psychology and counseling, research methodology
John R. Cragun, industrial
Marvin G. Fifield, school and counseling
Arden N. Frandsen, educational
J. Grayson Osborne, behavior therapy, child
Richard B. Powers, experimental social
David R. Stone, learning, educational
Sebastian Striefel, clinical child

Associate Professors
Susan L. Crowley, counseling
Gretchen A. Gimpel, school
George Julnes, evaluation methodology, research methodology
Kevin Masters, clinical

Research Associate Professor
Mark S. Innocenti, school psychology

Associate Professors Emeritus
William R. Dobson, clinical
Elwin C. Nielsen, clinical and school

Assistant Professors
Scott C. Bates, social and community psychology
M. Scott DeBerard, health psychology
Renee V. Galliher, clinical psychology
Donna M. Gilbertson, school psychology
Steve Lehman, educational psychology
Maria C. Norton, research and evaluation methodology
Amy I. Odum, behavior analysis
Melanie M. Domenech Rodriguez, counseling, child clinical
Timothy Shah, behavior analysis
Kerstin E. E. Schroder, health psychology
JoAnn T. Tschanz, neuropsychology, abnormal psychology, physiological psychology

Research Assistant Professor
Susan G. Friedman, research

Assistant Professor Emeritus
J. Whorton Allen, counseling

Adjunct and Clinical Faculty
Kent W. Anderson, professional-scientific
Ann M. Berghout Austin, infancy through childhood
Carolein G. Barcus, counseling
David W. Bush, clinical/counseling
Robert S. Cook, rural and family interventions
Gwenaelle C. Couillard, training
Mary E. Doty, clinical
Monique Frazier, child clinical
Eric J. Gee, research and evaluation
Richard D. Gordin, Jr., sport and exercise psychology
Randall M. Jones, family research management
Joan A. Kleinke, counseling and personnel services
J. Russell Mason, sensory evaluation, ethology
Kent E. Nabers, gero-psychology
Mark A. Nafziger, counseling psychology
D. Kim Openshaw, marriage and family therapy
Lori A. Roggman, developmental
Thomas R. Schenkenberg, neuropsychology
Patricia L. Truhn, neuropsychology, crisis intervention
Brian Tschanz, social psychology
Beth Walden, research and evaluation methodology
Leland J. Winger, Jr., clinical
Jean Wollam, educational psychology
Blaine R. Worthen, research and evaluation

Course Descriptions
Psychology (PSY), pages 467-472
Secondary Education

Department Head: Barry M. Franklin
Location: Emma Eccles Jones Education 330
Phone: (435) 797-2222
FAX: (435) 797-1441
E-mail: seced@usu.edu
WWW: http://www.coe.usu.edu/seced/

Undergraduate Advisor: Harold E. Heap, Education 330B, (435) 797-2224, harold.heap@usu.edu

Degrees Offered: Second Bachelor of Science (BS), Second Bachelor of Arts (BA), Master of Science (MS), Master of Arts (MA), and Master of Education (MED) in Secondary Education; BS and BA in Composite Teaching—Social Studies. The department participates in the Interdepartmental Doctor of Education (EdD) and Doctor of Philosophy (PhD) programs, focusing on the Curriculum and Instruction specialization.

Graduate Specializations: Educational Leadership, English as a Second Language (MED only), English Education, Gifted and Talented, Mathematics Education, Middle Level Education, Reading Education, Social Studies Education, Science Education

Undergraduate Programs

Objectives
The Department of Secondary Education coordinates state-approved programs for secondary teacher licensure across campus. The department offers the Secondary Teacher Education Program (STEP), a sequence of courses and field experiences designed to prepare students for teaching careers in secondary schools. The STEP program is fully accredited by the Utah State Board of Education and by the National Council for Accreditation of Teacher Education. Students who successfully complete the program are recommended for secondary licensure in the State of Utah, enabling them to teach in grades 6-12.

Requirements

Departmental Entrance Requirements. In addition to meeting the admission requirements for the University, students in good standing must have a minimum entrance GPA of 2.75 and maintain that GPA in order to student teach. All students must be admitted to the teacher education program. See details below.

Admission to Teacher Education. Prior to enrolling in STEP courses, students must be admitted to the teacher education program. Criteria for admission include completion of a minimum of 60 semester credits, and (1) minimum ACT scores, (2) University Studies requirements, (3) a speech and hearing test, (4) successful completion of the Teacher Education Writing Exam, and (5) recommendations from advisors in major and minor fields. Application forms are available from advisors; from the Office of Teacher Education, Graduation, and Educator Licensing, Room 103, Emma Eccles Jones Education Building; and from the Department of Secondary Education, Room 330, Emma Eccles Jones Education Building.

Students must submit copies of University transcripts, including transfer coursework, verifying a minimum total GPA of 2.75. Criminal Background Check materials, required by the State of Utah, must also be submitted at this time. The fee for the Criminal Background Check is payable to the Utah State Office of Education. A money order must be provided as payment. Questions about the admission requirements may be directed to the Secondary Education advisor.

Bachelor’s Degree in Social Studies Composite Teaching. Students who are accepted in good standing by the University and who have a minimum total GPA of 2.75 may be admitted to the Social Studies Composite Teaching Major. In order to graduate with the Social Studies Composite Teaching degree, students must (1) maintain a minimum 2.75 total GPA, (2) earn a grade of C or better in all courses in the major, (3) complete the Secondary Teacher Education Program (STEP), and (4) meet all requirements for the Secondary Teacher License (see below).

For the bachelor’s degree, students must complete: (1) University Studies requirements, (2) courses required for the Social Studies Composite Teaching Major (see list below), (3) The Secondary Teacher Education Program (STEP), and (4) electives. Students must complete each course in the Social Studies Composite Teaching Major with a minimum grade of C. Upon completing all requirements for graduation, students are eligible for a secondary teaching license from the Utah State Office of Education (grades 6-12). Students with the Social Studies Composite Teaching Major graduate from the Department of Secondary Education. Courses in the Social Studies Composite Teaching Major are provided by various departments. Students should check regularly with these departments and the Secondary Education advisor for changes and substitutions.

Students must complete a total of 60 credits selected from various social science courses listed below. The number of credits and course choices are listed after the area in which they must be completed.

History (21 credits). HIST 1030, 1040, 1050, 2700, 2710, 3850, and 4860.

Geography (15 credits). GEOG 1030, 1130, 2030, 3850, and 4200 (Utah).

Economics (6 credits). ECON 1500 and 2010.

Political Science (9 credits). POLS 1100; POLS 4120 or 4130; electives (3 credits minimum), chosen from POLS 2200, 3130; and a third POLS course approved by the Secondary Education Advisor.

Psychology/Sociology/Anthropology (15 credits). PSY 1010, SOC 1010, ANTH 1010; choose 6 credits from SOC 2500, 3010, or other courses approved by the Secondary Education Advisor.

Secondary Teaching License (grades 6-12). To obtain a teaching license, undergraduate students must complete (1) 30 credits of University Studies requirements, including written communications, (2) an approved composite teaching major or approved teaching major and teaching minor (see below), and (3) the Secondary Teacher Education Program (STEP). The Secondary Education advisor will assist returning students who already have an undergraduate degree with program planning for
licensure. These students occupy “Second BS” or “Second BA” status while pursuing licensure. They also may apply for a second bachelor’s degree in conjunction with teacher licensure. Consult the Admissions Office for details.

All students should note that secondary teacher licensure is not automatic upon completion of the program. In order to receive Utah licensure, students must apply for the Basic Teaching License. Applications are available in the Office of Teacher Education, Graduation, and Educator Licensing, Emma Eccles Jones Education Building, Room 103.

**Special Education Dual License.** Students can be licensed in both special education and in a secondary subject area through a dual licensure program offered jointly by two departments. Early in their programs, students should consult with undergraduate advisors in Secondary Education and the Department of Special Education and Rehabilitation.

**Optional Middle Level Endorsement (grades 6-9).** The Department of Secondary Education has joined with the Department of Elementary Education to offer a Middle Level Endorsement for students seeking initial teacher licensure and for persons who already have an elementary or secondary teaching license. Students pursuing this endorsement must take additional coursework that specifically focuses on middle level curriculum and instruction. To be recommended for the Middle Level Endorsement, students must student teach (SCED 5630) in the middle grades. Information about this program is available from the Secondary Education Advisor and the Department of Elementary Education.

**ESL Teaching Minor or Endorsement.** The USU Elementary Education Department and the Secondary Education Department jointly offer a K-12 English as a Second Language (ESL) endorsement. Undergraduate students seeking initial teacher licensure can obtain an ESL Teaching Minor (24 credits) and the ESL endorsement. Students pursuing the minor must complete the following courses: LING 4100, 4400, 4900; SCED 3300 or 4300; SCED 4710, 4770, 5630.

**Composite Majors, Teaching Majors, and Teaching Minors.** Secondary Teacher Licensure requires that students complete a composite teaching major or a combination of a single-subject teaching major and teaching minor. Students are strongly encouraged to meet as soon as possible with advisors in their declared teaching major and minor. The following composite teaching majors, single-subject teaching majors, and teaching minors are approved for Utah State University.


**Teaching Majors (30 credits minimum).** Chemistry, English, Geography, Health Education, History, Mathematics, Modern Languages, Physical Education (K-12), Physics, Political Science, Psychology, Sociology, and Theatre Arts.


**Secondary Teacher Education Program (STEP)**

**Three-Level Program (35 credits).** Secondary Education coordinates a state-approved program to complement the teaching majors and minors in 21 departments. The framework is organized into three sequential levels, each taken during a different semester. Students should plan to complete the STEP Program during their junior and senior years after most or all of the major and minor coursework has been completed. All three levels of the STEP are offered during fall and spring semesters, but not during summers. Levels of the STEP are taken as a package, not piecemeal. Each level must be satisfactorily completed before students advance to the next level.

As outlined below, Level 1 and Level 2 courses are offered by the Department of Secondary Education and other cooperating departments. Teaching Methods courses are offered by many departments across campus. Students should refer to the requirement sheets of their composite teaching major, or their teaching major and minor, to determine which methods courses they should take. A clinical experience fee of $50 is assessed at each of the two levels. This fee provides a stipend to classroom teachers who work with clinical experience students in the public schools. Students should refer to the requirement sheet for their composite teaching major or their teaching minor to determine which methods courses they should take.

**Level 1 (11 credits).** After admission to teacher education, students should take SCED 3100 and 3210 during the same semester. In addition, Level 1 students must complete one or more teaching methods courses as required by the student’s composite teaching major, or by the student’s teaching major and minor, as well as an Instructional Technology course. (Students should contact their departmental advisor to determine which Instructional Technology course to take.) Finally, a departmentally sponsored course with a 3300 number should be taken for in-school clinical experiences.

**Level 2 (12 credits).** After successfully completing Level 1 courses, students should take SPED 4000 and SCED 4200, 4210 during the same semester. In addition, Level 2 students must complete all remaining methods courses in their major and minor teaching fields. Finally, a departmentally sponsored course with a 4300 number should be taken for in-school clinical experiences.

**Level 3 (12 credits).** After successfully completing Level 2 courses, students should take Student Teaching Seminar (departmentally sponsored course with a 5500 number) and Student Teaching (departmentally sponsored course with a 5630 number).

Students must enroll for either Clinical Experience I or Clinical Experience II concurrent with their methods courses. Methods instructors, in concert with the Office of Field Experiences, set up and monitor these field activities in middle and high school settings. The clinical experiences provide a classroom context for understanding STEP and methods courses. A clinical experience fee of $50 is assessed at each of the two levels. This fee provides a stipend to classroom teachers who work with clinical experience students in the public schools. Students should refer to the requirement sheet for their composite teaching major or their teaching minor to determine which methods courses they should take.

**Background Check and Student Teaching.** As a result of legislative mandate, all applicants for student teaching must undergo a criminal background check prior to student teaching placement. The Office of Field Experiences, Emma Eccles Jones Education Building, room 330, will assist students in complying with this mandate. The fee for the background check is payable only by money order to the Utah State Office of Education.
Applications for student teaching must be submitted to the Office of Field Experiences, Emma Eccles Jones Education Building, room 330, one year in advance. Students must have completed 80 percent of their teaching major/ minor (or composite major) requirements prior to student teaching. The Portfolio Interview is part of the application process.

Students should be financially prepared to stay off campus, if necessary, during the 13-week block of student teaching. Because student teaching requires a major commitment of time and energy, it should be planned with care. Students are urged to forego outside employment, if possible, during the student teaching experience.

**Graduate Programs**

**Admission Requirements**

The Department of Secondary Education assists in the preparation of graduate students seeking the MEd, MA, and MS degrees, as well as the EdD and PhD degrees. Students desiring information concerning the various graduate programs should contact the department head. The application for admission to a graduate program is made through the School of Graduate Studies. See Graduate Admission Procedures (pages 90-91).

Students applying to a master’s degree program may take either the Miller Analogy Test (MAT) or the Graduate Record Exam (GRE). Students applying to a doctoral degree program should take the GRE. Scores at the 40th percentile or above are required for admission. In addition, students must have at least one year of teaching experience (or comparable professional experience) and a valid secondary teaching license.

All students applying to the doctoral degree program (Curriculum and Instruction specialization) participate in oral interviews with the Curriculum and Instruction Management Committee. A sample of academic writing should be included as part of the doctoral-level admission folder.

Master’s applications are considered three times a year: June 15 for fall semester registration, October 15 for spring semester registration, and March 15 for summer semester registration. Doctoral applications are considered more frequently. Application folders will be not be considered until all required information is received by the School of Graduate Studies and sent to the department.

**Master’s Degree Programs**

Secondary Education master’s degree programs provide coursework and professional experiences for those preparing to become master teachers, teacher-leaders, supervisors, or curriculum specialists. Each program provides coursework in education, with associated work in a specialized subject matter, which is the teacher’s area of concentration. Typically, the area of concentration derives from the teacher’s ongoing work with middle school or high school students.

Areas of specialization in Secondary Education include the following: Educational Leadership, English as a Second Language (MEd only), English Education, Gifted and Talented, Mathematics Education, Middle Level Education, Reading Education, Social Studies Education, and Science Education. Three University departments—Art, Business Information Systems, and Music—also participate in master’s degree programs sponsored by Secondary Education. Admission to these fields of study requires approval of the cooperating department. In planning areas of specialization, students work with a faculty advisor and select graduate courses from the University-wide curriculum.

**MEd Degree Plan B (36 credits).** The MEd Plan B offers a Portfolio Project Option or Creative Project Option which culminates in the presentation of the project in a final exam setting. Students take a common core of courses from college and department curricula, then courses in areas of concentration in relation to their teaching specialties. The research course for the MEd focuses on issues of application as well as action research. Creative projects are diverse and range from action research to curriculum development. The professional portfolio project provides the context for a personal knowledge base. Although portfolios share certain structural features, each student’s portfolio is unique.

**MEd Degree Plan C (40 credits).** The MEd Plan C is a coursework only program. Students take a common core of courses from college and department curricula, then courses in areas of concentration in relation to their teaching specialties; additional coursework is taken in the area of concentration. At the conclusion of the program, a culminating experience to meet the needs of the student is developed. Options for the experience can be an interview with the advisor, oral comprehensive examination under the supervision of the advisor, written comprehensive examination under the supervision of the advisor, or other culminating experience developed by the student and advisor and approved by the department head.

**MS and MA Degrees Plan A (30 credits).** The MS/MA option culminates in a formal defense of a thesis. This option is for teachers whose long-term goals require a traditional, research-oriented degree. The MS thesis involves either an experimental or qualitative research study. The MA thesis involves development of a scholarly literature review. The MA degree also requires foreign language competency.

**Doctoral Degree Programs**

For students who have already completed a master’s degree, Secondary Education participates in the interdepartmental doctoral program coordinated by the dean of the College of Education and Human Services. Both PhD and EdD degrees are offered in the Curriculum and Instruction specialization. For an overview of the program, including program requirements and admission procedures, see pages 185-186 of this catalog. As with any degree program, students interested in doctoral study are encouraged to contact the department head of Secondary Education.

**Financial Assistance**

Departmental support or grant support is available to doctoral-level and master’s level students pursuing full-time study on campus. Such financial support typically is through assistantships, which carry half-time teaching, research, or supervisory obligations. Typical assistantships carry forward for three years. Awards are made on a competitive basis. Students who wish to be considered for financial aid should apply to the department no later than February 1 for the following academic year. Acceptance to graduate study does not guarantee financial assistance.
Secondary Education Faculty

Professor
Barry M. Franklin, curriculum policy, theory, and history

Professors Emeriti
Ross R. Allen, mathematics education, comparative education
Eldon M. Drake, journalism, general student teaching
Kenneth C. Farrer, curriculum development
Richard S. Knight, social studies specialist
Izar A. Martinez, administration, research methods, measurement/evaluation
Walter L. Saunders, science specialist
James P. Shaver, social studies, former School of Graduate Studies Dean
William J. Strong, content area reading, Utah Writing Project Director

Associate Professors
Kay Camperell, content area reading/writing, learning theory, literacy education
Janice L. Hall, qualitative research, professional development, supervisor of student teaching
Grace C. Huerta, educational foundations, multi-cultural education

Adjunct Associate Professor
Michael K. Freeman, higher/adult education, educational leadership

Associate Professor Emeritus
Varnell A. Bench, extension, administration, supervision

Assistant Professors
George G. Hruby, literacy/reading
Sherry Marx, ESL/Bilingual
Thomas C. Pedroni, social studies, critical social theory, qualitative methods, critical pedagogy
L. Ruth Struyk, classroom assessment, classroom management, measurement, instructional supervision, program evaluation

Lecturer
Marla J. Johnson, science education

Undergraduate Advisor
Harold E. Heap, classroom management, adolescent development

Course Descriptions
Secondary Education (SCED), pages 474-477
Social Sciences

Degree Coordinator: Dean Gary Kiger, College of Humanities, Arts and Social Sciences
Location: Main 338
Phone: (435) 797-1195

Degree offered: Master of Social Sciences (MSS)

Major Disciplines: History, Political Science, and Sociology

Minor Disciplines: Anthropology; Business Administration; Instructional Technology; Environment and Society; Family, Consumer, and Human Development; History; Political Science; Psychology; Social Work; and Sociology

Graduate Program

Administration

The program is administered by a committee of the department heads (Management Committee) from the three major disciplines or their designees. The committee is chaired by annual rotation by one of the members of the committee, and reports to the Degree Coordinator. The Management Committee reviews policy and develops recommendations which are submitted to the Degree Coordinator for approval.

Degree Description

The social sciences are disciplines that have as a common objective the understanding of human behavior and social relationships. The MSS offers multidisciplinary graduate training for candidates desiring in-depth applied understanding of human performance, human environments, and/or the structuring of social, political, and economic systems. Students in History and Sociology typically follow the Plan B option, which requires a minimum of 30 credits. A minimum of 15 credits are required in a major discipline, plus a minimum of 15 credits from one of the following two tracks: Track A: a minimum of 15 credits from two approved minor areas, with at least two courses in each minor area. Track B: a minimum of 15 credits from an approved minor and a cluster, with at least two courses in the minor and two courses in the cluster. Courses counted in a cluster must be outside the selected major and minor. Three of the 30 credits required for the Plan B option must be thesis credits, but no more than 3 credits of thesis can be counted toward a degree. Departments may impose more rigorous requirements. A maximum of 3 credits may be earned either from readings/conferences or from independent research.

The MSS degree is primarily intended to prepare degree recipients for employment or advancement in social science-related occupations. Students interested in pursuing doctoral work should consider a Plan A Master of Science program.

Admission Requirements

See general admission requirements, pages 90-91. In addition, the faculty of each discipline determines whether to recommend to the graduate dean the acceptance of applicants. For further information, contact the Graduate Coordinator in the department of the proposed major.

Degree Requirements

Student Supervision. For each student admitted, a supervisory committee is ordinarily appointed consisting of at least one faculty representative from the student’s major discipline and (a) one from each of the minor disciplines, or (b) one from a minor discipline and one from a discipline associated with the cluster. Policies governing student supervision may vary from specialization to specialization.

Plan B Research Paper. Each Plan B student must submit a research paper for thesis credit in accordance with School of Graduate Studies and departmental requirements. Ordinarily, the Plan B paper is written in the major discipline, but in some cases, with the approval of the student’s supervisory committee, it may be written in one of the minor disciplines. Information specific to each major discipline may be obtained by contacting the sponsoring department.

Further Information

Candidates interested in pursuing this degree program may obtain specific information by contacting the head of one of the participating departments, the School of Graduate Studies, or the dean of Humanities, Arts and Social Sciences.
Sociology, Social Work and Anthropology

Department Head: Richard S. Krannich
Location: Main 224
Phone: (435) 797-1230
FAX: (435) 797-1240
E-mail: lstocking@hass.usu.edu
WWW: http://www.usu.edu/sswa

Undergraduate Program Directors:
Sociology: Peggy Petzelka, Main 216E, (435) 797-0981, peggyp@hass.usu.edu
Social Work: Terry L. Peak, Main 239D, (435) 797-4080, tpeak@hass.usu.edu
Anthropology: Bonnie Glass-Coffin, Main 245A, (435) 797-4064, glasscob@cc.usu.edu

Sociology Graduate Program Director:
Douglas B. Jackson-Smith, Main 216H, (435) 797-0582, douglasj@hass.usu.edu

Degrees offered: Bachelor of Science (BS), Bachelor of Arts (BA), Master of Science (MS), Master of Arts (MA), and Doctor of Philosophy (PhD) in Sociology; participates in Master of Social Sciences (MSS); BS and BA in Social Work; BS and BA in Anthropology

Graduate Specializations: PhD—Demography, Environmental Sociology/Sociology of Natural Resources, Social Problems, and Sociology of Development

Undergraduate Programs

Objectives

The department offers educational programs for students to prepare for positions in business, social welfare, teaching, research, personnel, government service, law enforcement, and industry, as well as providing liberal and general education for all interested students. The program offers a wide range of courses for the study of social, cultural, and behavioral dynamics. The department also provides University Studies, Liberal Arts and Sciences, and other service courses for students from all majors.

Requirements

Departmental Admission Requirements. New freshmen admitted to USU in good standing qualify for admission to the sociology and anthropology majors, as well as to the pre-social work major. Transfer students from other USU majors or other institutions must have a minimum 2.5 overall GPA.

For admission to the sociology major, students must additionally have earned a grade of C- or better in SOC 1010. For admission to the social work major, transfer students must have earned a minimum 2.75 GPA in all social work classes. Applicants to the social work major must have completed the basic social work core curriculum, must have a minimum 2.5 overall GPA and a minimum 2.75 GPA in social work classes, must have completed SW 1050 with a grade of C+ or better, and must have completed an application form (available from the department).

Sociology

Undergraduate Program Director: Peggy Petzelka
Program Office: Main 224, (435) 797-1230

The study of the human individual and human groups is central to sociology. These subjects offer a broad foundation for understanding human behavior on an individual and group basis, and encourage the development of skills necessary for establishing favorable societal conditions for human development.

Students learn to systematically describe and explain group behavior, including the effects of one group on another and of groups upon individual behavior. Required sociology classes deal with how people in different societies organize and control their societies, critical issues in sociology as they have developed through history, and statistical methods for analyzing sociological data.

Upon completion of the prescribed program for a major in sociology, the student should be able to:

1. Demonstrate knowledge essential for understanding society from a sociological perspective;
2. Identify and critically evaluate the contributions of sociologists, social scientists, and scholars;
3. Identify and critically evaluate the forces and institutions that influence his or her life as a member of society;
4. Identify, comprehend, and critically evaluate the influences of race, class, gender, age, and disability on a member of society;
5. Pursue careers in sociological areas, business, government, and/or graduate study; and
6. Apply the methods and concepts of sociology to the analysis of social issues, problems, and conflicts in preparation for participation as agents of creative social change.

Students select courses from three different areas. Social Problems classes focus on retirement and other aspects of aging, the causes and prevention of juvenile delinquency, and the cultural characteristics of minority groups. Groups and Institutions courses look at collective behavior, the organization of communities, and the development of gender roles, as well as economic systems, educational systems, and social inequality. Population and Environment and Development courses deal with the effects of the environment and human behavior and the consequences of different patterns of population growth and settlement. A Law and Society Area Studies Certificate is available. A teaching major in sociology is available for students wishing to teach in secondary schools.
Surveys of graduates indicate that sociology majors pursue a wide range of occupations. About one-third are employed in the professional sector, while close to one-fourth are in service occupations. In addition, 26 percent are involved in sales or management/administration. In terms of specific job titles, social service is a popular option, as are retail sales and teaching. Other frequent job titles include: vocational rehabilitation counselor, research analyst, data coordinator, management analyst, district sales manager, parole officer, juvenile probation officer, social services director, civil service test examiner, personnel director, insurance salesman, and correctional service officer. A variety of government and business positions are also expanding for sociology majors with the new emphasis on a liberal arts education. The growing awareness of the value of sociological perspectives for problem-solving continues to provide an increasing range of opportunities for employment in a variety of work settings.

**Departmental Graduation Requirements.** Sociology majors must meet the following course requirements:

1. Complete the general requirements of the University. Majors are expected to take STAT 1040 to fulfill the quantitative literacy requirement for University Studies.

2. Complete a minimum of 33 credits of sociology coursework. At least fifty percent of the sociology coursework should be completed in the USU Sociology program. Sociology majors must maintain a minimum GPA of 2.5 in sociology courses and earn a grade of C- or better in courses to be counted toward the major.

3. A minor outside the program is encouraged but not required.

4. Complete the following required courses: SOC 1010, 3010, 3110, 3120, and 4010.

5. Choose a minimum of 18 credits from the following sociology elective courses. At least 3 credits must come from each of the three specialty areas listed below.

   a. **Social Problems:** SOC 1020, 3410, 3420, 3430, 3750, 4420.

   b. **Groups and Institutions:** SOC 2500, 3320, 3330, 3500, 4330.

   c. **Population, Environment, and Development:** SOC 3200, 3600, 3610, 4620, 4710, 4730, 5650/6650.

**Sociology and Social Work Dual Major.** Sociology majors desiring additional preparation for employment in the social services may complete a dual major in sociology and social work. With the help of advisors, students who will seek positions in other special areas could include appropriately related courses.

**Minor.** Students minoring in sociology must complete a minimum of 12 credits in sociology courses. SOC 1010 and 1020, as well as six additional credits with a SOC prefix, are required.

**Teaching License.** Sociology is defined as an approved teaching major in Utah secondary schools by the State Board of Education. The sociology major must complete a minor in a subject that is required in Utah high schools. In addition to completing the courses required for the sociology major, the sociology teaching major must also complete the required teaching licensure courses in education. Students can also elect sociology as an approved teaching minor.

**Law and Society Area Studies.** The Department of Sociology, Social Work and Anthropology sponsors an interdisciplinary program emphasizing the study of the relationship between law and society. Students must complete 24 credits, chosen from a selected list of courses, in at least three disciplines. A minimum 3.0 GPA must be maintained in these courses.

The selected courses are: FCHD 3100; JCOM 4030; POLS 2990, 3810, 5640; PHIL 2500, 4600, 4610, 5600; POLS 3120, 3130, 3170, 3320, 3810, 4120, 4130, 4810, 5130; SOC 1020, 3410, 3420, 3430, 4420; SPED 5070; SW 5350. Only 12 credits may be selected from a single discipline. The Law and Society Area Studies program is pursued in conjunction with a major. Credits may be applied to the major, as well as to the area studies requirements. A student's transcript will reflect the Law and Society Area Studies emphasis upon completion of requirements for a degree.

More information may be obtained from the department or from the Science/HASS Advising Center, Student Center 302.

**Gerontology Program.** The Department of Sociology, Social Work and Anthropology is one of several departments sponsoring an interdisciplinary gerontology program, which prepares students for careers in the field of aging. Students may earn a certificate in gerontology by completing a selected list of course requirements, including supervised field practicum in a gerontological setting.

More information concerning the gerontology certification program may be obtained from the Department of Family, Consumer, and Human Development.

**American Studies Major.** The Department of Sociology, Social Work and Anthropology is one of several departments offering an area of concentration for the American Studies program. Students who wish to focus their work in American culture should refer to the American Studies program description (page 196) and check with the Sociology program for further information.

**Social Work**

**Program Director:** Terry L. Peak

**Program Office:** Main 239, (435) 797-1286; or Main 224, (435) 797-1230

Utah State University's Social Work Program offers a baccalaureate degree in social work. The program is accredited by the Council on Social Work Education (CSWE) and meets requirements established by the State of Utah for licensure of social service workers.

The Social Work Program provides a learning environment for those who seek to acquire knowledge and skill in order to bring about meaningful social change in individuals, groups, communities, and society in accordance with democratic principles of civil, social, political, and economic justice. The program provides grounding in the fundamental generalist skills, knowledge, and values of social work, such as critical thinking, clarification of personal values, awareness of diversity, professional use of self, and communication and interpersonal relationship skills.

Social Work at Utah State University recognizes the historic importance of social welfare in balancing the country’s economic and social structure. The program is committed to the resolution of contemporary human social problems, such as poverty, racism, discrimination, exploitation, economic injustice, poor housing, malnutrition, and inadequate education.
Program Goals

There are two fundamental goals that guide the Social Work Program:

1. To prepare students for employment as generalist social workers through education in a professional foundation curriculum and selected liberal arts education coursework.

2. To prepare students for advanced education.

The program is based on a generalist conception of social work and a problem-solving, empowerment, and strengths model of practice. The social work sequence stresses problem solving at the interface of person and environment, which requires that students develop a repertoire of generalist practice skills. The program inculcates in students the knowledge, skills, understanding, and values necessary to perform multi-level assessments and interventions utilizing a theoretical knowledge base. The program is committed to building a student’s education on a solid base that includes a liberal arts perspective vital to the development of a social worker.

The program endeavors to prepare students for advanced standing in graduate professional programs and to provide a solid academic base for continuing education. To accomplish this, the program facilitates the development of the profession’s knowledge, values, and skills; provides a well-rounded liberal arts educational foundation; and teaches good study habits, written and oral communication skills, and the ability to think critically.

The program also endeavors to maintain a campus environment that will foster a sense of community and social responsibility. To accomplish this, the program provides opportunities for service learning, social development, and educational research forums through the state-affiliated National Association of Social Workers student organization and the Social Work Phi Alpha Honor Society.

Licensure

In the State of Utah, graduates with a bachelor’s degree in Social Work are eligible to be licensed upon graduation as social service workers. Students may obtain further information on licensure from:

Department of Commerce
Division of Occupational and Professional Licensing
160 East 300 South
PO Box 146741
Salt Lake City UT 84114-6741
(801) 530-6628
http://www.dopl.utah.gov

Social Work Major

Liberal Arts Foundation. All students pursuing an undergraduate degree at Utah State University must meet requirements designed to assure a broad liberal arts foundation. Cross-cultural and cross-disciplinary perspectives are vital to a student’s development as a social worker. The University Studies program, which is described in detail in this catalog (see pages 42-49), is required of all majors. Majors are expected to take STAT 1040 to fulfill the quantitative literacy requirement for University Studies. In addition to fulfilling University Studies requirements, majors will need to complete specific liberal arts courses, listed in the Social Work Program requirements, some of which fulfill both University Studies and Social Work Program requirements. Social Work majors must complete STAT 1040 and SOC 3120 to graduate.

Program Admission Requirements. The following regulations apply for admission to the Social Work Program: (1) New freshmen admitted to USU in good standing qualify for admission to the Social Work Major. (2) Transfer students from other institutions must obtain a minimum overall GPA of 2.5 and a minimum overall GPA of 2.75 in social work classes. (Refer to the USU Social Work Program Transfer of Credit Policy.) (3) Students transferring from other USU majors must complete the Social Work Major course of study and must obtain a minimum overall GPA of 2.5 and a minimum overall GPA of 2.75 in social work classes. (4) Students must apply for and meet criteria for advanced standing in order to continue in upper-division social work practice courses and field practicum courses. (5) Students are responsible for reviewing and knowing the requirements for the Social Work degree. (6) All courses required for the Social Work degree must be taken for a letter grade.

Social Work Major. Students may declare Social Work as their major at any time. All course offerings in social work are open to all Social Work majors, with the exception of the practice courses (SW 3050, 4150, and 4160) and the field practicum courses (SW 4870 and 5870), which require admission to advanced standing. Social work students are expected to take courses in sequence, in order to have the professional foundation knowledge required for each class. Maintenance of a high grade point average is important as students progress through the major and continue on to graduate school. Requirements for the Social Work major are as follows:

First year: SW 1050, FCHD 1500 (BSS), ENGL 1010 (CL), BIOL 1010 (BLS), SOC 1010 (BSS), PSY 1010 (BSS), STAT 1040 (QL), and ANTH 1010 (BSS).

Second year: ENGL 2010 (CL), SW 2400, 2500, and one elective enrichment course. Apply for advanced standing.

Third year: SW 3050, 4100, 4150, 4160, SOC 3120, and two elective enrichment courses. Apply for practicum.

Fourth year: SW 4870, 5350 (CL), and 5870.

Procedures for Advanced Standing in the Social Work Major. In order to be considered for advanced standing, students must turn in a completed application form by March 5 of the academic year. Applications for admission can be obtained in the Social Work Office, Main 239. At the end of spring semester, when the criteria for advanced standing have been met, eligible students will be ranked according to their grade point average, personal statement, performance on the advanced placement test, and faculty evaluation. The highest ranking students will receive advanced standing, which will allow them to enroll in upper-division practice courses. Only those students who have completed first- and second-year requirements by the end of spring semester of the application year will be considered for advanced standing. The primary reasons for this evaluation are: (1) to maintain a high-quality educational experience for students in upper-division practice courses, and (2) to maintain the status of full accreditation by the Council on Social Work Education. Students will receive notification of acceptance in June of the application year. Those students who do not receive advanced standing, and are therefore not allowed to enroll in upper-division practice courses, may reapply courses to improve their GPA and reapply for advanced standing.
To be considered for advanced standing, students must meet the following minimum criteria:

1. Completion of the following courses with a C or better: FCHD 1500 (BSS); ENGL 1010 (CL), 2010 (CL); ANTH 1010 (BSS); BIOL 1010 (BLS); SOC 1010 (BSS); PSY 1010 (BSS); and SW 2400, 2500.
2. Completion of SW 1050 with a grade of C+ or better.
3. Junior status (61-90 credits) upon application.
4. Maintenance of a minimum overall GPA of 2.5 and a minimum GPA of 2.75 in social work classes.
5. No Pass-D-Fail grades in courses required for the major.

Students should also be aware that if there are any personal data, such as that included on the application for state licensure, which indicate a potential threat to the public safety and welfare, a student may be denied advanced standing in the program. Students turned down for advanced standing will be assisted in finding a more suitable major.

To maintain advanced standing and eligibility for graduation as a Social Work Major, a student: (1) must obtain a B- or better in SW 3050, 4150, and 4160; (2) must have completed SW 1050 with a C+ or better; (3) must maintain a minimum overall GPA of 2.5 or better and a minimum GPA of 2.75 in the Social Work Major; (4) must receive a grade of C or better in all courses required for the major; (5) must not repeat more than once, to improve a grade, any course required for the major; and (6) must not receive a Pass-D-Fail grade for any course required for the major.

**Procedures for Admission to Field Practicum.** Students must complete 480 clock hours of supervised field practicum and integrative seminar coursework. The field practicum courses are SW 4870 (Beginning Field Practicum) and SW 5870 (Advanced Field Practicum). Students may register for SW 4870 only after making application with the practicum director. Application must be made during the spring semester of the academic year prior to enrollment in the practicum, and is due by February 20. Applications are available in Main 239. No applications for the practicum will be accepted from students who will not complete all required coursework by the end of spring semester.

The following are eligibility criteria for admission to the field practicum:

1. Senior status (92-120 credits completed) by the end of the spring semester in which the student applies. Only those students who are candidates for the baccalaureate degree in social work may be admitted to the field practicum.
2. Completion of University Studies program (including Depth Education requirements) and all social work courses, with the exception of SW 5350.
3. A grade of B- or better in SW 3050, 4150, and 4160.
4. A grade of C or better in all courses required for the major and a grade of C+ or better in SW 1050.
5. No Pass-D-Fail grades received in courses required for the major.
6. Demonstration of appropriate professional, moral, and ethical character, and must abide by the National Association of Social Work (NASW) code of ethics.
7. Maintenance of an overall minimum GPA of 2.5 and a 2.75 minimum GPA in the Social Work Major.

Students should also be aware that if there are any personal data, such as that included on the application for state licensure, which indicate a potential threat to the public safety and welfare, a student may be denied continuation in the program. If a student is denied admission to the practicum, the faculty will review his or her file upon request.

Students entering the practicum cannot ordinarily begin their placement earlier than the start of fall semester. If they do so, this practice falls outside of the Social Work Program’s responsibility, and any accrued hours will not count toward the practicum.

Students are strongly encouraged to join the NASW and be involved in the NASW Student Program Unit.

**Transfer of Credit Policy.** Students who transfer to the USU Social Work Program are required to complete an application for transfer credit. Students may substitute certain social work classes taken at other Council of Social Work Education (CSWE) accredited programs for USU courses. Course approval must be sought from the student’s advisor. When petitioning for a substitution, the student is responsible to meet with an advisor and fill out a transfer of credit form, available in Main 239. Social work courses taken ten or more years ago cannot ordinarily serve as substitutes. Courses taken in a department or program not accredited by the CSWE cannot ordinarily serve as substitutes for the USU Social Work courses unless they have been covered in an articulation agreement.

The following regulations apply to transfer students: (1) A transfer credit application, with official transcripts from all institutions previously attended, must be submitted. (2) The transcripts must reflect a cumulative grade point average of at least 2.5 (on a 4.0 scale) and a 2.75 GPA in all social work courses. (3) The credentials of students seeking transfer to the Utah State University Social Work Program will be evaluated on an individual basis. (4) University Studies Depth Education requirements must be completed by all students, including transfer students who have earned an associate degree.

The following courses, or their equivalents, will be considered for transfer credit: SW 1050; STAT 1040 (QL); FCHD 1500 (BSS); ENGL 1010 (CL), 2010 (CL); ANTH 1010 (BSS); BIOL 1010 (BLS); SOC 1010 (BSS); PSY 1010 (BSS); and SW 2400, 2500. Students transferring from junior colleges will be required to apply for advanced standing and take upper-division social work courses at USU. Only those social work courses taken within the last ten years will be considered. Students transferring credits from CSWE accredited programs must apply for advanced standing and take SW 3050 (Practice I), SW 4150 (Practice II), SW 4160 (Practice III), SW 5350 (CL) (Social Welfare Policy), SW 4870 (Beginning Field Practicum), and SW 5870 (Advanced Field Practicum) with the USU Social Work Program.

During the month of March, Social Work faculty members will review applications for advanced standing, to qualify students to enroll in upper-division practice classes. Advanced standing is based on the following criteria: (1) completion of FCHD 1500 (BSS); ENGL 1010 (CL), 2010 (CL); ANTH 1010 (BSS); BIOL 1010 (BLS); SOC 1010 (BSS); PSY 1010 (BSS); and SW 2400, 2500 with a grade of C or better; (2) completion of SW 1050 with a grade of C+ or better; (3) junior status (61-90 credits) upon application; (4) maintenance of a minimum overall GPA of 2.5 and a minimum GPA of 2.75 in social work classes; (5) a passing score on the Advanced Placement Test (APT), which is a score of 70 percent or higher; and (6) no Pass-D-Fail grades received in courses required for the major. Students transferring to USU should obtain and complete a copy of the social work advanced standing application and send the application to the Social Work...
Program by March 5, prior to the fall semester in which they intend to transfer.

Students transferring to USU should be advised that social work education is a professional program, designed to prepare competent and effective social work professionals. Coursework is based upon a specific body of knowledge, values, and professional skills. Therefore, if students have not completed the required criteria for advanced standing, completion of their educational program could take additional time. For more information about the Social Work Program, call (435) 797-1286, or visit the Social Work website at: http://www.usu.edu/sswa/sw.htm.

Social Work Student Organizations

The Social Work Program recognizes the importance of students having opportunities to learn and socialize outside of the classroom. Students are encouraged to become involved with the NASW student organization, as well as the USU Social Work Program Phi Alpha Honor Society. Information is available in Main 239.

Anthropology

Program Director: Bonnie Glass-Coffin
Program Office: Main 245, (435) 797-0219; or Main 224, (435) 797-1230

Anthropology is the integrated study of humans in all their aspects. It offers a broad framework for understanding humans as individuals and as members of widely varying societies through courses dealing with the biological evolution of humans, prehistoric culture change, and present diversity of cultures and human types. Two parallel goals of the discipline are to explore and develop an appreciation for human diversity and the shared legacy of our common humanity.

Anthropology includes the following subspecialties: cultural anthropology, biological anthropology, archaeology, and linguistics. Major requirements are designed to encourage broad exploration across anthropology, and students who major in anthropology examine a wide range of peoples and cultures, both past and present. They examine lifeways as different as the hunter-gatherers of Ice-Age Europe, tribal horticulturalists of lush interior Amazonia, and the diverse ethnic neighborhoods of modern U.S. cities. They explore both the biological and cultural basis of human behavior, and examine how it is manifested in individuals and groups. Anthropology courses use both scientific and humanistic approaches to the study of humankind, in all its complexity. Courses emphasize critical reasoning, oral and written communication skills, and the expansion of thinking beyond the familiar.

The contemporary social science student lives in a world of diminishing cultural and national barriers. In this setting, a major in anthropology can lead to a wide variety of careers. Anthropologists are on the staff of leading medical, business, law, public affairs, and other professional schools, and have played critical roles in international ventures, public health programs, community development activities, and minority and migrant social actions. Additionally, anthropology serves applied interests in international development, archaeology and cultural resource management, cross-cultural health care, and osteology/forensics. With firsthand experience in every region of the country and around the world, anthropologists bring a unique understanding of specific social and ethnic groups and of the biological, ecological, and cultural factors that influence human behavior.

Special features of the anthropology program include smaller courses, individualized attention, opportunities for laboratory, museum, and field work, and the opportunity of working in teaching assistant positions. All these features give anthropology majors choice and experiences unavailable to undergraduates in most programs. The Anthropology Museum and the Archaeology Field School provide additional hands-on learning opportunities. Anthropology participates in the Department of Geology emphasis in Geoarchaeology, the American Studies Program, and the Folklore Program in the Department of English.

Anthropology leads to a variety of “real-world” jobs. Anthropology graduates are: lawyers, nurses, health care administrators, travel consultants, teachers of all kinds, cultural resource professionals, agency and program administrators, and technical writers. They work for museums, government land management, environmental and foreign service agencies, Indian tribes, and are common in both the government and private sectors of the environmental-cultural heritage protection industry. They can be found in public and private foundations, bureaus, and agencies for the arts, humanities, sciences, and tourism.

Graduate study in anthropology opens the world of practicing anthropology. Not limited to college teaching, anthropologists with graduate degrees can be found in a variety of private sector and government agency positions.

For students seeking a dual major, an Anthropology major can complement a major in American Studies, Biology, Geology, Geography, History, Languages, and Political Science. It also pairs well with majors in Natural Resources, because cultural resource and Native American issues are important to many positions in private firms and government agencies concerned with land management and the environment.

Major Requirements. A minimum of 33 credits is required for the anthropology major. All students must take four required courses, including a three-semester sequence in the basic areas of anthropology and a beginning upper-division level course in the history of anthropology. The anthropology major also requires exposure across the breadth of the discipline. To achieve this, students select courses from topical and area clusters at the upper-division levels and a final capstone course. Additional graduation requirements include:

Methods component. Majors must complete one “Methods” course. The course chosen to meet this requirement may also count toward other anthropology major requirements.

A minimum of 16 credits of the anthropology course credits counting toward the major must be Utah State University courses. Credits from distance and residence center courses are subject to departmental approval for application toward the anthropology major.

Students majoring in anthropology must maintain a minimum 2.5 GPA in anthropology courses. A grade of C or better must be attained in courses counted for the major, including foreign language and statistics courses. In addition, majors must: (1) complete the general requirements of the University in consultation with the student’s advisor; (2) complete the following required courses: ANTH 1010, 1020, 1030, 3990; (3) choose a minimum
of six credits from: ANTH 2100, 3110, 3150, 3160, 4110, 4120, 4130, 5100, 5110, 5120, 5160; (4) choose a minimum of six credits from: ANTH 3200, 3250, 4250, 5210; (5) choose a minimum of six credits from: ANTH 3170, 3300, 3310, 3350, 4350, 4360, 4370, 5300, 5310; and (6) choose a minimum of one course from: ANTH 4250, 4350, 5650, 5990.

Students planning to receive a BA degree must complete two years training or equivalent in a foreign language approved by the Languages, Philosophy, and Speech Communication Department or one year or equivalent in each of two foreign languages approved by the Languages, Philosophy, and Speech Communication Department.

Students planning to receive a BS degree must complete STAT 1040 (Introduction to Statistics), and one course having a Quantitative Intensive (QI) University Studies designation.

Anthropology majors are encouraged to complete both the foreign language and statistics requirements.

**Minor Requirements.** A minimum of 18 credits is required for the anthropology minor. A minimum of 12 anthropology credits counting toward the minor must be Utah State University courses. Credits from distance and residence center courses are subject to departmental approval for application toward the anthropology minor. Students must maintain a minimum 2.5 GPA in anthropology courses. A grade of C or better must be attained in courses counting toward the minor.

The following courses are required for the anthropology minor: ANTH 1010, 1020, 1030 (9 credits). In addition, students must complete 9 credits in anthropology, selected from ANTH 2100 and from 3000-, 4000-, and 5000-level anthropology courses, excluding ANTH 5210 (Physical Anthropology Lab), ANTH 5310 (Archaeology Lab), and ANTH 5900 (Independent Studies).

**Sociology Graduate Program**

**Graduate Program Director:** Douglas B. Jackson-Smith  
**Program Office:** Main 224, (435) 797-1230

The Department of Sociology, Social Work and Anthropology offers graduate work leading to the MS, MA, and PhD degrees in Sociology. The department also administers an interdisciplinary Master of Social Sciences (MSS) degree with emphasis in International Rural and Community Development.

The Graduate Program in Sociology provides a unique integrative and reinforcing combination of demographic, organizational, political-economic, and social psychological orientations to major domestic and global issues. At the graduate level, the department is particularly strong in four areas: Demography, Natural Resource and Environmental Sociology, Social Problems, and Sociology of Development. Graduate students have the opportunity to merge basic foundation coursework in sociological theory and research methods with more specialized training in selected specialty areas and apprenticeship roles in both basic and applied research projects. Sustained personal interaction between faculty and students is a hallmark and strength of the program.

The Graduate Program in Sociology has developed a *Graduate Program Handbook* that provides more details about the application process, financial assistance decisions, and graduation requirements. An electronic copy of this handbook is available on the departmental website: [http://www.usu.edu/sswa/grad.htm](http://www.usu.edu/sswa/grad.htm).

The typical graduate application has five main components:

1. A formal application form, available from the School of Graduate Studies;
2. Transcripts from the applicant’s undergraduate and graduate studies;
3. Test scores from the Graduate Record Examination (GRE) for all applicants, and the Test of English as a Foreign Language (TOEFL) and the Test of Spoken English (TSE) examinations for international students whose native language is not English;
4. Letters of reference from faculty or scholars who can attest to the applicant’s abilities to succeed in graduate school; and
5. A letter of intent providing background about the applicant’s training, interests, and experiences, as well as an overview of the applicant’s career goals and specific reasons why graduate training in sociology is important to the applicant.

All application materials should be sent directly to the School of Graduate Studies, 0900 Old Main Hill, Utah State University, Logan UT 84322-0900.

The department offers financial assistance to most graduate students enrolled in departmental programs. These funds are distributed through a competitive process, based on student qualifications, performance, and interests. Graduate assistants typically earn enough to cover basic costs of tuition and living expenses. In order to be considered for financial assistance for the following academic year, complete applications must be received by USU no later than February 1. Decisions on graduate student funding are usually based on an overall evaluation of all five components of the application.

Students must have scores on the verbal and quantitative portions of the Graduate Record Examination (GRE) at or above the 40th percentile. TOEFL scores are required for international candidates, with a minimum score of 600 (paper test) or 250 (computer-based test) deemed acceptable. The Test of Spoken English (TSE) is also strongly recommended, with a minimum score of 50 deemed acceptable. International applicants who are admitted without having taken the TSE will be required to take a test of spoken English fluency administered by the Intensive English Language Institute (IELI) at Utah State University prior to beginning their first semester in the Sociology Graduate Program. Dependent upon the test results, the student may be required to complete a program of English language training during the first semester of residence in the graduate program. For consideration for admission to the MSS degree program, applicants must submit either GRE or Miller Analogies Test scores.

Applications are screened throughout the year by the Graduate Program Executive Committee. No applications will be considered until all required information arrives in the School of Graduate Studies or a formal petition to review a nearly-complete file is made and approved.

Students with or without an undergraduate degree in sociology may enter the master’s degree program. However, before matriculating, basic competencies in sociology that have not been ac-
required through prior courses or experience must be satisfied. Students entering the doctoral program must complete master’s level prerequisites in sociological theory and research methods and statistics.

**PhD in Sociology**

In addition to coursework in sociological theory and methods, students are expected to concentrate in two of the following specialty areas. Specialty areas are distinct, but are also highly integrative. One line of integration involves the department’s continuing emphasis on **Rural Sociology**, which links elements of all four specialty areas. The program is sufficiently flexible to permit students with a strong interest in an area other than the established specialty areas to elect that area as an emphasis area, rather than having a second specialization, with approval of the supervisory committee and the department head or his or her delegated representative. In this case, the student would select a series of courses in that area in consultation with his or her supervisory committee and the department head or his or her delegated representative.

**Demography.** The demography area of specialization is administered through the Population Research Laboratory. The orientation is twofold: (1) basic and policy-oriented research on sociological aspects of demographic structure and processes, including migration, marriage and fertility, morbidity, and mortality; and technical demographic topics such as population estimates and projections; and (2) the provision of demographic training to domestic and international students relevant to their respective settings. Research endeavors encompass a broad range of local, regional, national, and international projects in the areas of migration and population redistribution, family demography, life course and aging, health and disability, labor force, and population estimates and projections. Graduate coursework is provided in social demography, population theories and policy, and demographic methods, as well as through various special topic seminars.

**Environmental Sociology/Sociology of Natural Resources.** The faculty in this area maintain an active research involvement in a wide variety of areas, such as natural resource development, land use changes, public participation in environmental planning, hazardous facility siting, recreation, risk assessment, population/environmental relationships, public land management issues, and natural resource policy. Faculty have been engaged in cooperative research ventures with engineering, natural resource sciences, and other physical and social sciences faculty. Graduate curricula offerings are focused on the sociology of natural resources, environmental sociology, environmental problems and inequality, and social risk analysis.

**Social Problems.** This area is a specialization focused on theoretical and research-related issues relevant to a range of topics. Students will find a good deal of flexibility in the program, allowing them to pursue special interests. The faculty members affiliated with this specialty area are actively involved in research on contemporary social problems and structures of inequality.

A number of themes are emphasized in each of the specific content courses for this area. For example: How are social problems defined? What identifiable interest groups are involved in defining social problems? How do responses to social problems vary across time, place, and group? Examples of specific content courses this area may include are: criminal justice, aging, gender, race and ethnic relations, mental health, sexuality, stratification, science and technology, medicine, and work.

**Sociology of Development.** This specialization focuses on both domestic and international issues. Two major goals of the program are to give students the conceptual and analytic foundations to understand the dynamics and impact of social change and development, and to convey specific skills required for effective performance in applied fields. The basic curriculum includes courses covering a broad range of topics related to processes in local, national, and international development, including community, rural sociology, international development, applied anthropology, political sociology, and economic development.

**Core Courses.** The core courses for the PhD degree in Sociology include SOC 7010, 7100, 7110, and 7150.

**MS and MA in Sociology**

The main objective of this degree program is to provide a firm foundation in sociological theory and methods. Students also have the opportunity to take electives in any of the departmental specialty areas or outside the department. A minimum of 30 credits (including a research thesis) is required for the degree.

**Core Courses.** The core courses for this degree include SOC 6010, 6020, 6100, and 6150. The ability to utilize a statistical package (or permission of instructor) is a prerequisite to SOC 6150. Such competence may be gained by taking STAT 4910 (SPSS Shortcourse, 1 credit) or STAT 4920 (SAS Shortcourse, 1 credit).

**MSS Sociology Specialization**

This specialization enables interdisciplinary training in three related disciplines. The program requires a minimum of 35 credits, including 17 credits in a major discipline (Sociology); and either (1) a minimum of 9 credits in each of two minors or (2) a minimum of 9 credits in a minor and a minimum of 9 credits in a cluster. Two credits for the Plan B paper are included in the minimum 17 credits in Sociology. A minimum overall GPA of 3.0 is required. This is an applied degree. Individual options and plans of study can be arranged in consultation with the student’s supervisory committee. At present, the degree is available with an emphasis in International Rural and Community Development.

**International Rural and Community Development.** This emphasis is designed to prepare administrators, planners, and researchers for work in international settings. The emphasis is on social and community factors in development. The interdisciplinary curriculum in sociology of development, rural sociology, economic anthropology, political science, and the economics of development has been specifically designed to prepare practitioners and leaders for careers in applied social development. The coursework can be adapted to the individual career interest of each student. The program involves students both from abroad and from the United States.

**Core Courses.** Individualized programs of study are prepared with the cooperation of the student and supervisory committee.
Research

The graduate program’s research agenda is focused within the framework of the department’s specialty areas. Since the areas are integrative, research tends to involve collaborative participation by several faculty members. Several active research projects are supported by the Utah Agricultural Experiment Station. Research is conducted at various levels, including international, national, regional, and state. The department houses two active research units, the Institute for Social Science Research on Natural Resources, and the Population Research Laboratory. Faculty play key roles in several interdisciplinary research units, including the Institute for Rural and Community Development and the Women and Gender Research Institute. Graduate program faculty are frequently involved in the research activities of other research units on campus, including the Center for Persons with Disabilities, the Utah Water Research Laboratory, the Mountain West Center for Regional Studies, and the International Irrigation Center.

Financial Assistance

Both departmental support and formal research grant support are available to graduate students and are awarded on a competitive basis. Some highly qualified departmental graduate students are also nominated to compete for University fellowships. Students who wish to be considered for financial aid must submit applications by February 1 for the coming academic year. Financial aid forms are available from the Department of Sociology, Social Work and Anthropology. Late applications are considered only if additional funds are still available.

Teaching assistantships are available through the department. Research assistantships are available through faculty members who have ongoing projects with the Utah Agricultural Experiment Station or who have research grants from the University, private companies, and federal or state agencies.

Career Opportunities

Traditionally, persons with advanced degrees in sociology have been employed in college and university settings. Recent evidence has shown a greater variety of career paths. A survey conducted by the American Sociological Association showed that 21 percent of sociologists holding the doctoral degree were employed in the private sector; 31 percent were working in the nonprofit sector; 46 percent were working in federal, state, or local government agencies; and 12 percent were self-employed. USU sociology graduates have followed this pattern of diversity. They have secured appointments in a variety of academic, governmental, and private settings, both domestic and abroad. A sizeable number have achieved key leadership positions and high visibility in the profession.

Sociology, Social Work and Anthropology Faculty

Professors

Stan L. Albrecht, Provost and Executive Vice President of Utah State University, environmental sociology, rural sociology, health studies
Richley H. Crapo, religion, sex, and gender; sexuality and homosexuality
Steven E. Daniels, rural development, natural resource policy
Susan E. Dawson, occupational and environmental health

H. Reed Geertsen, community, sociological theory, medical
Gary Kiger, Dean of College of Humanities, Arts and Social Sciences; social psychology, gender, work, and family; research methods
Yun Kim, demography, development, quantitative methodology
Richard S. Krannich, environmental, community, and rural sociology; research methods
David F. Lancy, educational anthropology, ethnography
Gary E. Madson, methods
Jon R. Morris, applied anthropology, rural development, contemporary Africa
Steven R. Simms, archaeology, anthropological theory, behavioral ecology
Michael B. Toney, demography, ecology

Adjunct Professors

Gil-Sung Park, economic sociology
Douglas N. Sharon, cultural anthropology

Professors Emeriti

Therel R. Black, theory, rural sociology
H. Bruce Bylund, social change, methods
Gordon N. Keller, comparative kinship, applied anthropology
Ronald L. Little, environmental sociology, rural, quantitative methodology
Wesley T. Maughan, community organization, sociology of education
Bradley W. Parlin, comparative sociology of work
Pamela J. Riley, social psychology, international development, criminology, gender
David L. Rogers, complex organizations, political sociology, communities
William F. Stinner, social demography, life course, community
Alison C. Thorne, marriage and family

Associate Professors

E. Helen Berry, demography, ecology, methods, urban
M. Diane Calloway-Graham, women’s development, women’s clinical and societal issues, social work theory
Bonnie Glass-Coffin, medical anthropology, shamanism, Latin America, applied anthropology, method and theory
Patricia M. Lambert, biological anthropology, bioarchaeology, paleopathology
Derek T. Mason, juvenile delinquency
Terry L. Peak, social policy, health care, gerontology

Adjunct Associate Professors

Dale J. Blahna, natural resource sociology, policy, and outdoor recreation
Joanna L. Endiser-Wada, cultural anthropology and natural resource policy and sociology

Assistant Professors

Youngtae Cho, demography, health studies
Kelly H. Hardwick, criminology, deviance, theory, methods
Douglas B. Jackson-Smith, sociology of agriculture, natural resources and environment, research methods, economic sociology
Susan E. Mannon, social inequality, sociology of development, gender
Sandra T. Marquart-Pyatt, environmental sociology, political sociology, methods
Peggy Petzelka, environmental sociology, rural sociology, social change and development
Bonnie L. Pitblado, archaeology
Neil F. Wieloch, deviance, criminology, theory
Adjunct Assistant Professors

Nazih T. Al-Rashid, sociology of work
Sue H. Guenter-Schlesinger, diversity
Jason Leiker, criminology and juvenile delinquency
Janet L. Osborne, sociology of gender
Theresa L. Selfa, sociology of development
Bryan R. Spykerman, research methods

Assistant Professor Emeritus

Alice C. Smith, sociology

Course Descriptions

Sociology (SOC), pages 477-479
Social Work (SW), pages 488-489
Anthropology (ANTH), pages 334-336
Special Education and Rehabilitation

Interim Department Head: Benjamin Lignugaris/Kraft
Location: Emma Eccles Jones Education 313A
Phone: (435) 797-2382
FAX: (435) 797-3572
E-mail: lig@cc.usu.edu
WWW: http://sped.usu.edu

Graduate Program Coordinators:
Special Education Master’s Programs: David E. Forbush, Education 320, (435) 797-0697, davidf@cc.usu.edu
Doctoral Programs: Timothy A. Slocum, Education 314, (435) 797-3212, tslocum@cc.usu.edu
Doctoral Programs: Charles L. Salzberg, Education 326, (435) 797-3234, salzberg@cc.usu.edu
Rehabilitation Counseling Program: Julie F. Smart, Education 322, (435) 797-3269, jsmart@cc.usu.edu

Multi-university Consortium in Sensory Impairments Coordinator: Judith M. Holt, Center for Persons with Disabilities 197, (435) 797-7159, judith@cpd2.usu.edu

Advising:
Advising and Student Teaching Coordinator:
Darcie L. Peterson, Education 107, (435) 797-3252, darcie.peterson@usu.edu

Distance Undergraduate Programs Coordinator:
Nancy K. Glomb, Education 326, (435) 797-3911, nkglomb@cc.usu.edu

Degrees offered: Bachelor of Science (BS), Bachelor of Arts (BA), Master of Science (MS), Master of Education (MEd), and Educational Specialist (EdS) in Special Education; Master of Rehabilitation Counseling (MRC); Doctor of Philosophy (PhD) in Disability Disciplines; the Special Education and Rehabilitation Department participates in the Interdepartmental Doctor of Education (EdD)

Undergraduate emphases: BS, BA—Mild/Moderate Disabilities, Severe Disabilities, Early Childhood Special Education

Graduate specializations: MEd, MS, EdS—Behavioral Disorders, Early Childhood Special Education, Mild/Moderate Disabilities, Severe Disabilities, Transition/Special Education

Licensure is available for teachers in early childhood special education, mild/moderate disabilities, and severe disabilities. At the postbachelor’s level, licensure is available for teachers in vision and hearing impairments. Special Education dual licensure programs are available with the departments of Secondary Education: Elementary Education; and Family, Consumer, and Human Development.

Undergraduate Programs

Objectives

The undergraduate programs in the Department of Special Education and Rehabilitation offer educational and training opportunities for teachers and support personnel working with exceptional children and adults with disabilities. The programs prepare students to work with individuals with mild, moderate, and severe disabilities and with early childhood special education. Students who are majoring in other teaching fields (i.e., elementary education, secondary education) are encouraged to pursue a second endorsement by taking those courses which lead to a special education license. Teacher education programs in the department are accredited by the State of Utah and nationally by NCATE.

Areas of Emphasis. The Department of Special Education and Rehabilitation offers training programs for individuals who want to work with children and adults with disabilities. A student fulfilling the undergraduate course requirements will qualify for a BS or BA degree in special education and be eligible for a license to teach students with mild/moderate disabilities, students with severe disabilities, or young children with disabilities. The severe and mild/moderate endorsements allow graduates to teach pupils with disabilities from kindergarten through 12th grades. The early childhood special education license allows graduates to teach children with disabilities from birth to five years old. In addition, the department offers dual teaching majors with the departments of Secondary Education; Elementary Education; and Family, Consumer, and Human Development. Students completing the dual major requirements in secondary education will be eligible for teacher licensure in one of the special education endorsement areas and their secondary education content major. Students completing the dual major requirements in elementary education will be eligible for teacher licensure in one of the special education endorsement areas and elementary education. Students interested in teaching preschool children with disabilities may receive an early childhood special education license for ages 0-5, in addition to a K-12 special education endorsement in severe or mild/moderate disabilities.

Requirements

Admission Requirements. Students are admitted to the Department of Special Education and Rehabilitation as Pre-Special Education majors by meeting the Utah State University minimum requirements (see pages 15-18). To become a Special Education major, a student must make written application to the department after meeting the following prerequisites: (1) completion of at least 40 attempted semester credits with a cumulative GPA of 2.75 or higher; and (2) completion of admission requirements to the College of Education and Human Services Teacher Education Program (see page 104). Students should apply to the department during fall semester of their sophomore year. Admission to the department is competitive based on several factors. These include: (1) the student’s current GPA; (2) the number of credit hours completed by the end of fall semester; (3) completion of premajor classes (such as STAT 1040 and FCHD 1500); and (4) the student’s career goals and experiences.
GPA Requirement. A minimum GPA of 2.75 is required to apply for admission, to remain in good standing, and to graduate from the program. All required special education classes must be completed with a grade of C or better.

Bachelor’s Degree in Special Education. Undergraduate study leads to the Bachelor of Science or Bachelor of Arts degree in Special Education with licensure to teach students with mild/moderate disabilities, severe disabilities, or early childhood special education. The degree requires a total of 120 credits. The requirements are as follows:

1. University Studies Requirements. Competency Requirements (9-13 credits), Breadth Requirements (18 credits), and Depth Education Requirements (5 courses). For more information, see pages 42-49.

2. Professional Education. 15-18 credits.

3. Special Education Major. 42-60 credits. Coursework includes: human growth and development; applied behavior analysis; introduction to systematic instruction (task analysis, curriculum-based measurement, behavioral objectives, contingent reinforcement); designing curriculum; Individualized Educational Programs (IEP); educational assessment, analysis, and adaptation of instructional materials; intervention strategies for academic and social behaviors; and parent involvement. Additionally, each endorsement area includes practicum work with exceptional children or youth. Finally, all students must complete student teaching with students with disabilities.

4. Professional Depth. 15 credits. The emphasis area is designed to enhance the Special Education major’s background. Areas recommended include communicative disorders, psychology, sociology, family and human development, recreation, and physical education.

5. Electives. 7-20 credits.

Additional Information
For more information concerning Bachelor of Science or Bachelor of Arts requirements and the sequence in which courses should be taken, see major requirement sheets available from the Department of Special Education and Rehabilitation (Education 313) or the Special Education Advising Office (Education 107).

Financial Support
Scholarships, assistantships, grants-in-aid, and work-study programs are available through the University. In addition, there are some endowed scholarships available through the department and, sometimes, there are stipends available from federal grants.

Graduate Programs
Admission Requirements
Admission decisions are made by the department’s Graduate Program Committee. Admission requirements are based upon those of the School of Graduate Studies (see pages 90-91). In addition, the committee considers experience, academic record and curriculum, formal recommendations, and test scores. To be considered for admission to the master’s degree programs, applicants must submit either GRE or Miller Analogies Test scores. Doctoral program admission requires GRE scores. Students applying for admission to special education graduate programs, who do not have an undergraduate special education background, may be required to complete selected undergraduate courses prior to admission as fully-matriculated graduate students.

Applicants for the Rehabilitation Counseling and doctoral programs are screened throughout the year by the Graduate Program Committee. Applicants for the Special Education Master’s program are reviewed on May 1, August 1, and December 1. Only complete files will be reviewed. Applications received after these dates will be considered, but opportunities for financial assistance may be limited. No applications will be considered until all required information arrives at the School of Graduate Studies office.

Teaching Licenses
The department prepares students for licensure as teachers of students with mild/moderate disabilities, students with severe disabilities, and preschool-age students with disabilities. Licensure may also be obtained in visual and/or hearing impairments through a multi-university consortium program. Licensure may be obtained as part of the graduate degree program or without a graduate degree.

Degree Programs
Master of Science in Special Education (MS). The Master of Science degree program is designed for persons who desire to improve their teaching skills and who are contemplating an advanced degree beyond a master’s degree. Generally speaking, MS theses differ from MEd creative projects in that they involve experimental research. That is, a study is designed to determine the relationship between an independent variable (i.e., an intervention or treatment) and a dependent variable (i.e., a target behavior). The intent of such research is to contribute knowledge to the field of special education. A minimum of 36 credits, including a thesis, is required for the MS degree.

Master of Education in Special Education (MEd). The Master of Education degree program is designed for persons who desire a graduate program that will help them improve their competencies as educators. This includes school personnel, as well as individuals who are involved in education-related activities across a variety of community, work, and clinical settings. The MEd degree focuses on refining school practices in terms of instruction and management practices, legal requirements, and professional collaboration. All candidates must complete a creative project. A minimum of 36 credits, including a creative project, is required for the MEd degree.

Master of Rehabilitation Counseling (MRC). The Master of Rehabilitation Counseling prepares persons with the basic competencies to provide rehabilitation counseling to a broad range of individuals with disabilities in a variety of settings, such as state rehabilitation agencies, independent living centers, rehabilitation hospitals, private rehabilitation facilities and agencies, employment assistance programs, and private industry. The degree is a 48-credit program consistent with the requirements of the Council on Rehabilitation Education (CORE). The Rehabilitation Counseling Program has a limited number of scholarships funded
through the U.S. Department of Education, Rehabilitation Services Administration. These scholarships require a postgraduate commitment to work for a not-for-profit agency serving the needs of individuals with disabilities for two years for every year of scholarship received.

**Educational Specialist Program (EdS).** The educational specialist degree is designed for advanced graduate students seeking instruction beyond a master’s degree. Programs are individually planned to address specific student needs. Completion of the EdS program is based on completion of required coursework, submission of a research proposal to a supervisory committee, and satisfactory defense of the research project.

**Doctor of Philosophy in Disability Disciplines (PhD).** The PhD program prepares leadership personnel for positions in research and university programs.

Completion of the PhD program certifies competence in the three following areas: (1) mastery of the theoretical and applied content required for providing appropriate services for persons with disabilities (infants and toddlers, children, youth, and/or adults), (2) ability to conduct independent research with particular emphasis on topics related to persons with disabilities, and (3) ability to effectively teach audiences of varying sophistication and expertise and to supervise the delivery of special education, rehabilitation, or other services.

**Doctorate of Education (EdD).** The department participates in the College of Education and Human Services Interdepartmental Doctorate of Education (EdD) degree program. The general purpose of the special education emphasis area of the EdD program is to prepare leadership personnel for positions in administration, supervision, curriculum development, and teacher training. For information about areas of specialization, emphases of study, research sponsored, admission requirements, procedures to follow, and other information, see pages 185-186 of this catalog.

**Financial Assistance**

Acceptance of a student to a graduate program is independent of financial aid. Financial assistance available through the School of Graduate Studies includes University fellowships, scholarships, and fee waivers. Further, federal grants to the faculty members often provide stipends and assistantships for doctoral students.

**Additional Information**

Graduate handbooks outlining the graduate programs, policies, and procedures in the Department of Special Education and Rehabilitation may be obtained from the department office in room 313 of the Education Building.

For more information about graduate requirements and the sequence in which courses should be taken, see major requirement sheets, available from the department.

Graduation requirements described in this catalog are subject to change. Students should check with the department concerning possible changes.

Because the Special Education and Rehabilitation graduate programs occasionally undergo fine-tuning and updating, prospective students are advised to check the departmental website at: [http://sped.usu.edu](http://sped.usu.edu).

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**Special Education and Rehabilitation Faculty**

**Professors**

- Alan M. Hofmeister, technology, school reform, reading and math instruction
- Benjamin Lignugaris/Kraft, personnel preparation, secondary special education, social/vocational skill training, behavioral analysis, instructional design and program development
- Sarah Rule, early intervention, developmental disabilities, technology and teacher education
- Charles L. Salzberg, applied behavioral analysis, single-subject research design, research on teacher training, employment preparation for persons with disabilities, video assisted training programs, paraeducator training, and students with disabilities in higher education
- Julie F. Smart, rehabilitation counseling, disability studies, Hispanics with disabilities, Spanish translation of rehabilitation instruments, multicultural rehabilitation
- Richard P. West, behavior analysis in education, computer-based decision making, parent training, school organization and administration
- Karl R. White, research and evaluation, early intervention

**Adjunct Professor**

- K. Richard Young, behavior disorders, behavior analysis, social skills

**Professors Emeritus**

- Garth M. Eldredge, rehabilitation counseling
- Marvin G. Fifield, evaluation of persons with emotional disturbances

**Associate Professors**

- Judith M. Holt, early childhood and visually impaired
- Pamela J. Hudson, adolescents with mild disabilities, mathematics
- Robert L. Morgan, behavior analysis/transition
- Timothy A. Slocum, reading, mild/moderate disabilities, behavior analysis, research methods

**Adjunct Associate Professor**

- Daniel P. Morgan, behavior disorders, social skills, legal issues in special education, personnel development in special education

**Associate Professors Emeritus**

- Hyrum S. Henderson, teacher training
- Devoe C. Rickert, vocational training

**Assistant Professors**

- David E. Forbush, mild/moderate disabilities, reading, behavior analysis in schools, assessment, educational systems change, educational leadership
- Thomas S. Highsee, early childhood, severe disabilities, autism
- Timothy N. Tansey, rehabilitation, counseling, administration, employment training

**Research Assistant Professor**

- Cynthia J. Rowland, distance education, speech and language development, naturalistic instructional methods, early literacy, assistive technology

**Extension Assistant Professor**

- Nancy K. Glomb, special education teacher education, distance education, legal issues, behavior disorders, collaboration

**Adjunct Assistant Professors**

- David W. Bush, psychological, assessment, counseling
- Julie Landeen, legal issues in special education, special education administration
Marilyn Likins, paraeducators, mild and moderate disabilities, alternative teacher preparation
Sharon Neyme, students at-risk
Ginger Rhode, legal issues in special education, behavior analysis
Kathleen Robins, multi-sensory disabilities
Randyl Schelble, mild and moderate disabilities

Clinical Instructors
Barbara J. Fiechtl, preschool and infant service delivery
Greg E. Gerard, chronic illness, assistive technology, instructional technology, distance education
Kimberly H. Snow, curriculum development

Adjunct Clinical Instructors
Kirk Allen, emotionally disturbed, special education administration
Gayle Baker, severe disabilities
Jerry Christensen, personnel development, special education leadership
Marlene Deer, preschool disabilities, severe disabilities
Glenn Dyke, behavior disorders, mild and moderate disabilities
AnnaLee Hansen, mild and moderate disabilities
Melanie Jones, mild and moderate disabilities
Susanne Kuresa, behavior disorders, classroom management
Martell Menlove, special education administration
Cindy Myers, moderate and severe disabilities, alternative teacher preparation
Lois Naegle, American Sign language, deaf culture, rehabilitation counseling
Bruce Schroeder, collaboration, special education administration, special education personnel development
Patricia B. Willis, learning disabilities, early literacy

Clinical Instructor Emeritus
Joan F. Forsgren-White

Course Descriptions
Special Education (SPED), pages 482-486
Rehabilitation Counseling (REH), page 473
Theatre Arts

Department Head: Colin B. Johnson  
Location: Chase Fine Arts Center 232  
Phone: (435) 797-3046  
FAX: (435) 797-0086  
E-mail: luannh@hass.usu.edu  
WWW: http://www.usu.edu/theatre

Undergraduate Advisors:  
Theatre Arts: Colin B. Johnson, Fine Arts Center 232, (435) 797-3046, colin.johnson@usu.edu  
Theatre Design and Technology Emphasis: Bruce L. Duerden, Fine Arts Center 148, (435) 797-3026, bruced@hass.usu.edu  
Theatre Education Emphasis: David E. Sidwell, University Reserve 125, (435) 797-3703, dsidwell@hass.usu.edu

Graduate Program Coordinator: Nancy E. Hills, Fine Arts Center 229A, (435) 797-3049, nhills@hass.usu.edu

Degrees offered: Bachelor of Arts (BA), Bachelor of Fine Arts (BFA), Master of Arts (MA), and Master of Fine Arts (MFA) in Theatre Arts

Undergraduate programs: BA—General Theatre Arts Studies (History and Dramatic Literature); BFA—Acting, Theatre Design and Technology (costume design, lighting design, scenic design, stage management, theatre technology), Theatre Education

Graduate specializations: MFA—Advanced Technical Practice, Design (scenery, costume, lighting)

Undergraduate Programs

Objectives

The primary mission of the Department of Theatre Arts is to offer a flexible program with the following objectives:

1. To prepare students for professional work in performance, various types of theatre design, and technical practice with producing theatre organizations;
2. To teach appreciation and service courses contributing to the University Studies Program;
3. To prepare students for careers as theatre instructors in secondary schools and to provide service courses in support of the language arts curriculum of the State of Utah for elementary education majors;
4. To prepare students for advanced study and training;
5. To sponsor public performances in which students can practice the art and craft of theatre and interpretive/narrative performance. These productions will enhance the cultural life of the University community and region.

Production Groups and Theatres. The Theatre Arts Department sponsors the following production groups and divisions: Utah State Theatre, Old Lyric Repertory Company (summer), Studio/Conservatory Stage Series, Narrative Theatre, and Utah State Children’s Theatre. Facilities used for performances by these groups include a 690-seat thrust stage in the Chase Fine Arts Center, the 380-seat proscenium Lyric Theatre in downtown Logan, and the flexible 80-seat Studio Stage. Facilities also include a costume shop, scenery shop, sound studio, design studio, dance and movement laboratory, and storage areas.

Requirements

Departmental Admission Requirements. Admission requirements are the same as those described for the University on pages 15-18. Students in good standing may apply for admission or transfer to the program. Students transferring into the department must have a minimum 2.5 GPA (on a scale of 4.0) regardless of credit amount transferred. Admission to specialized BFA programs by audition, interview, or portfolio review subsequent to admission to the department is explained below. Students must maintain an average 2.5 minimum GPA in all theatre classes required for graduation. No grade of less than a C- is accepted in any theatre class, and no required classes, regardless of department, may be taken on a pass-fail basis.

Core Courses. All Theatre Arts majors are required to complete the following core courses: THEA 1210, 1400, 1500, 2410, 3230. Entering and transfer students must attend a noncredit theatre orientation seminar. In addition, all students must complete a minimum of 6 credits of production practicum work.

Bachelor of Arts Degree

General Theatre Arts Studies Program (60 credits). Requirements are as follows: core courses and production work (21 credits); performance courses (9 credits); design/technical courses (3 credits); dramatic literature/history courses (15 credits); university minor (12 credits). To obtain a Bachelor of Arts degree, a student must fulfill the language requirement (see page 50). All majors enter in this degree program. Students interested in graduate programs in stage directing will be urged to complete this degree.

Bachelor of Fine Arts Degree

Program Entrance Requirements. Students seeking the BFA degree who choose the Acting Program or the Theatre Design and Technology Program will be admitted by audition or an interview and portfolio review. Periodic audition and review will be undertaken to determine good standing in these programs. This degree is highly recommended for those students desiring more intensive preprofessional training in their selected discipline. Students in these programs also complete a capstone recital or project during their senior year.
Acting Program (74 credits). Candidates are accepted into this performance program through an audition and interview conducted by a BFA committee. Progress is monitored through periodic recitals/auditions before the same body, and students must maintain good status in the program for a minimum of two years. Transfer students are subject to the same acceptance process and progress review. Inquiries about specific requirements and expectations should be directed to the Theatre Arts Office.

Students seeking the BFA degree must work closely with advisors. Most University Studies courses and the core curriculum should be completed before the end of the sophomore year, as training is conducted in a manner adapted from conservatory practice. Individual needs, interests, and goals of the student are taken into consideration for selection of elective courses. A student handbook describing the procedures and containing a course of study is also available; these are designed to assist students who are presenting recitals, directing one-act productions, and preparing other projects.

Theatre Design and Technology Program (69-71 credits). Candidates are accepted into the design and technology program by interview and review of a portfolio by a BFA committee. The policies and recommendations for the acting program also apply to this program. Students may further specialize in costume design, lighting design, scenic design, stage management/technician, or theatre technology.

Theatre Education Program (69 credits). Candidates are accepted into the theatre education program by interview and a review of a portfolio by the theatre education committee. Requirements are as follows: core courses (15 credits); performance/directing courses (3 credits); theatre education/language arts courses (6 credits); design/technical courses (4 credits); theatre history/literature courses (3 credits); performance and production practicum courses (3 credits). Students earning a secondary education license must complete 35 additional credits in the Secondary Teacher Education Program (STEP), as well as an academic minor approved by the College of Education and Human Services. All majors desiring a teaching license must apply for admission to teacher education; it is recommended that this be done no later than the beginning of the sophomore year.

Theatre Arts Teaching Minor (20 credits)
Candidates are accepted into the theatre education program by interview and a review of a portfolio by the theatre education committee. Requirements are as follows: core courses (15 credits); production or performance practicum courses (2 credits); theatre education/language arts courses, THEA 4330 or 4340 (3 credits). The requirements for this academic minor must be approved and monitored by the College of Education and Human Services.

Academic Minor in Theatre Arts
Generally, a student interested in a theatre arts minor will complete the 15-credit core course requirements and two 1-credit practicums (see above).

Production Responsibilities
Because the production programs of the department are some of the most important training tools of the discipline, all majors and teaching minors are required to participate in them. A permanent theatre participation record is maintained for each student, and successful completion of crew and performance assignments is a requirement for graduation.

As a capstone experience to their university careers, all majors in their senior year are required to complete a project or recital appropriate to their area of emphasis (except those in the General Theatre Studies BA program, who complete a minor).

Financial Support
Scholarships, grants-in-aid, and work-study opportunities are available through the University. In addition, the department offers talent awards and tuition scholarships to its own majors. These are generally for one semester of in-state tuition and may be applied for each semester by continuing students. Several auditions and interviews are scheduled during the year, both on-campus and at regional theatre conferences and festivals. The department offers special work grants through its production program for qualified, skilled students. There are a number of named scholarships awarded to students qualifying under specific conditions. Contact the Theatre Arts Department for more information.

Graduate Programs

Admission Requirements
All students making application to the MFA program who cannot audition or interview with a member of the theatre arts faculty must submit a resume and a portfolio with renderings, designs, photographs appropriate to the specialization, and any special letters of reference not included with the formal application to the School of Graduate Studies.

The Miller Analogies Test (MAT) may be substituted for the more standard GRE, although the department does not recommend the MAT for international students.

Students who have received their undergraduate training at other institutions or in a discipline other than theatre will be expected to meet a proficiency equivalent to that of USU Theatre Arts graduates. This may require the student to complete the following minimum 20-credit program, which will not count toward the graduate degree: THEA 1400, 1500, 2410, 3230; 3 credits of THEA 4750; and 6 credits of elective Theatre Arts courses in one program area. The student will be given credit for any equivalent courses taken within seven years prior to the date of admission.

Students accepted into the program must begin during the fall semester. The nature of the discipline and the program require that students maintain a continuous residence at the campus during the first two years of study.

Master of Arts
The candidate for the 30 (minimum) credit MA degree will normally complete a thesis, but may, with the approval of the supervisory committee, present a thesis alternative Plan B (36 credits minimum required).

Required courses (30 credits). Requirements are as follows: THEA 6010, 6180, 6240, 6270; two advanced dramatic literature courses selected from the Theatre Arts, English, or Languages,
Philosophy, and Speech Communication departments; three 5000- or 6000-level THEA courses, two of which must be in a single area; and up to 8 credits of THEA 6970 (Thesis). Under special circumstances, a Plan B option in this program is available, requiring 12 credits of special project work and no more than 3 credits of THEA 6970, for a total of 36 credits minimum.

In addition, the standard language competency of 15 credits in one language is required for the MA degree (see page 95).

Master of Fine Arts

The candidate for the 60 (minimum) credit MFA must complete the Plan B program, and will undertake from three to five creative projects in the appropriate specialization. Under this plan, the required project reports customarily take the form of production books, journals, or a design or technical portfolio.

The normal residency is six semesters, including one or two summers in an established repertory or stock company or equivalent intern experience. Participation in the department’s summer Old Lyric Repertory Company in Logan, Utah, satisfies this requirement. The nature of the discipline discourages credit by extension, large amounts of transfer credit, or numerous off-campus projects.

Required Courses. The program is completed in three phases, and while there may be considerable overlap between them, students undergo formal reviews before advancing to the next phase. The number of semesters given is approximate.

Entry Phase. Requirements are as follows: fall semester: THEA 6010, 6240, 6520, 6800; spring semester: THEA 6270 and advanced courses in the area of specialization.

Upon or during completion of this phase, the student will: (1) submit a petition to advance to the next phase; (2) identify two to four projects for the next phase; and (3) nominate a supervisory MFA committee of at least three members for submission to the department head. A communication proficiency examination will be conducted at the conclusion of THEA 6180 when the student presents his or her project to the Graduate Study Committee.

All of the above coursework (with the exception of the BA proficiency requirement, as necessary) must be completed, with grades recorded, prior to entry into the next phase. A full-time student entering in the fall semester who does not complete the Entry Phase by the following summer will be subject to termination.

Project Phase. During this phase, the student must complete two courses in advanced dramatic literature, along with additional advanced courses in the area of specialization; must complete a cognate skill, consisting of the equivalent of 6 semester credits outside the department, to develop a skill or increase knowledge in a field related to the specialization, subject to approval by the advisor and Graduate Study Committee; must participate in the summer Old Lyric Repertory Company (4 credits, repeatable) or its equivalent in a recognized stock or repertory program, with a letter of satisfactory performance from the company director submitted to the department; and must complete two to four projects in the field of specialization (approximately 6-12 credits).

Culminating Phase. Requirements are as follows: THEA 6920 (4 credits), 6970; execution of a final, culminating project; a maximum of 3 thesis credits, taken to complete all reports; and completion of two to four additional 5000- or 6000-level elective courses.

Note: Whenever possible, graduate projects are proposed and executed as part of the Utah State Theatre artistic season. The option to cancel a student project or to allow work to proceed, but disqualify it as an MFA project based upon insufficient preparation or validity, rests with the Graduate Study Committee, the student’s supervisory committee chairperson (advisor), and the executive producer of Utah State Theatre. This rule is designed to protect the integrity of the production priorities of the department.

Upon completion of this phase, the student will: (1) assemble the supervisory committee for a final review in a defense of the student’s graduate work; and (2) file a complete copy of all Plan B reports with the department, in accordance with the procedures of the School of Graduate Studies.

Financial Assistance

Teaching and general assistantships are awarded by the department. Assistantships are generally in the area of production, depending on theatre needs and the skills of applying students, and are renewable for up to three years. Application should be made directly to the department by February 1. Graduate students are not guaranteed financial assistance during their initial year of residence. Several other grants and forms of support are available on a competitive basis.

Career Opportunities

The MA degree is a general, nonterminal degree designed to train students for further doctoral work in the discipline and to serve as a career upgrade for secondary school teachers. Students interested in teaching dramatic literature and theatre history and criticism at the postsecondary level should plan to use the MA as a step toward further PhD studies. A few two-year colleges employ MA graduates in teaching positions; however, almost no four-year colleges do so.

The MFA is designed for students pursuing careers in educational, professional, and regional theatres, or, in some cases, further doctoral-level work. It is regarded by most university and college administrations as a terminal degree for individuals with academic appointments as acting coaches, designers, and technicians. The department makes no guarantee that its training will qualify its graduates to pass examinations administered by the theatrical trade unions or otherwise meet requirements for guild membership. MFA graduates are qualified to seek employment with regional and professional theatres, regardless of the guild or trade union status of these organizations.

Additional Information

Specific details about each of the foregoing programs are outlined in documents available through the department. Requirements are subject to change. Internet e-mail requests should be sent to: luannh@hass.usu.edu.

Theatre Arts Faculty

Professor
Colin B. Johnson, theatre history and criticism, film

Professor Emeritus
Sidney G. Perkes, scene and costume design
Associate Professors

Mark L. Damen, playwriting, history

Kevin Doyle, acting, directing

Bruce L. Duerden, technical theatre, lighting

Dennis Hassan, scene design

Nancy E. Hills, costume design

Lynda Linford, acting

David E. Sidwell, history, storytelling, theatre education

Associate Professor Emeritus

Arthur Y. Smith, interpretation, theatre education

Assistant Professors

Shawn Fisher, design, technical generalist

Adrianne Moore, voice, acting, directing

Artemis Preeshl, movement, dance, acting

Course Descriptions

Theatre Arts (THEA), pages 489-492
Toxicology

Director: Roger A. Coulombe, Jr.
Location: Animal Science 213
Phone: (435) 797-1600
FAX: (435) 797-1601
E-mail: rogerc@cc.usu.edu
WWW: http://toxicology.usu.edu

Degrees offered: Master of Science (MS) and Doctor of Philosophy (PhD) in Toxicology

Graduate Programs

Established in 1962, USU’s Interdepartmental Graduate Program in Toxicology is one of the first degree-granting graduate toxicology programs in the country. More than 140 students have received MS and PhD degrees through this research-intensive interdisciplinary program. Students affiliate with the program through one of several departments: Animal, Dairy and Veterinary Sciences (ADVS); Biology; Chemistry and Biochemistry; Civil and Environmental Engineering (CEE); or Plants, Soils, and Biometeorology (PSB). The USDA Poisonous Plants Laboratory also provides facilities and research projects for study.

Admission Requirements

Students with a degree in life sciences, physical science, medical science, or engineering and with adequate preparation in chemistry, biology, physics, and/or mathematics are encouraged to apply. Admission to the program requires compliance with the general admission requirements of the School of Graduate Studies, a faculty sponsor, and acceptance into the sponsoring professor’s home department. Applicants should have a minimum GPA of 3.0 from completed degree programs. International students must receive a minimum TOEFL score of 250 (computer-based) or 600 (paper-based).

Major Research Areas

Molecular and Biochemical Toxicology. Modern molecular biological techniques are used to determine the mechanisms of toxicity and carcinogenesis by examining how various natural and synthetic compounds interact with the cellular genome. Resultant mutations in oncogenes and tumor suppressor genes are being investigated. The mechanisms of free-radical toxicity, specifically by iron and other transition elements, are also important research topics. Other ongoing studies examine the mechanisms of cancer chemoprevention, chemical metabolism, effects of toxics on macromolecular synthesis, and metabolic intermediates. The toxicity of poisonous plants is another program emphasis.

Environmental Toxicology. Utah State University has a comprehensive research program in several aspects of environmental toxicology. Specifically, Utah State University faculty pioneered the use of white-rot fungi for the biodegradation of environmental contaminants. Models are developed and tested for dealing with the migration of chemicals in the environment, especially those with potential routes for human exposure. Basic biological, chemical, and physical methods are explored for hazardous waste management programs.

Course Requirements

Students in the MS program are required to complete the following core courses: ADVS 6350, 6400, 6600 (taught alternate fall semesters), 6810; CHEM 5700, 5710; STAT 5200.

Students in the PhD program are required to complete the following core courses: ADVS 6350, 6400, 6600 (taught alternate fall semesters), 6810; BIOL 5600 or 5620; CHEM 5700, 5710; STAT 5200.

Additional coursework may be required, at the discretion of the student’s advisory committee.

Financial Assistance

Graduate students are eligible for competitive fellowships, teaching assistantships, and research assistantships. Out-of-state fees are waived, and in many cases, in-state fees are also waived. Hourly employment, which often permits waiver of out-of-state fees, is also available.

The Toxicology Graduate Program participates in the WICHE Western Regional Graduate Degree Program (WRGP). Residents of participating states may enroll in this program without paying nonresident tuition. To facilitate this process, applicants should inform the Toxicology Program of their WRGP status upon application.

Toxicology Program Faculty

Professors
Anne J. Anderson, plant toxicology (Biology)
Ann E. Ausr, metal-induced carcinogenesis (Chemistry and Biochemistry)
Steven D. Ausr, biochemical toxicology and bioremediation (Chemistry and Biochemistry)
Roger A. Coulombe, Jr., molecular toxicology, cancer chemoprevention, natural product toxicology (ADVS)
Howard M. Deer, pesticides and occupational health (ADVS)
William J. Doucette, fate of environmental chemicals, phytoremediation (CEE)
R. Ryan Dupont, biological waste treatment (CEE)
William J. Popendorf, occupational toxicology and industrial hygiene (Biology)
Ronald C. Sims, environmental engineering (CEE)

Research Professor
Darwin L. Sorensen, aquatic toxicology (CEE)

Associate Professors
Paul R. Grossl, soil chemistry and phytoremediation (PSB)
Jeffery O. Hall, veterinary toxicology (ADVS)

Collaborators at USDA Poisonous Plants Laboratory
Dale R. Gardner, natural product chemistry
Kip E. Panter, poisonous plants
James A. Pfister, behavioral toxicology
Bryan L. Stegelmeier, veterinary pathology
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<td>BA Business Administration</td>
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<td>BIE Biological and Irrigation Engineering</td>
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<td>BIS Business Information Systems</td>
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<td>BMET Biometeorology</td>
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<td>BUS Business</td>
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<td>CEE Civil and Environmental Engineering</td>
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<td>CHEM Chemistry and Biochemistry</td>
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<td>CLAS Classics</td>
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<td>COMD Communicative Disorders and Deaf Education</td>
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<td>CS Computer Science</td>
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<td>DE Dance West Summer</td>
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<td>ECE Electrical and Computer Engineering</td>
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<td>ECON Economics</td>
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<td>EDUC Education</td>
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<td>ELED Elementary Education</td>
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<td>ENGR Engineering</td>
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<td>ENVVS Environment and Society</td>
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<td>FCHD Family, Consumer, and Human Development</td>
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<td>FCSE Family and Consumer Sciences Education</td>
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<td>FREN French</td>
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<td>FRWS Forest, Range, and Wildlife Sciences</td>
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<td>GEOG Geography</td>
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<td>HEP Health Education Professional</td>
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<td>HONR Honors</td>
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<td>ID Interior Design</td>
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<td>IELI Intensive English Language Institute</td>
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<td>INST Instructional Technology</td>
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<td>ITAL Italian</td>
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<td>ITDS Interdisciplinary Studies</td>
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<td>ITE Industrial Technology and Education</td>
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<td>JAPN Japanese</td>
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<td>JCOM Journalism and Communication</td>
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<td>KOR Korean</td>
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<td>LAEP Landscape Architecture and Environmental Planning</td>
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<td>LANG Languages</td>
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<td>LAS Liberal Arts and Sciences</td>
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<td>LING Linguistics</td>
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<td>MAE Mechanical and Aerospace Engineering</td>
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<td>MATH Mathematics</td>
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<td>MHR Management and Human Resources</td>
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<td>MS Military Science</td>
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<td>MUSC Music</td>
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<td>NAV Navajo</td>
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<td>NEPA National Environmental Policy Act</td>
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<td>NFS Nutrition and Food Sciences</td>
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<td>NR Natural Resources</td>
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<td>NURS Nursing</td>
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<td>PE Physical Education</td>
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<td>PEP Physical Education Professional</td>
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<td>PFP Personal Financial Planning</td>
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<td>PHIL Philosophy</td>
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<td>PHYX Physics</td>
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<td>PLSC Plant Science</td>
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<td>POLS Political Science</td>
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<td>PORT Portuguese</td>
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<td>PRP Parks and Recreation Professional</td>
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<td>PSB Plants, Soils, and Biometeorology</td>
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<td>PSY Psychology</td>
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<td>PUBH Public Health</td>
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<td>REH Rehabilitation Counseling</td>
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<td>RUSS Russian</td>
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<td>SCED Secondary Education</td>
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<td>SOIL Soil Science</td>
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<td>SPCH Speech Communication</td>
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<td>STAT Statistics</td>
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<td>SW Social Work</td>
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<td>THEA Theatre Arts</td>
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<td>USU University Studies</td>
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<td>WGS Women and Gender Studies</td>
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Course Descriptions

**Accounting (ACCT)**

See School of Accountancy, pages 119-122

ACCT 1050  
Accounting Essentials  
(3)  
Overview of accounting concepts, with special emphasis on practical applications. Taught only as a special extension course as requested.

ACCT 2010  
Survey of Accounting I  
(3)  
Survey of uses of accounting information by investors and creditors for decision making. Emphasis on basic accounting principles used to prepare, analyze, and interpret financial statements. Prerequisites: STAT 1040 or MATH 1030 or 1050 (MATH 1050 or equivalent is required for College of Business majors); and GPA of 2.5 or higher. (F,Sp,Su)

ACCT 2020  
Survey of Accounting II  
(3)  
Survey of uses of accounting information by managers for decision making, including planning, budgeting, and controlling operations. Emphasizes accumulation, analysis, and control of product and service costs. Prerequisite: ACCT 2010. (F,Sp,Su)

ACCT 3110  
Intermediate Financial Accounting and Reporting I  
(3)  
Study of accounting principles, theory, and practice relating to financial reporting of assets. Prerequisites: Cumulative GPA of 3.0 or higher; grade of B or better in ACCT 2010; ACCT 2020. (F,Sp,Su)

ACCT 3120  
Intermediate Financial Accounting and Reporting II  
(3)  
Study of accounting principles, theory, and practice relating to liabilities, equities, and other contemporary issues. Prerequisite: ACCT 3110. (F,Sp,Su)

ACCT 3310  
Strategic Cost Management  
(3)  
Contemporary theory and applications in the accumulation, analysis, and interpretation of accounting information for internal decision-making and control. Prerequisites: Cumulative GPA of 3.0 or higher; grade of B or better in ACCT 2010; ACCT 2020. (F,Sp,Su)

ACCT 3410  
Income Taxation I  
(3)  
Emphasis on Federal income taxation of individuals. Introduction to tax research methods and taxation of corporations and partnerships. (F,Sp,Su)

ACCT 4500  
Accounting Information Systems  
(3)  
Theoretical concepts underlying accounting systems’ computerized support of business processes. Topics include accounting systems development, controls, security, and audit. Prerequisites: ACCT 3110 and BIS 2450. (F,Sp)

ACCT 4510  
Auditing Principles and Techniques  
(3)  
Fundamental principles and techniques of auditing and reporting of audits presented in the context of the audit logic sequence. Integrative applications emphasizing audits of organizational resources, processes, and systems. Also addresses ethics, legal environment, auditing standards, and fraud. (F,Sp)

ACCT 4900  
Independent Research and Readings  
(1-3)  
Selected reading and research individually assigned, handled, and directed. Problems of mutual interest to students and the instructor are investigated and reported. Prerequisite: Departmental permission. (F,Sp,Su)

ACCT 4950H  
Senior Honors Thesis/Project  
(3)  
Creative project that will then be written up, and presented, as a Senior Thesis as required for an Honors Plan. (Sp)

ACCT 5210  
Accounting and Reporting for Business Combinations and International Issues  
(3)  
Study of accounting principles and theory relating to business combinations, foreign currency transactions, foreign affiliates, and segment and SEC reporting. Prerequisite: ACCT 3120. (3 cr) (F,Su)

ACCT 5220  
Accounting for Government, Nonprofit, and Other Entities and Issues  
(3)  
Study of accounting principles and theory relating to government and nonprofit organizations, partnerships, estates and trusts, and business insolvency. Prerequisite: ACCT 3120. (3 cr) (Sp,Su)

ACCT 5400  
Income Taxation II  
(3)  
Federal income taxation of partnerships, corporations, S-corporations, estates and trusts, and gifts. Prerequisite: ACCT 3410. (F,Sp)

ACCT 6210  
Accounting and Reporting for Business Combinations and International Issues  
(3)  
Study of accounting principles and theory relating to business combinations, foreign currency transactions, foreign affiliates, and segment and SEC reporting. Prerequisite: ACCT 3120. (F,Sp)

ACCT 6220  
Accounting for Government, Nonprofit, and Other Entities and Issues  
(3)  
Study of accounting principles and theory relating to government and nonprofit organizations, partnerships, estates and trusts, and business insolvency. Prerequisite: ACCT 3120. (Sp,Su)

ACCT 6350  
Accounting Strategies forAchieving Profit Goals  
(3)  
Action-oriented case studies to demonstrate management accounting techniques to achieve profit goals and business strategies in a variety of organizations. International accounting and ethical issues are addressed. Prerequisites: ACCT 2010 and 2020, or BUS 6160. (F,Sp)

ACCT 6400  
Income Taxation II  
(3)  
Federal income taxation of partnerships, corporations, S-corporations, estates and trusts, and gifts. Prerequisite: ACCT 3410. (F,Sp)

ACCT 6410  
Tax Research and Procedures  
(3)  
Methods of researching tax problems, case studies in tax administration, civil procedures and penalties, professional responsibility, and tax ethics for the tax practitioner. Prerequisites: ACCT 3410 and 5400. (F)

ACCT 6420  
Taxation of Corporations and Shareholders  
(3)  
Concepts and principles governing the taxation of corporations and shareholders. Effect of taxes on corporation formation, capital structure, distributions, liquidations, and reorganizations. Prerequisites: ACCT 3410 and 5400. (Su)

ACCT 6440  
Taxation of Partnerships, Estates, and Trusts  
(3)  
Concepts and principles governing the taxation of partnerships and partners and estates, trusts, and beneficiaries. Uses of partnerships and trusts in tax planning. Prerequisites: ACCT 3410 and 5400. (F)

ACCT 6460  
Tax Topics  
(3)  
Topics of current interest to tax professionals. Prerequisites: ACCT 3410 and 5400. (Su)

ACCT 6500  
Advanced Accounting Information Systems  
(3)  
Contemporary issues in accounting information systems, including emerging information technologies, systems evaluation and selection, and computer-based audit and security. Prerequisite: ACCT 4500. (Sp,Su)

ACCT 6510  
Financial Auditing  
(3)  
Application of generally accepted auditing standards to accounting systems. Some study of auditing theory and current issues, and an introduction to statistical auditing. Prerequisite: ACCT 4510. (F,Sp)

ACCT 6540  
Forensic Accounting  
(3)  
Study of forensic accounting. Topics covered include types of fraud, recognition of
ACCT 6550 Professional Accounting Cases and Problems (3)
Cases and problems relating to professional accounting practice and theory. Prerequisites: ACCT 3120, 3410, 5210/6210, 5220/6220, and 5400. (Sp,Su)

ACCT 6600 Information Systems Auditing and Control (3)
Study of information systems auditing methodologies, including risk assessment, systems controls, and the use of computer-assisted audit techniques.

ACCT 6610 Accounting Theory and Research (3)
Analytical approach to understanding the financial reporting environment. Integration of accounting theory and practical research methodology in the resolution of financial reporting problems. Prerequisite: ACCT 3120 (may be taken concurrently). (Sp,Su)

ACCT 6900 Independent Reading and Research (1-3) ®
Independent work in accounting areas: theory, auditing, taxation, and other related areas. Prerequisite: Departmental permission. (F,Sp,Su)

ACCT 6960 Professional Paper (1-3)
A paper of professional quality prepared by the student. Designed to demonstrate the ability to complete a major business-related project and to effectively present the results. Prerequisite: Departmental permission. (F,Sp,Su)

ACCT 6990 Continuing Graduate Advisement (1-3) ®
Continuing enrollment at the University required after completing coursework. Prerequisite: Departmental permission. (F,Sp,Su)

Animal, Dairy and Veterinary Sciences (ADVS)

See Department of Animal, Dairy and Veterinary Sciences, pages 128-133

ADVS 1010 Artificial Insemination and Reproduction (2)
Principles of reproduction, artificial insemination, and handling of semen. Anatomy and physiology of the bovine reproductive tract and reproductive management of the dairy farm. (F)

ADVS 1020 Dairy Cattle Nutrition and Feeding (3)
Applied approach to nutrients, feeds, digestion, and nutrient utilization by dairy cattle. Dietary requirements and feeding practices. (F)

ADVS 1030 Lactation and Milking Systems (3)
The mammary gland, udder health, and mastitis and its control. Milk quality and marketing. Principles involved in the function, design, and maintenance of dairy equipment. (Sp)

ADVS 1040 Records and Financial Aspects of Dairy Herd Operations (3)
Record keeping systems, tax records, estate planning, DHI records, and computer record systems. Principles of credit and finance. Accessing loan sources. (Sp)

ADVS 1050 Dairy Genetics (3)
Principles of dairy genetics, mating, pedigrees, and breeding. Purebred cattle type traits and classification. (F)

ADVS 1060 Applied Feeding and Management of Dairy Calves and Basic Construction of Facilities (3)
Practical experience in feeding and management of dairy calves from birth to weaning. Students participate in actual calf-raising programs. Development of basic skills required for planning and building agricultural structures. (Sp)

ADVS 1100 Small Scale Animal Production (3)
Fundamentals of raising domestic farm animals in a semi-rural, noncommercial setting. Considerations of feeding, breeding, housing, marketing, sanitation, general health care, and community zoning factors. For nonmajors. (Su)

ADVS 1110 Introduction to Animal Science (4)
Influence and contributions of animal production and its commodities to society. Introductory scientific principles of animal science, livestock production systems, and contemporary issues. Introduction to professions and careers in animal agriculture and veterinary sciences. (F,Sp)

ADVS 1250 QI Applied Agricultural Computations (2)
Development of understanding and proficiency in the application of basic mathematical skills, including algebra and geometry, to practical computational situations encountered in the agricultural sciences. (F,Sp)

ADVS 1600 Western Horsemanship I (2)
Grooming, saddling, bridling, mounting, seats and hands, horseback riding both bareback and on western saddle. For students with limited or no previous riding experience. Western-type riding boots and health insurance required. (F,Sp)

ADVS 1720 Dairy Cattle Evaluation and Judging (1)
Evaluation of cattle based on exterior anatomical traits functional for improving longevity and milk production. Explanation of classification systems used by breed associations and the artificial insemination industry. Development of basic skills for preparing dairy cattle for show. (Sp)

ADVS 1910 Orientation to Animal and Dairy Science (0.5)
Introduction to the Animal Science and Dairy Science programs, and to the opportunities in animal agriculture and related fields. (F)

ADVS 1920 Orientation to Bioveterinary Science (1)
Introduction to the profession of veterinary medicine and related fields, and to the preparation required for veterinary medical careers. (F)

ADVS 2040 Introduction to Biotechnology (1)
Introduces students to the emerging field of biotechnology and the impact this technology has on society. Also taught as BIOL 2040, NFS 2040, and PSB 2040. (Su)

ADVS 2080 Beef Production Practices (2)
Production practices in the handling, selection, and care of beef cattle. Demonstrations of equipment, facilities, and skills relevant to beef cattle production. Prerequisite: ADVS 1110 (may be taken concurrently) or permission of instructor. (Sp)

ADVS 2090 Sheep Production Practices (2)
Production practices in the handling, selection, and care of sheep. Demonstrations of equipment, facilities, and skills relevant to sheep and wool production. Prerequisite: ADVS 1110 (may be taken concurrently) or permission of instructor. (Sp)

ADVS 2120 Swine Production Practices (2)
Production practices in the selection, handling, and care of swine. Demonstrations of equipment, facilities, and skills relevant to swine industry. Prerequisite: ADVS 1110 (may be taken concurrently) or permission of instructor. (Su)

ADVS 2130 Dairy Production Practices (3)
Basic husbandry skills needed to carry out day-to-day operations on a dairy farm. Principles of dairy herd health, disease prevention, and treatment. Prerequisite: ADVS 1020 or 1110 (may be taken concurrently) or permission of instructor. (F)

ADVS 2190 Horse Production Practices (2)
Production practices in the selection, care, and evaluation of horses. Survey of breeds of horses, their characteristics, and their uses, as well as equine behavior, health care, nutrition, reproduction, anatomy, and physiology. Prerequisite: ADVS 1110 (may be taken concurrently) or permission of instructor. (F)

ADVS 2200 Anatomy and Physiology of Animals (4)
Normal structure and function studied systematically. Comparative livestock, poultry, pleasure and companion animals, laboratory animals, and humans. (Sp)
ADVS 2250 Cooperative Work Experience (1-12)®
For students who require animal industry experience to prepare them for advanced curriculum in Animal, Dairy, or Bioveterinary Science. (F,Sp,Su)

ADVS 2600 Western Horsemanship II (2)
Alternative training techniques for western pleasure and western reining horses, teaching leads, cueing techniques, reining maneuvers, and show-style riding. Western-type riding boots and health insurance required. Prerequisite: ADVS 1600. (F,Sp)

ADVS 2920 Orientation to Veterinary Medicine (0.5)
Preparation of prevetinary students for successful application and admission to professional veterinary schools. Taught first half of spring semester. (Sp)

ADVS 3000 Animal Health and Hygiene (3)
Introduction to basic principles of disease. Agents, mechanisms, and preventive measures for common diseases of farm animals will be emphasized. Prerequisite: ADVS 2200. (Sp)

ADVS 3200 DSC Ethical Issues in Genetic Engineering and Biotechnology (3)
Critical evaluation of ethical issues of genetic engineering in biotechnology, including biological engineering and cloning of plants, animals, and humans. Presents basic science of genetic engineering and biotechnology. (Sp)

ADVS 3300 CI Animal Production and Public Policy (2)
Students identify problems, become involved, organize resources, read and analyze documents, see different sides of an issue, and arrive at workable solutions for dealing with contemporary forces in society impinging on the ability of farmers and ranchers to function. (F)

ADVS 3500 Principles of Animal Nutrition (3)
Biochemical characterization and chemical analysis of feedstuffs for farm animals, with regard to carbohydrates, proteins, lipids, minerals, and vitamins. Catabolic/anaerobic pathways associated with utilization of these nutrients with respect to production, general health, and nutritional disorders. Prerequisites: ADVS 2200; CHEM 1120 or 2320. (F)

ADVS 3510 QI Applied Animal Nutrition (3)
Categorization of farm animal feeds into energy feeds, protein feeds, dry forages, silages and haylages, pasture and range plants, and vitamin-mineral supplements. Emphasis placed on practical diet formulation, including computerization and aspects of feed delivery and nutritional management. Prerequisite: ADVS 3500 or CHEM 3700. (Sp)

ADVS 3600 Western Horsemanship III (2)
Utilization of current training methods relating to basic equine behavior, ground breaking skills, and riding and training of the unbroken and freshly broken horse. Prerequisite: ADVS 2600. (F)

ADVS 3650 Live Animal and Carcass Evaluation (3)
Judging, grading, and pricing of market animals and carcasses, with emphasis on comparative evaluation of live animals and carcasses. (F)

ADVS 3710 Advanced Livestock Judging (2)
Advanced methods of selection and identification of superior animals for breeding stock. Emphasis on performance records, judging, grading, and oral reasons. (F,Sp)

ADVS 3900 Special Problems and Readings (1-3)®
Students conduct short-term studies and/or literature review with critical analysis of individualized subject matter. Formal written reports required. Prerequisite: Permission of instructor. (F,Sp,Su)

ADVS 3910 Special Topics (1-5)®
Topics of special interest to those who have needs not satisfied by courses currently offered. (F,Sp,Su)

ADVS 3920 Internship in Veterinary Medicine (1-3)®
A directed and evaluated work experience with a veterinarian. For each credit, student must document at least 54 hours of work time. Prerequisite: Permission of instructor. (F,Sp,Su)

ADVS 4200 CI Physiology of Reproduction and Lactation (4)
Introduction to principles of physiology as they relate to the reproductive and lactation processes in domestic mammals. Factors affecting reproductive and lactation performance and their applications in animal management. Prerequisites: ADVS 2200; CHEM 1120 or 2310. (Sp)

ADVS 4250 Internship in Animal Industry (1-12)®
Directed and evaluated educational work experience with an animal production unit, related business, or government facility in cooperation with the Livestock Education Foundation. Prerequisite: Permission of instructor. (F,Sp,Su)

ADVS 4260 Internship in Animal Biotechnology Industry (2-12)®
Directed and evaluated educational work experience with an animal biotechnology unit, or with a related business or government facility. Prerequisite: ADVS 5160 or 5240 or 5260 and permission of instructor. (F,Sp,Su)

ADVS 4560 QI Principles of Animal Breeding (3)
Genetic influences affecting animal performance and the application of selection principles, breeding systems, and methods of improvement to farm animals, including beef and dairy cattle, sheep, swine, and horses. Prerequisite: BIOL 1010 or 1220. (F)

ADVS 4800 Undergraduate Research or Creative Opportunity (1-6)®
Research or creative activity pertaining to animals. May include management, production, medical, or basic science, with consideration of biological, chemical, or physical aspects, or instrument design. Prerequisite: Permission of instructor. (F,Sp,Su)

ADVS 4910 Preprofessional Orientation (0.5)
Survey of the professional opportunities in the animal industries to enable graduating students to make the transition to careers and/or postgraduate study. Prerequisite: Senior standing. (F)

ADVS 4920 CI Undergraduate Seminar (2)
Current developments in agricultural field selected by student. Each student is responsible for the research and oral presentation of a topic in the animal industries. Group investigations, preparations, and deliberations on issues in animal agriculture. Prerequisite: Senior standing. (F)

ADVS 5030 Sustainable Agricultural Production Systems with Animals (3)
Study of various domestic animal production systems in relation to sustainable agriculture and integrated ranch and farm management strategies. Consideration of environmental factors and overall profitability. Prerequisite: ADVS 1110. (F)

ADVS 5080 CI Beef Cattle Management (3)
Managing the beef enterprise to yield optimum returns through integrating resource use and applying breeding, nutrition, reproduction, and animal health practices. Prerequisites: ADVS 2080; ADVS 3510, 4200, 4560 (may be taken concurrently). (Sp)

ADVS 5090 CI Sheep Management and Wool Technology (3)
Detailed study of the managerial considerations for range and farm flock operations. Examinations of wool, and review of wool clip handling and merchandising. Prerequisites: ADVS 2090; ADVS 3510, 4200, 4560 (may be taken concurrently). (Sp)

ADVS 5120 SW Swine Management (3)
Management decisions based on nutrition, breeding programs, herd health practices, herd records, and marketing opportunities. Prerequisites: ADVS 2120; ADVS 3510, 4200, 4560 (may be taken concurrently). (F)

ADVS 5130 SW Dairy Cattle Management (3)
Capstone course drawing together concepts and applying them to a total dairy farm management program. Prerequisites: ADVS 2130; ADVS 3510, 4200, 4560 (may be taken concurrently). (Sp)

ADVS 5160 SW Methods in Biotechnology: Cell Culture (3)
Techniques and fundamental knowledge for culturing mammalian and insect cells. Students will learn maintenance, growing, genetic engineering of cells, cytotoxicity,
ADVS 5190  Horse Management (3)
(d6190)
Management decisions in horse enterprises emphasizing business procedures, includ-
ing merchandising, records, selection, uses, housing, facilities, nutrition, feeding, health care, and breeding. Emphasizes total management of horse enterprise, rather than husbandry. Prerequisites: ADVS 2190; ADVS 3510, 4200, 4560 (may be taken concurrently). (Sp)

ADVS 5240  Methods in Biotechnology: Protein Purification Techniques (3)
Reviews basic methods of protein purification, including scaled-up use of 100L fermenter, large-scale centrifugation, diafiltration, chromatography, and use of BioCAD. Prerequisite: CHEM 3700. Also taught as BIOL 5240, CHEM 5240, NFS 5240, and PSB 5240. (Sp)

ADVS 5260  Methods in Biotechnology:
Molecular Cloning (3)
Laboratory-oriented course designed to teach molecular biology techniques such as DNA cloning, genetic probes, polymerase chain reaction, and DNA sequencing. Prerequisite: CHEM 3700 or 5710; or BIOL 3200; or permission of instructor. Also taught as BIOL 5260, CHEM 5260, NFS 5260, and PSB 5260. (F)

ADVS 5350  Introductory Pharmacology and Pharmacokinetics (3)
Basic principles of pharmacology and pharmacokinetics providing basis for extrapolation of biological kinetics of foreign compounds to a wide variety of xenobiotics encountered in toxicology, biology, and research. Prerequisites: BIOL 5600, CHEM 3700. (Sp)

ADVS 5370  Molecular Methods in Nutrition Science (2)
(d6370)
Theory of modern techniques used to study macromolecules and ions. Prerequisite: CHEM 3700. Also taught as BIOL/NFS/PSB 5370/6370. (Sp)

ADVS 5400  Environmental Toxicology (3)
(d6400)
Presents in-depth survey of toxic chemicals present in the environment, environmental factors impacting fate of chemicals, potential biological effects associated with chemical exposures, and methods of reducing associated risks. Prerequisite: CHEM 3700. (Sp)

ADVS 5490  Research Animal Techniques (1) ®
(d6490)
Methods of live animal research including laboratory animals and livestock. Required to utilize those species of animals included under PHS Policy and by the Animal Welfare Act. Includes discussion of Institutional Animal Care and Use Committees (IACUC). (F,Sp)

ADVS 5520  Grazing Livestock Nutrition and Management (2)**
(d6520)
Principles of livestock nutrition and production applied to the grazing environment and the relationships of livestock and range management for optimizing values from both. Prerequisites: ADVS 3510, FRWS 4000 (recommended). (Sp)

ADVS 5530  Nutritional Management of Farm Animals (3)*
(d6530)
Nutritional management, problem solving, and feeding strategies as they influence performance of farm animals. Optimization of nutrition for various species and classes of domestic livestock. Prerequisite: ADVS 3510. (Sp)

ADVS 5690  Animal Histology (3)
(d6690)
Microscopic anatomy and physiology of normal domestic animal’s cells, tissues, organs, and system. Prerequisite: ADVS 2200 or permission of instructor. (F)

ADVS 5700  CI General Animal Pathobiology (3)
(d6700)
Introduction to the principles of gross, microscopic, and physiological changes associated with diseases of domestic animals. Prerequisite: ADVS 5690/6690 or permission of instructor. (Sp)

ADVS 5820  Animal Cytogenetics and Gene Mapping (3)**
(d6820)
Structure and properties of chromosomes, chromosome behavior during cell division, chromosomal influence on phenotype, and factors causing changes in chromosome structure and number. Gene markers and gene mapping, with emphasis on applications for livestock. Prerequisite: ADVS 4560 or BIOL 3200. (F)

ADVS 5860  Poisonous Range Plants Affecting Livestock (2)**
Poisonous plants of rangelands and their effects on grazing animals, especially livestock. Management practices to reduce or prevent poisoning. Also taught as FRWS 5860. (Sp)

ADVS 6080  Beef Cattle Management (3)
Managing the beef enterprise to yield optimum returns through integrating resource use and applying breeding, nutrition, reproduction, and animal health practices. Prerequisites: ADVS 2080; ADVS 3510, 4200, 4560 (may be taken concurrently). (Sp)

ADVS 6090  Sheep Management and Wool Technology (4)
(d5090)
Detailed study of the managerial considerations for range and farm flock operations. Examinations of wool, and review of wool clip handling and merchandising. Prerequisites: ADVS 2090; ADVS 3510, 4200, 4560 (may be taken concurrently). (Sp)

ADVS 6120  Swine Management (3)
(d5120)
Management decisions based on nutrition, breeding programs, herd health practices, herd records, and marketing opportunities. Prerequisites: ADVS 2120; ADVS 3510, 4200, 4560 (may be taken concurrently). (F)

ADVS 6130  Dairy Cattle Management (3*)
(d5130)
Capstone course drawing together concepts and applying them to a total dairy farm management program. Prerequisites: ADVS 2130; ADVS 3510, 4200, 4560 (may be taken concurrently). (Sp)

ADVS 6190  Horse Management (3)
(d5190)
Management decisions in horse enterprises emphasizing business procedures, including merchandising, records, selection, uses, housing, facilities, nutrition, feeding, health care, and breeding. Emphasizes total management of horse enterprise, rather than husbandry. Prerequisites: ADVS 2190; ADVS 3510, 4200, 4560 (may be taken concurrently). (Sp)

ADVS 6200  Physiology of Reproduction (3)**
(d5200)
Study of processes of reproduction in mammals, including fertilization, embryonic development, reproductive endocrinology, and mechanisms of control. Prerequisites: ADVS 4200, CHEM 3700. (Sp)

ADVS 6300  Animal Breeding Theory (3)*
Basic theoretics of populations as applied to breeding and improvement of domestic animals with emphasis on effects of directed selection and mating and design of effective breeding plans. Prerequisite: ADVS 4560. (F)

ADVS 6350  Introductory Pharmacology and Pharmacokinetics (3)
(d5350)
Basic principles of pharmacology and pharmacokinetics providing basis for extrapolation of biological kinetics of foreign compounds to a wide variety of xenobiotics encountered in toxicology, biology, and research. Prerequisites: BIOL 5600, CHEM 3700. (Sp)

ADVS 6370  Molecular Methods in Nutrition Science (2)
(d5370)
Theory of modern techniques used to study macromolecules and ions. Prerequisite: CHEM 3700. Also taught as BIOL/NFS/PSB 6370/5370. (Sp)

ADVS 6400  Environmental Toxicology (3)
(d5400)
Presents in-depth survey of toxic chemicals present in the environment, environmen-
nal factors impacting fate of chemicals, potential biological effects associated with chemical exposures, and methods of reducing associated risks. Prerequisite: CHEM 5700. (Sp)

ADVS 6490 Research Animal Techniques (1) ®
(d5490)
Methods of live animal research including laboratory animals and livestock. Required to utilize those species of animals included under PHS Policy and by the Animal Welfare Act. Includes discussion of Institutional Animal Care and Use Committees (IACUC). (F,Sp)

ADVS 6500 Animal Nutrition Research Techniques (2)
(d7510)
Laboratory intensive course in routine feedstuff evaluation and research techniques to evaluate nutritional and metabolic responses under in vivo, in situ, and in vitro conditions using feed, digesta, feces, urine, tissue, metabolites, and products. Prerequisite: ADVS 3510. (F)

ADVS 6510 Rumen Physiology and Metabolism (2)*
(d7510)
Discussion of some key aspects of physiology and metabolism of the ruminant digestive tract, with emphasis on the rumen. Topics include anatomy and function; motility; metabolism of protein, carbohydrates, and lipids; rumen microbiology; and common digestive disorders. Prerequisite: ADVS 3510. (Sp)

ADVS 6520 Grazing Livestock Nutrition and Management (2)**
(d5520)
Principles of livestock nutrition and production applied to the grazing environment and the relationships of livestock and range management for optimizing values from both. Prerequisites: ADVS 3510; FRWS 4000 (recommended). (Sp)

ADVS 6530 Nutritional Management of Farm Animals (3)*
(d5530)
Nutritional management, problem solving, and feeding strategies as they influence performance of farm animals. Optimization of nutrition for various species and classes of domestic livestock. Prerequisite: ADVS 3510. (Sp)

ADVS 6540 Animal Energetics and Nutrient Metabolism (3)**
(d7540)
Techniques and procedures in measurement of heat production; factors affecting heat production; efficiency of energy utilization in body processes such as work, growth, and synthesis of fats, proteins, and carbohydrates; and the energetic costs of nutrient interconversion and turnover. Prerequisites: ADVS 6510/7510; CHEM 5700, 5710. (Sp)

ADVS 6550 Protein Metabolism and Utilization (3)**
(d7550)
Processes involved in the digestion, synthesis, and degradation of protein in the rumen, with special emphasis on protein-energy relationships in the rumen and whole animal. Discussion of protein requirements and efficiency of protein utilization. Prerequisite: ADVS 6510/7510. (F)

ADVS 6560 Mineral and Vitamin Metabolism (3)*
(d7560)
Principal roles of minerals and vitamins in nutrient metabolism as they apply to animal nutrition. Prerequisite: ADVS 6510/7510. (F)

ADVS 6600 Principles of Toxicology (3)**
(d7600)
Mechanisms of action and effects of toxicants on living organisms. Prerequisite: ADVS 5350/6350. (F)

ADVS 6690 Animal Histology (3)
(d5690)
Microscopic anatomy and physiology of normal domestic animal’s cells, tissues, organs, and system. Prerequisite: ADVS 2200 or permission of instructor. (F)

ADVS 6700 General Animal Pathobiology (3)
(d5700)
Introduction to the principles of gross, microscopic, and physiological changes associated with diseases of domestic animals. Prerequisite: ADVS 6690/5690 or permission of instructor. (Sp)

ADVS 6800 Animal, Dairy and Veterinary Science Seminar (1)
Seminar on topics of interest in Animal, Dairy and Veterinary Sciences. (F,Sp)

ADVS 6810 Seminar in Toxicology (1) ®
Graduate seminar in toxicology and related topics. (Sp)

ADVS 6820 Animal Cytogenetics and Gene Mapping (3)**
Structure and properties of chromosomes, chromosome behavior during cell division, chromosomal influence on phenotype, and factors causing changes in chromosome structure and number. Gene markers and gene mapping, with emphasis on applications for livestock. Prerequisite: ADVS 4560 or BIOL 3200. (F)

ADVS 6890 Special Problems (1-3) ®
Readings, discussions, lectures, literature reviews, and research problems in animal, dairy, and biovetinary sciences. Prerequisite: Consent of instructor and department. (F,Sp,Su)

ADVS 6910 Readings and Conference in Pharmacology and Toxicology (1-3)
Independent readings and conferences in the area of pharmacology and toxicology with particular emphasis on current literature. Prerequisite: ADVS 6350/5350. (F)

ADVS 6970 Research and Thesis (1-12) ®
(F,Sp,Su)

ADVS 6990 Continuing Graduate Advisement (1-3) ®
(F,Sp,Su)

ADVS 7510 Rumen Physiology and Metabolism (2)*
(d6510)
Discussion of some key aspects of physiology and metabolism of the ruminant digestive tract, with emphasis on the rumen. Topics include anatomy and function; motility; metabolism of protein, carbohydrates, and lipids; rumen microbiology; and common digestive disorders. Prerequisite: ADVS 3510. (Sp)

ADVS 7540 Animal Energetics and Nutrient Metabolism (3)**
(d6450)
Techniques and procedures in measurement of heat production; factors affecting heat production; efficiency of energy utilization in body processes such as work, growth, and synthesis of fats, proteins, and carbohydrates; and the energetic costs of nutrient interconversion and turnover. Prerequisites: ADVS 7510/6510; CHEM 5700, 5710. (Sp)

ADVS 7550 Protein Metabolism and Utilization (3)**
(d6550)
Processes involved in the digestion, synthesis, and degradation of protein in the rumen, with special emphasis on protein-energy relationships in the rumen and whole animal. Discussion of protein requirements and efficiency of protein utilization. Prerequisite: ADVS 7510/6510. (F)

ADVS 7560 Mineral and Vitamin Metabolism (3)*
(d6560)
Principal roles of minerals and vitamins in nutrient metabolism as they apply to animal nutrition. Prerequisite: ADVS 7510/6510. (F)

ADVS 7600 Principles of Toxicology (3)*
(d6600)
Mechanisms of action and effects of toxicants on living organisms. Prerequisite: ADVS 5350/6350. (F)

ADVS 7970 Dissertation Research (1-12) ®
(F,Sp,Su)

ADVS 7990 Continuing Graduate Advisement (1-9) ®
(F,Sp,Su)

 Parenthetical numbers preceded by d indicate a dual listing.
 ® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.
 **Taught 2005-2006.
Anthropology (ANTH)

See Department of Sociology, Social Work and Anthropology, pages 310-318

ANTH 1010 BSS Cultural Anthropology (3) ©
Role of cultural concepts within discipline of anthropology. Relationship of cultural concepts to survival and adaptation, society and social life, ideology and symbolism, and cultural change and diversity. Applications to contemporary world problems. (F,Sp)

ANTH 1020 BLS Biological Anthropology (3)
Survey of multidisciplinary field of biological anthropology. Includes study of fossil and living primates, fossil evidence for human evolution, bioarchaeology, contemporary human variation and adaptation, principles of evolutionary theory, and introductory population genetics. (F)

ANTH 1030 BSS World Archaeology CI (3)
Surveys archaeology and the means by which inferences about the past are made. Examines major processes shaping humans, including world colonization, our foraging legacy, origins of agriculture and civilization, and implications of our past for the present and future. (F,Sp)

ANTH 1710 BHU Introduction to Folklore (3)
Introduction to major genres of folklore (folk narrative, custom, folk music and song, vernacular architecture and arts), folk groups (regional, ethnic, occupational, familial), and basic folklore research method (collecting and archiving). Also taught as ENGL 1710 and HIST 1710. (F,Sp)

ANTH 2100 BSS Peoples of the Contemporary World (3)
Introduces different ways of life, rural and urban, from the world’s major culture areas. Focuses on how contemporary societies have evolved in ecological, historical, and political context. Introduces problems arising from third world social change. (Sp)

ANTH 2270 Survey of American Folklore (3)
Principal ethnic, regional, and occupational groups in America. Relations between folklore and American history, literature, and society. Key genres in American folklore (narrative, art, song, etc.) and their role in American culture. Also taught as ENGL 2270 and HIST 2270. (Sp)

ANTH 3110 North American Indian Cultures (3) ©
Introduces ethnography of native cultures found within the USA and Canada, documenting their pre-contact adaptations and their interactions with changing national policies leading to today’s resurgence of native peoples. (F)

ANTH 3120 DSS Peoples of the Pacific CI (3) ©
Introduces several perspectives, including: scientific analyses of the settlement and early ecology of the Pacific; impact on Pacific cultures of European contact, especially during the Age of Exploration; ethnographic classic studies of societies such as the Trobriands; and briefly, the contemporary scene. Prerequisites: ANTH 1010 or permission of instructor. (F)

ANTH 3130 CI Peoples of Latin America (3) ©
Survey of Latin American cultures, past and present. Emphasis on culture as a dynamic, adaptive system and on contemporary issues in rural and urban Andean South America, Amazonia, and Mesoamerica. Appropriate for both majors and nonmajors.

ANTH 3150 Field-Methods and Career Options in Anthropology (3) ©
Introduces students to the range of field-methods used in cultural anthropology. Provides opportunity for students to use these field-methods to identify career options in all anthropology sub-disciplines. (Sp)

ANTH 3160 DSS Anthropology of Religion (3)
Cross-cultural description and theoretical analysis of religion and its functional relationships to human psychology, society, and the natural environment. (F)

ANTH 3170 DSS Symbol Systems and the Origins of Writing and Literacy CI (3) ©
Discusses four broad themes: (1) humans as symbol-makers; (2) the development of writing systems; (3) the decipherment of ancient scripts; and (4) social construction of literacy. Specific topics include: cave art and myth, decipherment of Egyptian and Mayan hieroglyphics, and the place of literacy in society. Prerequisites: Any one of USU 1320, ANTH 1030, 3350, HIST 1040, 3110, or permission of instructor. (F)

ANTH 3200 DSS Perspectives on Race CI (3)
Study of the processes of racial differentiation, the basis of biological differences found among existing human groups, the influence of biology and culture on human variation, and the influence of social context on perceptions of race. (Sp)

ANTH 3250 Osteology (3) ©
Detailed hands-on study of human skeleton, including component of comparative vertebrate skeletal anatomy. Applications to fields of archaeology, forensic science, paleopathology, and zoology. Includes methods component. (F)

ANTH 3300 DSS Archaeology in North America (3) ©
Prehistoric and historic archaeology of the North American continent. Explores initial colonization and Native American origins; variability among foraging adaptations; spread of farming; cultural complexity in Midwest, Southwest, and West Coast; Indian-environment relationships; European contact; depopulation; and historic archaeology of Euro-Americans. (Sp)

ANTH 3310 CI Introduction to Museum Studies (3) ©
Explores all aspects of museum work, from the acquisition and storage of collections to fundraising and educational programs. As part of course requirements, students tour area museums and get first-hand perspectives on the challenges and rewards of museum work from professionals in the field. (F)

ANTH 3350 DSS Archaeology of Ancient Civilizations (3) ©
Surveys primary states in antiquity, including Mesopotamia, China, Egypt, South America, and Mesoamerica. In-depth study of the process of their formation and theories of their origins. Emphasis is anthropological and scientific to complement the classical and humanistic. (Sp)

ANTH 3390 History and Theories of Anthropology (3) ©
Traces history of anthropology, main currents of theoretical thought shaping claimed anthropological knowledge, and major figures associated with the discipline. Conceptualizes anthropology among the social sciences, life sciences, and humanities. Prerequisite: ANTH 1010. (F)

ANTH 4100 The Study of Language (3)
Investigates ways in which human languages are structured, how they change, how they reflect the cultures in which they are used, and how they are learned. Also taught as LING 4100. (F,Sp)

ANTH 4110 DSS Southwest Indian Cultures, Past and Present (3) ©
Reviews past and present Indian cultures of greater southwest region. Examines the prehistoric Anasazi, the Pueblos, the canyon and desert peoples, the Utes, and the Navajos. Interprets these cultures in ecological, historic, and political contexts. (F)

ANTH 4120 CI Ethnography of Childhood (3) ©
Focuses on ethnographic methods and the anthropological study of childhood. Students design and carry out ethnographic study of children in school, family, or other setting. Readings of ethnographic studies of childhood from the U.S. and abroad. Includes methods component. (F)

ANTH 4130 DSS Medical Anthropology: Matter, Culture, Spirit, and Health (3) ©
Examines the bio-ecological (matter) and socio-cultural aspects of disease/illness in human populations and examines “spiritual” dimensions of health in cross-cultural context. Includes methods component for anthropology majors and serves as a Liberal Arts and Sciences cluster capstone course. (Sp)

ANTH 4250 QI Problems in Bioarchaeology (3) ©
Examines various approaches to the study of human biocultural adaptation through the analysis of human remains from archaeological sites. Includes methods component. Prerequisite: ANTH 3250 or permission of instructor. (Sp)

ANTH 4350 Archaeological Method/Theory and Cultural Resource Management (3) ©
Examines contemporary theories, as well as methods used by archaeologists to ad-
dress questions arising from theory. Also considers contributions of cultural resource management to meeting anthropological and public concerns. Includes methods component. Prerequisite: ANTH 1030. (Sp)

ANTH 4360 DSS Ancient Desert West
Prehistoric to historic human ecology and paleoenvironments of the Great Basin, Southwest, and southern California deserts. Emphasizes perspective of human evolutionary ecology and detailed examination of the archaeological record in conjunction with paleoenvironmental data. For classroom work only, 3 credits are granted. For 4 credits, one or more weekend field trips are required. Prerequisite: ANTH 1030 or permission of instructor. (F)

ANTH 4370 Archaeology and Paleoenvironments Field Trip
Two-hour class session and assigned readings prepare students for a three-day field trip to explore the archaeology and paleoenvironments of the northern Bonneville Basin. Post-field writing assignment integrates the field experience with readings and discussion. Prerequisite: Instructor permission. (F)

ANTH 4800 Topics in Anthropology
Focuses on special topics in anthropology. Topics and course format vary. (1-3) ®

ANTH 5100 DSS Anthropology of Sex and Gender
(d6100)
Increases awareness of sexuality and gender, and of feminist perspectives about social problems related to gender and sexuality that cross-cut cultural boundaries. Emphasizes gender-related social problems in contemporary world societies. (Sp)

ANTH 5110 Ethnographic Field School
Provides practical training in use of ethnographic field methods, qualitative data analysis, and ethnographic report-writing. Combines classroom instruction with supervised off-campus field research, while living in a cross-cultural setting. Fulfills program methods requirement. Application and additional fee required. (Su)

ANTH 5120 Applied Rural Development
(d6120)
Reviews development anthropology for practitioners. Examines human dimensions of planned policy, program, and project interventions. Examines how rural development occurs and how it is analyzed and managed in selected real-world cases. Includes methods component. (Sp)

ANTH 5160 DSS Cities and Development
(d6160)
Examines role of emergent urban areas in national development. Employs ethnographic case studies of selected cities, coupled with a policy perspective on problems of hyperurbanization in both poor and more advanced societies. Includes methods component. (Sp)

ANTH 5190 Applied Anthropology Practicum
(1-5) ®
(d5190)
Supervised projects in applied anthropology for advanced students. Integrates academic knowledge and field technique. Minimum contact hours, requirements, and credits available vary. Includes methods component. Prerequisite: Application and instructor approval.

ANTH 5210 Physical Anthropology Lab
(1-3) ®
(d5210)
Laboratory experience enabling participation in analysis/reporting stages of physical anthropology projects. Includes methods component. Prerequisite: Permission of instructor.

ANTH 5300 Archaeology Field School
(1-5) ®
(d5300)
Internship on archaeological field project, including survey, excavation, recording, mapping, and scientific conduct of archaeological problem solving. Application process begins in March. Additional field support fee required. Prerequisites: ANTH 1030 and instructor’s permission. (Su)

ANTH 5310 Archaeology Lab
(1-3) ®
(d5310)
Laboratory experience enabling participation in analysis/reporting stages of archaeology projects. Includes methods component. Prerequisite: Permission of instructor.

ANTH 5650 DSS Developing Societies
(3) ®
(d6650)
Reviews how sociology, cultural geography, and economic anthropology analyze processes of globalization in postcolonial societies. Examines changing livelihoods, patterns of spatial incorporation and societal evolution, and emergent policy problems associated with rapid socioeconomic change. Also taught as GEOG 5650/6650 and SOC 5650/6650. (F)

ANTH 5700 Folk Narrative
Forms and functions of folk narrative genres: myth, legend, folktale, memorate, and ballad. Also taught as ENGL 5700 and HIST 5700. (F)

ANTH 5800 Museum Development
(1-3) ®
(d5800)
Apprenticeship in the USU Museum of Anthropology to learn the operation of a small museum. Entails close ongoing consultation with museum director and other staff members. Possible projects include artifact curation, exhibit development, public outreach, and others. Prerequisite: Instructor’s permission. (F,Sp, Su)

ANTH 5900 Independent Studies
Customized study or readings for graduate students on topics not covered in regular courses. Prerequisite: Approval, prior to registration, of proposal written by student in consultation with instructor. (1-3) ®

ANTH 5980 Senior Project
(1)
(d5980)
Develops advanced research and writing skills in a specialty area, and results in a research project/report. Must register in combination with a 4000- or 5000-level anthropology course, in consultation with instructor and subject to approval.

ANTH 5990 Contemporary Anthropological Theory and Method
(3) ®
(d5990)
Capstone course in anthropological theory and method, required for all majors. Prerequisite for majors: ANTH 3990. Graduate students may enroll only at instructor’s discretion, and must enroll for extra weekly meeting. (Sp)

ANTH 6100 Anthropology of Sex and Gender
(d6100)
Increases awareness of sexuality and gender, and of feminist perspectives about social problems related to gender and sexuality that cross-cut cultural boundaries. Emphasizes gender-related social problems in contemporary world societies. (Sp)

ANTH 6110 Southwest Indian Cultures, Past and Present
(d4110)
Reviews past and present Indian cultures of greater southwest region. Examines the prehistoric Anasazi, the Pueblos, the canyon and desert peoples, the Utes, and the Navajos. Interprets these cultures in ecological, historic, and political contexts. (F)

ANTH 6120 Applied Rural Development
(d6120)
Reviews development anthropology for practitioners. Examines human dimensions of planned policy, program, and project interventions. Examines how rural development occurs and how it is analyzed and managed in selected real-world cases. Includes methods component. (Sp)

ANTH 6160 Cities and Development
(d6160)
Examines role of emergent urban areas in national development. Employs ethnographic case studies of selected cities, coupled with a policy perspective on problems of hyperurbanization in both poor and more advanced societies. Includes methods component. (Sp)

ANTH 6650 Developing Societies
(d6650)
Reviews how sociology, cultural geography, and economic anthropology analyze processes of globalization in postcolonial societies. Examines changing livelihoods, patterns of spatial incorporation and societal evolution, and emergent policy problems associated with rapid socioeconomic change. Also taught as GEOG 5650/6650 and SOC 6650/5650. (F)

ANTH 6900 Independent Studies
(1-3) ®
(d6900)
Customized study or readings for graduate students on topics not covered in regular courses. Prerequisite: Approval of proposal written by student in consultation with instructor. (1-3) ®

1Parenthetical numbers preceded by d indicate a dual listing.
2This course is taught alternating years. Check with department for information about when course will be taught.
This course may be used to satisfy the methods component requirement for the anthropology major.

This course has one or more prerequisites. Check with the department for details.

This course is offered infrequently. Check with department for information about when course will be taught.

Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

This course is also offered by online correspondence and/or CD through Continuing Education Time Enhanced Learning.

**Art (ART)**

See Department of Art, pages 137-141

**ART 1100 BCA Exploring Art** (3) ©
Introduction to the visual arts, including the language, elements, and history of art.

(F)

**ART 1110 Drawing I** (3)
Introduction to the visual language of drawing, the graphic elements, various drawing media, and the creative problems involved. (F,Sp)

**ART 1120 Two-dimensional Design** (3)
Study and problem solving of form, space, texture, value, and color theory. (F,Sp)

**ART 1130 Three-dimensional Design** (3)
Fosters development of basic understanding of three-dimensional form and space relationships. Includes three-dimensional problem solving, as well as use of a range of materials. (F,Sp)

**ART 1140 Drawing I (Art Majors Only)** (3)
Development of foundation drawing skills for art majors. Introduction to fundamental drawing principles and various drawing media through creative applications. Required for art majors. Enrollment limited to art majors only. (F,Sp)

**ART 1150 Two-dimensional Design (Art Majors Only)** (3)
Foundation design course for art majors. Exploration of the elements and principles of two-dimensional design. Extensive use of a variety of media in creative problem solving. Required for art majors. Enrollment limited to art majors only. (F,Sp)

**ART 1160 Three-dimensional Design (Art Majors Only)** (3)
Foundation design course for art majors. Exploration into the principles and vocabulary of visual organization in three dimensions. Through the manipulation of a variety of materials, students gain understanding of form and space. Required for art majors. Enrollment limited to art majors only. (F,Sp)

**ART 2140 Drawing II** (3)
A continuation of ART 1110 or 1140, with an emphasis on more complex problems and techniques. Prerequisite: ART 1110 or 1140. (Sp)

**ART 2200 Painting I** (3)
Introduction to visual language of painting. Focuses on organization of visual ideas and basic oil painting techniques. Provides experience in both direct and indirect painting methods, as well as introducing applied color concepts. Prerequisites: ART 1110 or 1140; and ART 1120 or 1150. (F)

**ART 2230 Basic Printmaking** (3)
Introductory course to acquaint students with the broader aspects of relief, intaglio, and planographic processes. Prerequisites: ART 1110 or 1140; and ART 1120 or 1150. (F)

**ART 2400 Computers and Art** (3)
Basic course dealing with the study and use of the personal computer as a creative medium. Emphasizes hands-on software training directed toward the art of visual design and aesthetic expression. Several projects created using the computer and related peripherals. Discusses various forms of digital output and communications. Critical reviews of art projects focus on the elements and principles of visual design, as well as basic graphic design concepts. Prerequisite: ART 1120 or 1150. (Sp)

**ART 2600 Basic Sculpture** (3)
Introduction to additive and subtractive processes in the realization of sculptural ideas. Student involvement in carving, clay modeling, and construction projects. Prerequisite: ART 1130 or 1160. (F,Sp)

**ART 2650 Introduction to Ceramics** (3)
Introduction to basic processes of ceramics and the operation of the USU ceramics lab. Includes handbuilding, throwing, and firing. (F,Sp,Su)

**ART 2710 BHU Survey of Western Art: Prehistoric to Medieval** (3) ©
Prehistoric art through the end of the Gothic era. (F)

**ART 2720 BHU Survey of Western Art: Renaissance to Post-Modern** (3) ©
Renaissance through modern. (Sp)

**ART 2800 Introduction to Photography** (3)
Overview of photography. Operation of camera and related equipment, exposure and development of black and white and color positive film materials, and enlarging and printing of black and white negatives, with a strong emphasis on composition and photographic aesthetics. (F)

**ART 2810 Photography I** (3)
Black and white photography, including camera operation, exposure and development, and enlarging and printing of black and white negatives, with a concern for advancing technical controls, aesthetics, and darkroom experimentation. Introduction to electronic imaging. (F,Sp)

**ART 2900 Introductory Internship/Coop** (3) ©
Introductory level educational work experience in an internship/cooperative education position approved by the Department of Art. (F,Sp)

**ART 3000 Secondary Art Methods I** (3) ©
Focuses on developing art curricula by formulating objectives for teaching art history, art appreciation, and the making of art in the secondary schools. Required for art education majors. (F,Sp)

**ART 3050 Japanese Calligraphy** (1)
Study of Japanese writing system through practicing the art of calligraphy. No prerequisites. Also taught as JAPN 3050. (Sp)

**ART 3110 DHA Ancient Near East** (3)
Survey of history and civilization of ancient Mesopotamia, Egypt, and Israel, from prehistory to 500 B.C. Writing intensive. Prerequisite: ENGL 2010 or equivalent. Also taught as HIST 3110. (F,Sp)

**ART 3200 Painting II** (3)
Continuation of concepts and techniques covered in ART 2200, emphasizing more complex formal and conceptual problems. Prerequisite: ART 2200. (Sp)

**ART 3210 Classical Mythology** (3)*
Introduces major myths of the Classical world. Explores how these myths serve as keys to understanding the documents and arts of Classical civilization. Also taught as CLAS 3210. (Sp)

**ART 3220 Screen Printing** (3)
Investigation of the basic processes employed in screen printing. Includes surface preparation, image preparation, drawing techniques, registration, and printing of the screen. Prerequisite: ART 2230. (F)

**ART 3230 Lithography** (3)
Investigation of the basic processes employed in lithography, including surface preparation, basic drawing techniques, registration, processing, and printing of the stone or plate, as well as transfer, and color methods. Prerequisite: ART 2230. (F)

**ART 3240 Intaglio** (3)
Investigation of the basic processes employed in intaglio, including acid (line etch, aquatint, lift grounds, soft ground) and nonacid (dry point, mezzotint, engraving) techniques, as well as transfer and color methods. Prerequisite: ART 2230. (Sp)
ART 3250 Relief Prints (3)®
Introduction to relief printing, including woodcut, linoleum cut, and wood engraving. Prerequisite: ART 2250. (F)

ART 3260 Anatomy for Artists (3)
Study of principles of anatomical structure of the figure as it applies to two-dimensional and three-dimensional art media. Prerequisites: ART 1110 or 1140; and ART 2140. (F)

ART 3300 Clinical Experience I (1)®
First clinical practicum (30 hours minimum) in middle and secondary schools, arranged by special methods instructors in department. Required at level I. (Sp)

ART 3370 Intermediate Illustration: Concept (3)*®
Students develop ideas for illustrations. Student carries one of these ideas through the stages of roughs, a comprehensive, and a finished piece of art. Prerequisites: ART 1140 and 1150. (F)

ART 3400 Graphic Design I (3)®
Introductory graphic design course, dealing with concepts and principles related to the exploration of typography as an art and design element. Series of exercises designed to give students professional and philosophical look at aesthetic and functional use of type and related visual elements. Prerequisites: ART 1120 or 1150; and ART 2400. (F)

ART 3410 Intermediate Computers and Art (3)®
Intermediate digital imaging, motion graphics, and interactive multimedia course. Concepts and principles dealing with the art and design of digitally created still art, animation, and interactive presentations. Includes series of exercises designed to further students' understanding of the aesthetic and functional use of the computer as an art medium. Prerequisites: ART 1120 or 1150; and ART 2400 or 3400. (Sp)

ART 3420 Communication Arts Seminar (1)®
Lecture seminars by professional guest artists in illustration and graphic design. (F,Sp)

ART 3610 Intermediate Sculpture (3)
Further development in the materials, techniques, and traditions of sculpture. Expands on specific explorations, such as modeling, construction, and carving. Emphasizes strong relationship between concept and the technical execution of a sculptural form. Prerequisite: ART 2600. (F)

ART 3650 Intermediate Ceramics: Handbuilding (3)
Application of traditional ceramic construction techniques to vessel and sculptural subjects. Prerequisite: ART 2650. (F)

ART 3660 Intermediate Ceramics: Throwing on the Potter’s Wheel (3)®
Focuses on throwing and trimming techniques using the potter’s wheel. Emphasizes production of multiples. Prerequisite: ART 2650. (Sp)

ART 3700 Elementary Art Methods (3)®
Focuses on developing art curricula by formulating objectives for teaching art processes, art history, and art appreciation in the elementary schools. Required preparation for a grade school teacher. (F,Sp)

ART 3710 Fine Art Seminar (1)®
Lecture seminars given by professionals as part of the Art Department visiting artist program. (F,Sp)

ART 3810 Photography II (3)
Advanced black and white photography emphasizing technical controls, including the zone system and introduction to the 4x5 camera. Application of technical skills to enhance creative photographic expression. Continuation of digital imaging and use of computer for sensitometry graphing. Prerequisite: ART 2810 or equivalent experience. (Sp)

ART 3820 History of Early Photography (3)*
Reviews early history of photography, beginning before the 1839 public announcement by Daguerre and continuing through the early twentieth century. Explores social change, invention, and the fulfillment of the artist’s desire to represent reality. (Sp)

ART 3830 History of Contemporary Photography (3)**
Reviews history of contemporary photography, beginning with the modernist movements of the 1920s and progressing through the aesthetic, technical, and communicative changes, up to today's contemporary uses of the medium. Examines photography’s relationship to the historical changes in society, through its evolution as an art form, a commercial venue, and a visual record. (F,Sp)

ART 4000 Secondary Art Methods II (3)®
Focuses on developing methodologies for presenting art concepts and techniques in the secondary schools. Prerequisite: ART 3000. (F)

ART 4100 Drawing Studio (1-9)®
Independent study. Individually chosen drawing projects focus on central theme and specific approach. Prerequisite: Approval of major professor. (F,Sp,Su)

ART 4110 Central European Art (3)**
Discussion-based seminar covering the traditionally neglected theme of art in Central Europe. Emphasizes modern art, with the theme of national identity as a constant concern. (F)

ART 4200 Advanced Painting Studio (3-6)®
Advanced individual painting projects. Students may use a variety of painting methods to execute a series of closely related paintings that are intended to develop a focused and personal portfolio. Prerequisite: ART 2200. (F,Sp)

ART 4210 Figure Painting (3)
Painting from the model, with emphasis on solving problems of the planar structure of the human form. Prerequisites: ART 3200 and 3260. (Sp)

ART 4220 Advanced Painting: Alternative Materials (3)**
Advanced course dealing with painting methods important to modernism and postmodernism. Explores collage, assemblage, and encaustic painting. (Sp)

ART 4250 Advanced Printmaking Studio (1-9)®
In-depth investigation of one printmaking process with emphasis placed on both technical and aesthetic considerations. Prerequisites: ART 2230 and consent of instructor. (F,Sp)

ART 4260 Life Drawing (3)®
Drawing from live models with emphasis on exploring interpretation, techniques, and compositional approach. Prerequisites: ART 1110 or 1140; and ART 3260. (Sp)

ART 4300 Clinical Experience II (1)®
Second clinical practicum (30 hours minimum) in middle and secondary schools, arranged by special methods instructors in department. Required at level II. Prerequisite: ART 3300. (F)

ART 4370 Advanced Illustration (3)®
Production of art work suitable for publication in a variety of forms. Organization of portfolio and self-promotion pieces. Painting in class and homework assignments, including comprehensives and finishes. (F,Sp)

ART 4400 Graphic Design II (3)®
Graphic design production and prepress. Study of concepts and techniques concerning camera-ready art for mass printing. Closely examination process of getting artwork from designer to the presses. Prerequisite: ART 3400. (F)

ART 4410 Advanced Computers in Art I (3)®
Advanced graphic design course dealing with motion as an art element. Studies concepts and principles related to the research and development of new ideas concerning various motion graphic techniques and ideas. Includes a series of exercises designed to give the student a professional and philosophical look at the aesthetic and functional use of animation as it relates to business and society. Prerequisites: ART 3400, 4400. (F)

ART 4420 Advanced Graphic Design I: The Graphic Symbol (3)®
Advanced graphic design course dealing with concepts, principles, and techniques related to symbols and their applications. Trademarks, logos, pictographs, and labels will be designed and applied to various formats such as letterheads, packages, and digital advertising. Includes a series of exercises designed to give the student a pro-
ART 4430 Advanced Computers in Art II (3)**
Advanced graphic design course dealing with multimedia as an art element. Studies concepts and principles related to the research and development of new ideas concerning various computer graphic techniques. Includes series of exercises using the interaction between still imagery, animation, and sound to give the student a professional and philosophical look at the aesthetic and functional use of multimedia as it relates to business and society. Prerequisites: ART 4400, 4440. (F)

ART 4440 Advanced Graphic Design II: Word and Image/Visual Continuity (3)**
Advanced graphic design course dealing with concepts and principles related to exploration of word as image and ideas of visual continuity. Studies text type and layout. Various communication formats, such as magazines, books, and posters, created using various digital and traditional techniques. Gives students a professional and philosophical look at the aesthetic and functional use of type and related visual elements. Prerequisite: ART 4400. (Sp)

ART 4450 Advanced Graphic Design Studio (1-9)**
Independent research and development of advanced projects in the field of graphic design. Prerequisite: ART 4440. (F,Sp,Su)

ART 4460 Advanced Computer Graphics Studio (1-9)**
Independent research and development of advanced projects in the field of digital graphics. Prerequisite: ART 4440. (F,Sp,Su)

ART 4610 Sculpture Projects (3)**
Develops skills in a particular sculptural methodology. Investigates genres of public sculpture, installation, and advanced modeling, from traditional to contemporary. Stresses ideas based in a broader context of social and cultural issues. Prerequisite: ART 3610. (Sp)

ART 4620 Sculpture Seminar (3)
Described to focus on and challenge current assumptions in regard to contemporary issues in sculpture. Prerequisite: ART 4460. (F)

ART 4640 Technology of Ceramic Art (3)**
Selected topics in aesthetics and technology of ceramic art, including ceramic history, glaze chemistry and calculation, firing techniques, kiln design and construction, etc. Students enrolling for more than 3 credits arrange credit for directed studies in specific topics. Prerequisites: ART 3650, 3660. (F,Sp,Su)

ART 4650 Advanced Ceramic Studio (3-6)**
Provides time, equipment, and facilities for advanced students to pursue directed studies leading to personal expression through ceramic media. To be repeated during at least four semesters by art majors with ceramics emphasis. Prerequisites: ART 3650, 3660. (F,Sp,Su)

ART 4660 Advanced Sculpture Studio (1-9)**
Advanced directed study in specific technical, aesthetic, and/or conceptual issues in sculpture. Prerequisite: ART 4610. (Sp)

ART 4710 Greek and Roman Art (3)
Origin and development of art and architecture of Crete, Mycenae, Greece, and the Roman world.

ART 4720 Renaissance Art (3)
Development of European art and architecture from the thirteenth to the sixteenth century.

ART 4730 Baroque and Rococo Art (3)
Development of painting, sculpture, and architecture in Europe from the late sixteenth through the eighteenth centuries.

ART 4740 Nineteenth Century Art (3)
Painting and sculpture from Neoclassicism to Symbolism. Prerequisite: ART 2720.

ART 4750 Twentieth Century Art (3)**
History of painting, sculpture, and architecture from post-impressionists to the present. Prerequisite: ART 4710.

ART 4760 American Art (3)
History of painting, sculpture, and architecture in America from colonial times to the present. Prerequisite: ART 2720. (Sp)

ART 4770 Gender Issues in Art (3)
Discussion of major issues and debates regarding gender in the visual arts. Topics include: revising the canon, representing gender, and theories of gender and spectatorship. Readings are discussed and applied to visual works of art. (Sp)

ART 4780 Sacred Art: Art of the World's Major Religions (3)
Designed to give students understanding of the world’s seven major religions or “wisdom traditions” (Hinduism, Buddhism, Confucianism, Taoism, Judaism, Christianity, and Islam) through the history of their art. (Alt Sp)

ART 4790 Art History Seminar and Special Problems (1-6)**
Prerequisite: Permission of instructor. (F,Sp,Su)

ART 4810 Digital Photography (3)**
Continued exploration of digital photography, from computer to studio, with strong ties to traditional image making. Digital image processing and use of both software and hardware of digital photography. Study of ethical, artistic, and personal issues. Prerequisite: ART 3810. (F)

ART 4820 Nineteenth Century Photography Printing Processes (3)**
Introduction to hand-made photographic emulsions invented and used in the nineteenth century. Production of gum prints, cyanotypes, photogravures, carbon prints, and platinum prints. Explores unique visual characteristics of each process. Includes basic bookbinding. Prerequisite: ART 3810. (F)

ART 4830 Independent Projects in Photography (1-9)**
Student-initiated, independent projects in photography. Provides opportunity for students to gain technical proficiency and aesthetic creativity. Major emphasis on critique and group discussions. Prerequisite: ART 3810 or permission of instructor. (F,Sp,Su)

ART 4840 Color Photography I (3)
Introduction to technical, conceptual, aesthetic, and digital explorations available with exposure and development of color positive and negative films. Investigation of color theory accompanied by production of correctly balanced color prints. Prerequisite: ART 3810. (F)

ART 4850 Color Photography II (3)
Continuation of study with color materials including digital investigations. Explores alternative techniques and manipulative capabilities with color processes. Stresses individual pursuit of color print portfolio. Prerequisite: ART 4840. (Sp)

ART 4860 Photographic Studio (3)**
Exploration of the photographic studio, 4x5 view camera, the principles of applied lighting, and the communication of an idea through photography. Commercial, editorial, portrait, and digital photography directed toward professional portfolio preparation. All students required to have 4x5 camera. Enrollment limited to BFA students only. Prerequisite: ART 3810. (F)

ART 4870 Photographic Portfolio (3)**
Advanced photography class in preparation for life after graduation. Strong emphasis on work toward a personal professional portfolio (fine art and commercial) and written support documentation (resumes, cover letters, artist statement, etc.). Enrollment limited to BFA students only. Prerequisite: ART 4860. (Sp)

ART 4880 Imaging Services (3)
Internship situation at a commercial photographic studio and lab facility. Prerequisites: ART 4810, 4840. Enrollment limited to BFA candidates only. (F,Sp,Su)

ART 4900 Advanced Internship/Coop (1-9)**
Internship/cooperative education work experience in art. For those students needing complexity and a more professional level of experience in the workplace. (F,Sp)
ART 4910 Senior BFA Exhibition (2)
Professional presentation and exhibition procedures. Enrollment limited to senior standing and BFA candidates only. Required for all BFA candidates. Prerequisite: Approval of advisor. (Sp)

ART 4920 Independent Projects (1-9) ®
Student-planned projects, executed through individual initiative and scheduled consultation with instructor. Prerequisites: ART 1110 or 1140; ART 1120 or 1150; and ART 1130 or 1160. (F,Sp,Su)

ART 4930 Student Teaching at University Level (3)
Teaching methods and procedures for university-level classes, working directly with faculty in lower-division classes. Prerequisite: Approval of instructor. (F,Sp,Su)

ART 4940 Graduate Reading Room (1-6) ®
Library privileges for graduate students enrolled in graduate courses. (F,Sp,Su)

ART 4950 Directed Studies (1-9) ©
Principles of effective instruction, emphasizing a reflective methodology. Prerequisites: Graduate status. (F,Sp,Su)

ART 5500 Student Teaching Seminar (2)
Capstone seminar focused upon student teaching issues, professional development, and principles of effective instruction, emphasizing a reflective methodology. Prerequisites: Level 1 and Level 2 completion, and student teaching placement. (F,Sp)

ART 5630 Student Teaching in Secondary Schools (10)
Thirteen-week culminating practicum in which students assume full-time teaching responsibilities under direction of cooperating teachers in major and minor fields. Prerequisites: Level 1 and Level 2 completion, and student teaching placement. (F,Sp)

ART 6100 Graduate Drawing Studio (3-9) ®
Advanced individual drawing projects designed to aid in preparation for the thesis project. (F,Sp,Su)

ART 6200 Graduate Painting Studio (3-9) ®
Emphasizes individual attainment of personal conviction or direction in painting. Prerequisite: Graduate status. (F,Sp,Su)

ART 6250 Graduate Printmaking Studio (1-9) ®
Intensive individual production in advanced printmaking techniques. Prerequisite: Graduate status. (F,Sp,Su)

ART 6370 Graduate Illustration Studio (3-9) ®
(Advertising, Editorial, Fashion.) Techniques in advertising illustration meeting the needs of client and his or her audience. Prerequisite: Graduate status. (F,Sp,Su)

ART 6400 Graduate Graphic Design Studio (3-9) ®
Graphic design problems leading to understanding of major concepts in this area. Prerequisite: Graduate status. (F,Sp,Su)

ART 6640 Technology of Ceramic Art (3) ®
Selected topics in aesthetics and technology of ceramic art, including ceramic history, glaze chemistry and calculation, faying techniques, kiln design and construction, etc. Prerequisite: Graduate status. (F,Sp,Su)

ART 6650 Graduate Ceramic Studio (3-9) ®
Arranged to provide, time, equipment, and facilities for graduate students to pursue directed studies. Tutorial format with group critiques. Prerequisite: Graduate status. (F,Sp,Su)

ART 6660 Graduate Sculpture Studio (3-9) ®
Advanced individual problems in various media and technique. Prerequisite: Graduate status. (F,Sp,Su)

ART 6710 Graduate Greek and Roman Art (3)
Origin and development of the art and architecture of Crete, Mycenae, Greece, and the Roman world. Prerequisite: Graduate status. (Sp)

ART 6720 Graduate Renaissance Art (3)
Development of European art and architecture from the thirteenth to the sixteenth centuries. Prerequisite: Graduate status. (F)

ART 6730 Graduate Baroque and Rococo Art (3)
Development of art and architecture in Europe from the sixteenth to the eighteenth centuries. Prerequisite: Graduate status. (Sp)

ART 6740 Graduate Nineteenth Century Art (3)
Painting and sculpture from Neoclassicism to Symbolism. Prerequisites: ART 2720 or consent of instructor, graduate status. (F)

ART 6750 Graduate Twentieth Century Art (3)
History of painting, sculpture, and architecture from the post-impressionists to the present. Prerequisite: Graduate status. (Sp)

ART 6760 Graduate American Art (3)
History of painting, sculpture, and architecture from the post-impressionists to the present. Prerequisite: Graduate status. (F)

ART 6770 Graduate Gender Issues in Art (3)
Discussion of major issues and debates regarding gender in the visual arts. Topics include: revising the canon, representing gender, and theories of gender and spectatorship. Readings are discussed and applied to visual works of art.

ART 6790 Art History Seminar and Special Problems (1-6) ®
Prerequisite: Graduate status and consent of instructor. (F,Sp,Su)

ART 6800 Graduate Photography Studio (3-9) ®
Designed to cover several phases of photography, with emphasis on composing what we see in an artistic manner. Allows graduate students to further emphasize their thesis project area of study. Prerequisite: Graduate status. (F,Sp,Su)

ART 6900 Graduate Seminar (3) ®
Deals with general topic of professional practice, including art criticism and how contemporary work relates to current social issues. Prerequisite: Graduate status. (F,Sp)

ART 6910 Graduate Interdisciplinary Critique (1) ®
Focuses on current work of critique participants. Brings disciplinary analysis to specific problem. Prerequisite: Graduate status. (F,Sp)

ART 6920 Graduate Independent Projects in Art (1-9) ®
Advanced problems in emphasis, medium, and idiom of student’s choice. Student plans project and executes it through individual initiative and scheduled consultation with the instructor. Prerequisites: Consent of instructor, graduate status. (F,Sp,Su)

ART 6940 Graduate Internship/Coop (1-9) ®
Internship/cooperative education work experience in art. Designed to allow graduate students to receive more complex and professional workplace experience. Prerequisite: Graduate status. (F,Sp,Su)

ART 6970 Research and Thesis (3) ®
Prerequisite: Candidacy status. (F,Sp,Su)

ART 6990 Continuing Graduate Advisement (1-3) ®
(F,Sp,Su)

© Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

This course is also offered by online correspondence and/or CD through Continuing Education Time Enhanced Learning.

**Taught 2005-2006.
Aerospace Studies (AS)

See Department of Aerospace Studies, pages 123-124

AS 1010 Introduction to the Air Force Today (1)
AS 1020 Introduction to the Air Force Today (1)
Introduces the United States Air Force and Air Force Reserve Officer Training Corps. Air force mission and organization, officerhood and professionalism, military customs and courtesies, officer opportunities, group leadership problems, and communication skills. Leadership Laboratory is mandatory for cadets. (F) (Sp)

AS 1110 Leadership Laboratory I (1)
AS 1120 Leadership Laboratory I (1)
Air Force customs and courtesies, drill and ceremonies, military commands, environment of the Air Force officer, and officer opportunities. AS 1110 must be taken concurrently with AS 1010; AS 1120 must be taken concurrently with AS 1020. (F) (Sp)

AS 2010 The Evolution of U.S. Aerospace Power (1)
AS 2020 The Evolution of U.S. Aerospace Power (1)
Examines general aspects of air and space power through a historical perspective. Illustrates Air Force Core Values with historical examples and continues development of communications skills. Leadership Laboratory is mandatory for cadets. (F) (Sp)

AS 2110 Leadership Laboratory II (1)
AS 2120 Leadership Laboratory II (1)
Air Force customs and courtesies, drill and ceremonies, military commands, environment of the Air Force officer, and officer opportunities. AS 2110 must be taken concurrently with AS 2010; AS 2120 must be taken concurrently with AS 2020. (F) (Sp)

AS 3010 Air Force Leadership and Management (3)
AS 3020 Air Force Leadership and Management (3)
Presents advanced leadership and management skills. Cadets given opportunity to practice these leadership skills and management techniques in a supervised environment. Leadership Laboratory is mandatory for cadets. (F) (Sp)

AS 3060 Physical Fitness Training (2) ®
Early morning workout to build stamina. Organized to keep cadets in shape to pass the Physical Fitness Test (PFT), Team instructed. (F,Sp)

AS 3110 Leadership Laboratory III (1)
AS 3120 Leadership Laboratory III (1)
Advanced leadership experiences to include the planning and controlling of cadet corps activities, and the preparation and presentation of briefings and other oral and written communications. AS 3110 must be taken concurrently with AS 3010; AS 3120 must be taken concurrently with AS 3020. (F) (Sp)

AS 3400 Field Training (4 Weeks) (1-4)
Students in the four-year program participate in four weeks of Field Training. Major areas of study include junior officer training, career orientation, survival training, basic functions, Air Force environment, and physical training. (Su)

AS 3500 Field Training (5 Weeks) (1-5)
Students in the two-year program participate in five weeks of Field Training. Major areas of study include junior officer training, career orientation, survival training, basic functions, Air Force environment, and physical training. (Su)

AS 4010 National Security Affairs/Preparation for Active Duty (3)
AS 4020 National Security Affairs/Preparation for Active Duty (3)
Designed to give college seniors the foundation to understand military officer’s role in American society. Overviews complex social and political issues facing the military profession. Leadership Laboratory is mandatory for cadets. (F) (Sp)

AS 4110 Leadership Laboratory IV (1)
AS 4120 Leadership Laboratory IV (1)
Advanced leadership experiences to include the planning and controlling of cadet corps activities, and the preparation and presentation of briefings and other oral and written communications. AS 4110 must be taken concurrently with AS 4010; AS 4120 must be taken concurrently with AS 4020. (F) (Sp)

® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

Agricultural Systems Technology and Education (ASTE)

See Department of Agricultural Systems Technology and Education, pages 125-127

ASTE 1010 Introduction to Agricultural Systems Technology (3)
Introduction to problem solving related to the areas of agricultural power and machinery, soil and water conservation, structures and animal environments, electrical circuits, and emerging technologies. (F)

ASTE 1120 Forage and Harvest Equipment (3)
Fundamentals and principles in operations, adjustments, and maintenance of technologies utilized in agricultural forage and combine harvesting. (F)

ASTE 1130 Planting and Tillage Equipment (3)
Fundamentals and principles in operation, maintenance, and repair of planting and tillage equipment. Exploration of different systems and their applications. (Sp)

ASTE 1610 Agricultural Machinery Engines (6)
Fundamental principles and components utilized in the power production for agricultural machinery. Diesel engines, as power plants, will be overhauled using a systems approach. (F)

ASTE 1620 Agricultural Machinery Power Trains (6)
Fundamental principles and components utilized in agricultural machinery transmission of power through drive trains. A systems approach to overhauling these components will be developed. (Sp)

ASTE 1640 Agricultural Equipment and Parts Marketing and Communications (3)
Introduction to principles and operation of computer software systems related to marketing and management within the agricultural machinery business industry. Emphasis on business communication principles for effective transfer of information and problem resolution. (F)

ASTE 2200 Electricity in Agricultural Systems (3)
Fundamentals of electricity (AC) as used on farms and ranches. Residential and commercial agricultural applications of the National Electric code. Electrical supply and service, distribution, proper grounding, and installation of components. (Sp)

ASTE 2250 Occupational Experience in Agriculture (1-6)
Supervised occupational experiences for technical vocational preparation. (F,Sp)

ASTE 2380 Agribusiness Sales and Marketing (3)
Basic principles of agribusiness sales and marketing. After completing a series of self-assessments relating to sales, learning, and personality preferences, students learn to complete each major step of the sales process. (F)

ASTE 2710 Orientation to Agricultural Education (2) ®
Students examine the framework of agricultural education, with a special emphasis on the nature of the programs, career opportunities, and the qualifications and preparation requirements of future agricultural educators. Students will spend 25-30 hours observing instruction in secondary classrooms. (F)

ASTE 2900 BSS Humanity in the Food Web (3)
Provides broad overview of food systems in conjunction with detailed analysis of particular issues, such as different theories and supporting data on the domestication of plants and animals, the use of human labor, the development and operation of complex technologies, and the analysis of socioeconomic data on human population growth and well-being. (F,Sp)

ASTE 2930 Individualized Projects in Agricultural Mechanics (1-3) ®
Basic skill preparation for employment in agricultural industry. (F,Sp)

ASTE 3030 Metal Welding Processes and Technology in Agriculture (3)
Selection of ferrous and nonferrous welding techniques in agricultural applications. Welding, cold- and hot-working metal in agricultural construction and maintenance. (F)
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASTE 3040 QI</td>
<td>Fabrication Practices in Agricultural Buildings</td>
<td>(2)</td>
<td>Selection and use of agricultural building materials, including concrete and masonry, lumber, plywood, finishes, and fasteners. Application of hand and power tools and procedures in agricultural construction. (Sp)</td>
</tr>
<tr>
<td>ASTE 3050 C1</td>
<td>Technical and Professional Communication Principles in Agriculture</td>
<td>(3)</td>
<td>Technical communication principles and practices used in the agricultural industry. Emphasizes technical writing of reports and correspondence using electronic information retrieval and presentation. Prerequisite: ENGL 2010. (F,Sp)</td>
</tr>
<tr>
<td>ASTE 3080</td>
<td>Compact Power Units for Agricultural and Turfgrass Applications</td>
<td>(3)</td>
<td>Operation and application of agricultural and turfgrass equipment powered by internal combustion engines having less than 40 horsepower. (Sp)</td>
</tr>
<tr>
<td>ASTE 3090</td>
<td>Computer Applications in Agriculture</td>
<td>(3)</td>
<td>Overview of computer systems and software currently used in agriculture. Emphasizes development of term project using spreadsheets, word processing, file management, CAD, and computer ethics. Prerequisite: Satisfactory completion of University computer and information literacy exam. (F,Sp)</td>
</tr>
<tr>
<td>ASTE 3100</td>
<td>Leadership Applications in Agricultural Science, Management, and Development</td>
<td>(2)</td>
<td>Study of leadership styles and their applications in development of agricultural programs for youth and adults. Emphasizes leadership and communication principles for effective community resource management in rural environments. Experiences provided in leadership styles, program planning, and meeting organization. (Sp)</td>
</tr>
<tr>
<td>ASTE 3200</td>
<td>Irrigation Principles and Practices</td>
<td>(3)</td>
<td>Introduction to planning principles for irrigation systems and farm water resource development. Layout of system components and coverage of practices common to the Intermountain West. (Sp)</td>
</tr>
<tr>
<td>ASTE 3240 C1</td>
<td>Teaching in Laboratory Settings</td>
<td>(3)</td>
<td>Basic principles of teaching students in laboratory settings. Overview of major concepts, considerations, and practices used for developing and evaluating agriscience curricula. Prerequisite: ASTE 2710. (Sp)</td>
</tr>
<tr>
<td>ASTE 3300</td>
<td>Clinical Experience I in Agricultural Education</td>
<td>(1)</td>
<td>In-school clinical laboratory experience. Students involved in observing management and assisting in teaching. Designed to provide familiarity with agricultural education classroom. (Sp)</td>
</tr>
<tr>
<td>ASTE 3500</td>
<td>Teaching Apprenticeship in Agricultural Education</td>
<td>(2)</td>
<td>Each student serves as an apprentice to professional agricultural educator. Students complete competencies leading to early preparation for student teaching. (F,Sp,Su)</td>
</tr>
<tr>
<td>ASTE 3600 QI</td>
<td>Management of Agricultural Machinery Systems</td>
<td>(3)</td>
<td>Management principles for evaluation and selection of agricultural complements for performance, optimization, economics, environmental impact, and long-term sustainable agricultural practices. Prerequisite: MATH 1050 or STAT 1040. (Sp)</td>
</tr>
<tr>
<td>ASTE 3620</td>
<td>Managing the FFA and SAE Programs</td>
<td>(2)</td>
<td>Introduction to basic concepts, understandings, and practices needed to effectively advise an FFA chapter. Students learn appropriate philosophies and skills for operation of a comprehensive supervised agricultural experience program. (Sp,Su)</td>
</tr>
<tr>
<td>ASTE 3710</td>
<td>Agricultural Machinery Hydraulic Systems and Diagnosis</td>
<td>(3)</td>
<td>Fundamental principles and components overhaul of hydraulic systems as applied in agricultural machinery. Exploration of techniques for diagnosing malfunctions and related failures with a systems approach. (F)</td>
</tr>
<tr>
<td>ASTE 3720</td>
<td>Agricultural DC Electrical Systems and Diagnosis</td>
<td>(3)</td>
<td>Fundamental principles and components overhaul of DC electrical systems as applied in agricultural machinery. Exploration of techniques for diagnosing malfunctions and related failures with a systems approach. (F)</td>
</tr>
<tr>
<td>ASTE 3730</td>
<td>Agricultural Machinery Auxiliary Systems and Diagnosis</td>
<td>(3)</td>
<td>Application of theory, testing, diagnosis, and repairs of auxiliary systems, including air conditioning, fuel injection, analog, electronic monitoring, and GPS as utilized in agricultural equipment. Prerequisite: ASTE 3720 or approval of instructor. (Sp)</td>
</tr>
<tr>
<td>ASTE 3900</td>
<td>Special Problems in Agricultural Systems Technology and Education</td>
<td>(1-6)</td>
<td>Students conduct short-term investigation and/or literature analysis with critical review of contemporary issues in Agricultural Systems Technology. Formal contract with approved faculty. Activities culminate with a written report. (F,Sp,Su)</td>
</tr>
<tr>
<td>ASTE 4100</td>
<td>Agricultural Structures and Environment</td>
<td>(3)</td>
<td>Overview of agricultural structures and environmental considerations related to livestock, livestock waste management, and commodity storage. Planning, layout, construction materials, concrete masonry, ventilation, insulation, and energy. (Sp)</td>
</tr>
<tr>
<td>ASTE 4150 C1</td>
<td>Methods of Teaching Agriculture</td>
<td>(3)</td>
<td>Introduction to basic practices of classroom teaching and program planning. Through participation in discussions, activities, and assignments, students refine their abilities to develop programs, diagnose the learner, prepare the instruction, and guide student learning. Prerequisites: ASTE 2710, 3240. (F)</td>
</tr>
<tr>
<td>ASTE 4250</td>
<td>Occupational Experiences in Agriculture</td>
<td>(1-6)</td>
<td>Supervised occupational experience for technical and professional preparation in teacher education and/or agricultural business. (F,Sp,Su)</td>
</tr>
<tr>
<td>ASTE 4300</td>
<td>Clinical Experience II in Agricultural Education</td>
<td>(1)</td>
<td>Continued in-school observation of agricultural education teaching. Requires student participation in teaching, management, and program development in agricultural education. (F)</td>
</tr>
<tr>
<td>ASTE 4400</td>
<td>Advising Applied Technology Education Student Organizations</td>
<td>(1)</td>
<td>Principles and practices for advising applied technology student organizations in secondary education. Examination of leadership organizations supporting applied technology education. Emphasis on program planning, leadership development, and evaluation. (Sp,Su)</td>
</tr>
<tr>
<td>ASTE 4900</td>
<td>Senior Project Research and Creative Opportunity</td>
<td>(1-6)</td>
<td>Returning student teachers work to strengthen their weaknesses in areas such as scaled drawing, cost estimating, machine shop practices, construction, and small engines. (Sp)</td>
</tr>
<tr>
<td>ASTE 5100</td>
<td>Electrical Controls and Motors for Agri-Industrial Applications</td>
<td>(3)</td>
<td>Operation and application of electrical motors, electrical and electronic controls, and circuit and overload protection utilized in agricultural and industrial installations. (Sp)</td>
</tr>
<tr>
<td>ASTE 5200</td>
<td>Assessment in Applied Technology Education</td>
<td>(3)</td>
<td>Principles and practices in assessing performance and development of applied technology students. Emphasizes testing and evaluation techniques used in applied technology education. (Sp,Su)</td>
</tr>
<tr>
<td>ASTE 5260 C1</td>
<td>Environmental Impacts of Agricultural Systems</td>
<td>(3)</td>
<td>Investigation of relationship between agricultural practices and environmental quality, including control of agricultural nonpoint-source pollution. (F)</td>
</tr>
<tr>
<td>ASTE 5500</td>
<td>Agricultural Education Secondary Curriculum Seminar</td>
<td>(2)</td>
<td>Cooperative examination of considerations and processes for teaching secondary students. Reflection on the practice of teaching. Preparation for entry into the teaching profession. (Sp)</td>
</tr>
<tr>
<td>ASTE 5630</td>
<td>Agricultural Education Student Teaching in Secondary Schools</td>
<td>(10)</td>
<td>Students teach agriscience and technology courses in secondary and middle school settings under the guidance of clinical and Utah State University supervisors. (Sp)</td>
</tr>
</tbody>
</table>
| ASTE 6000    | Methods of Equipment Testing, Diagnosis, and Repair       | (3)     | Investigation and demonstration of methods and procedures for testing, troubleshoot-
ing, and diagnosis of tractors, power units, and all types of agricultural equipment.

**ASTE 6070** Program and Curriculum Development in Applied Technology Education (3)
Program planning for locally applied curriculum design to meet student interests and community needs for applied technology teachers. (F,Sp,Su)

**ASTE 6100** Electrical Controls and Motors for Agri-Industrial Applications (3)
Operation and application of electrical motors, electrical and electronic controls, and circuit and overload protection utilized in agricultural and industrial installations. (Sp)

**ASTE 6110** Applied Technology Education Program Planning and Evaluation (3)
Program planning and evaluation. Study of strategies used in applied technology. Demonstration of manpower surveys and job analysis for curriculum development. (F)

**ASTE 6130** Electrical and Hydraulic Component Testing, Diagnosis, and Repair (3)
Involves supervision and demonstration of procedures for testing, diagnosis, and repair of all types of electrical and hydraulic components on modern agricultural equipment. (F)

**ASTE 6140** Agricultural Development and Evaluation (3)
Principles and strategies for developing, implementing, and evaluating agricultural technology and educational programs for U.S. and international organizations. (Sp)

**ASTE 6170** Supervision and Administration of International Extension Programs (3)
Investigation and analysis of theories and practices of supervision and administration as applied to international extension-education programs and rural development/agricultural extension operations. (F)

**ASTE 6240** Strategies for Teaching Adults (3)
Features contemporary strategies and guided practice for teaching adults in group and individualized learning settings. (F,Sp,Su)

**ASTE 6250** Special Problems in Agricultural Systems Technology (1-5) ®
A consideration of needs and special types of service in FFA, young farmers, and adult programs for applied technology teachers. (F,Sp,Su)

**ASTE 6260** Environmental Impacts of Agricultural Systems (3)
Investigation of relationship between agricultural practices and environmental quality, including control of agricultural nonpoint-source pollution. (F)

**ASTE 6300** Foundations of Adult Education and Program Evaluation (3)
Addresses the context and providers of adult education. In addition, adult learning theories and participation models are examined. (F)

**ASTE 6400** Food, Land and People Workshop (0.5-3) ®
Designed for practicing K-12 teachers. Offers in-service development for infusing agriculture and the concepts of Food, Land and People into existing curriculum standards and objectives. Presentation of Agriculture in the Classroom instructional units, as well as hands-on methods and materials. (F,Sp,Su)

**ASTE 6510** Principles and Practices of Extension Education (3)
History, philosophy, and organizational structure of U.S. and international extension organizations, including programming models, teaching strategies, and accountability. (F)

**ASTE 6600** Analysis of Machinery Management and Decision Making Processes (3)
Involves the record keeping and analysis procedures for profitable decision making and machinery management related to modern production agriculture practices. (Sp)

**ASTE 6700** Research Methods in Agricultural Systems (3)
Introduction to research techniques used in agricultural systems. Includes research design, data gathering, and statistical analysis and interpretation. (Sp)

**ASTE 6750** Agricultural Safety and Health: Issues and Decisions (3)
Review of agricultural safety and health issues. Public and private concerns addressed through problem identification, data gathering, resolution, and evaluation. (Sp)

**ASTE 6970** Research and Thesis (1-9) ®
(F,Sp,Su)

**ASTE 6990** Continuing Graduate Advisement (1-3) ®
(F,Sp,Su)

**ASTE 7000** Principles and Practices of Community College Education (3)
Examines the American two-year college, including historical and philosophical development, curricula, students and the learning process, faculty and instruction, administration and governance, support, and control. Focuses upon principles, practices, and problems of community colleges in America. (Su)

**ASTE 7400** Community and Interagency Partnerships (3)
Explores relationship between education and the community, with special emphasis on community needs and interagency relationships needed for the development of a total community education program. Further understanding of leadership and agency, through exploring and examining contemporary and perennial issues from multiple perspectives in a diverse higher-educational context. (Su)

**ASTE 7500** Diffusion of Innovations (3)
Explores processes by which professional change agents influence the introduction, adoption, and diffusion of technological change. Course content is applicable to persons who work closely with people in formal and informal educational settings. (Su)

1Parenthetical numbers preceded by d indicate a dual listing.

® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

### Aquatic, Watershed, and Earth Resources (AWER)

See Department of Aquatic, Watershed, and Earth Resources, pages 134-136

**AWER 1020** Aquatic, Watershed, and Earth Resources Professional Orientation (1)
Introduction and orientation to natural resource/environmental disciplines and related professional careers for Aquatic, Watershed, and Earth Resources majors. Discussion of education, curricula, faculty, professional societies, and employment opportunities. (F,Sp,Su)

**AWER 1200** BLS Biodiversity: Its Conservation and Future (3)
Today, species extinctions are occurring at an unprecedented rate. People in developed countries are concerned with this loss. Solving this problem requires knowledge of what determines biodiversity, how it is being threatened, and how its loss can be countered. (F)

**AWER 2250** Introductory Internship/Co-op (1-3) ®
Introductory-level educational experience in internship/cooperative education position approved by department. Prerequisite: Permission of department. (F,Sp,Su)

**AWER 3000** DSC Oceanography (3)
Examines fundamental interrelationships between physical environment of the oceans and the life forms they support. Suitable for nonbiologists. (Sp)

**AWER 3100** DSC Fish Diversity and Conservation (3)
C1
Systematics, physiology, ecology, evolution, and conservation of major groups of marine and freshwater fishes. Stresses functional morphological, physiological ecology, and community interactions explaining fish abundance and distribution. Prerequisite: BIOL 1010 or 1210 or 1220. (F)
AWER 3110  Fish Diversity Laboratory  (1)
Focuses on field collection, identification, and habitat relationships of freshwater fishes in North America. Prerequisite: AWER 3100 (may be taken concurrently). (F)

AWER 3600  Geomorphology  (4)
Geomorphic processes, origin of landforms and surficial deposits. Emphasizes fluvial and hillslope landscape elements, and surficial geologic mapping. Three one-hour lectures and one three-hour lab per week. Prerequisite: GEOL 1100 or 1150 or GEOG 1130. Also taught as GEOL 3600. (F)

AWER 3700  Fundamentals of Watershed Science  (3)
Study of water movement, hillslope processes, and nutrient movement in catchments, and its relevance to the properties, land use, and management of watersheds as natural resource units. Prerequisite: SOIL 3000 or permission of instructor. (Sp)

AWER 3820  DSC  Climate Change  (3)
QI
Emphasizes physical basis of climate (climate dynamics), as well as the mechanisms and processes for its fluctuations on sub-seasonal to interannual time scales (climate variations) and on regional to hemispheric/global time scales. Prerequisite: BMET 2000 or GEOG 1130. Also taught as BMET 3820. (Sp)

AWER 3900  Spatial Analysis  (3)
Analysis of geographic data, including spatial economic theory, spatial quantitative methods, and spatial distributions. Prerequisite: STAT 2000. (Sp)

AWER 4250  Advanced Internship/Coo-op  (1-9) ®
Internship/cooperative education work experience; increased complexity to help student gain a more professional level of experience. Prerequisite: Permission of department. (F,Sp,Su)

AWER 4490  Small Watershed Hydrology  (4)***
(d5490)
Detailed exploration of concepts of hydrologic processes in small, wildland watersheds. Concentrates on recent research findings concerning key hydrological processes. Particular attention paid to study of partitioning of water in the hydrologic cycle, sources for runoff generation, snow and snowmelt, and erosion. Features process modeling and parameter estimation techniques as related to wildland systems. Prerequisites: MATH 1210, AWER 3700. (F)

AWER 4500  Freshwater Ecology  (3)
Ecosystem analysis of physical, chemical, and biological interactions in lakes and streams. Application of these concepts for managing aquatic system. Prerequisite: CHEM 1210. (Sp)

AWER 4510  Aquatic Ecology Practicum  (3)
Integration of limnological theory and methods of conducting field and laboratory analyses of physical, chemical, and biological parameters. Students will design and conduct their own research project within the framework of a general water quality or fishery issue addressed by the class. Development of analytical, statistical, and writing skills. Field trips required. Prerequisites: AWER 4500; STAT 3000 (may be taken concurrently). (F)

AWER 4530  Water Quality and Pollution  (3)
(d6530)
Reviews biological and social problems caused by point and nonpoint source water pollution; toxicology; abiotic and biotic water quality parameters; and use criteria of the Clean Water Act. Graduate-level class will require additional readings of the peer-reviewed literature and an additional class meeting to have in-depth discussions of those readings. Each graduate student will be responsible for making a presentation at the beginning of class, and leading the discussion. (Sp)

AWER 4650  Principles in Fishery Management  (3)
(d6650)
Emphasizes management of fish populations within context of community and ecosystem dynamics. Stresses use of simulation models to assess effects of growth, recruitment, and mortality on age-structured populations. (Sp)

AWER 4750  Fundamentals of Remote Sensing  (3)
(d6740)
Develops the scientific principles behind remote sensing. Examines the basic physics of electromagnetic radiation and the interactions of radiation with the surface and the atmosphere. Prerequisites: MATH 1060, 1210; PHYX 2210. (F)

AWER 4930  Geographic Information Systems  (4)
(d6920)
Examines structure and operation of Geographic Information Systems (GIS). Explores design, theory, and implementation of GIS software, digitizing, fundamentals of vector and raster GIS processing, georeferencing, map accuracy, and site location. To receive graduate-level credit, students must complete a more rigorous final project directed toward their thesis or dissertation. (F)

AWER 4950  Special Topics  (1-3) ®
Individual study and research upon selected aquatic, watershed, and earth resources problems. (F,Sp,Su)

AWER 4960  Directed Readings  (1-3) ®
Provides one-on-one interaction between student and instructor. Prerequisite: Permission of department. (F,Sp,Su)

AWER 4970  Undergraduate Research  (1-3) ®
Individual or team research. Prerequisite: Permission of department. (F,Sp,Su)

AWER 4980  Undergraduate Seminar  (1)
Intended to bring upperclassmen up-to-date on aquatic, watershed, and earth resources topics. (F)

AWER 5130  Terrestrial Ecosystem Modeling  (3)
(d6130)
Introduces concepts of terrestrial ecosystem cycles, using computer modeling techniques. Includes discussions of modeling concepts, as well as in-class student projects. Prerequisites: MATH 1050 and NR/BIOL 2220; or permission of instructor. (Sp)

AWER 5150  Fluvial Geomorphology  (3)
(d6150)
Focuses on physical processes in streams that control their shape, plan form, slope, bed material, and distribution of channel bars. Emphasizes field analysis of these topics, and application of geomorphology to aquatic ecology and environmental restoration. Prerequisite: GEOL/AWER 3600. Also taught as GEOL 5150/6150. (F)

AWER 5170  Fluvial Geomorphology Lab  (2)
(d6170)
Field analysis focuses on physical processes in streams which control their shape, plan form, slope, bed material, and distribution of channel bars. Application of geomorphology to aquatic ecology and environmental restoration. Prerequisite: GEOL/AWER 3600. Also taught as GEOL 5170/6170. (F)

AWER 5200  Fish Habitat Relationships in Managed Forests  (3)*
Examines biological and social factors influencing aquatic ecosystems and fish habitats within the context of forest management. Analyzes ecological relationships of fish habitats within forest ecosystem, and how these are influenced by forest management practices. Provides examples of forest habitat issues in major regions of North America, illustrating that both biological and social factors must be considered in developing management strategies and programs. (F)

AWER 5250  Remote Sensing of Land Surfaces  (4)
(d6250)
Basic principles of radiation and remote sensing. Techniques for ground-based measurements of reflected and emitted radiation, as well as ancillary data collection to support airborne and satellite remote sensing studies in agriculture, geography, and hydrology. Prerequisites: MATH 1100 or 1210; and PHYX 2110 or 2210. Also taught as BIE 5250/6250 and BMET 5250/6250. (Sp)

AWER 5330  Large River Management  (3)
(d6330)
Focuses on constituencies participating in modern management of large river basins, including water developers, irrigators, municipalities, power consumers, recreationists, environmentalists, and scientists. Primary examples drawn from Colorado, Columbia, Rio Grande, and Missouri river basins. (F)
AWER 5490 Small Watershed Hydrology (4)***
(D4490)
Detailed exploration of concepts of hydrologic processes in small, wildland watersheds. Concentrates on recent research findings concerning examining key hydrological processes. Particular attention paid to study of partitioning of water in the hydrologic cycle, sources for runoff generation, snow and snowmelt, and erosion. Features process modeling and parameter estimation techniques as related to wildland systems. Additional oral and written assignments required for graduate students. Prerequisites: MATH 1210, AWER 3700. (F)

AWER 5550 Freshwater Invertebrates (3)
Ecology, collection, and systematics of freshwater aquatic invertebrates. Focuses on insects, but also covers crustaceans, molluscs, and annelids. Several weekend field trips and a collection are required. Prerequisite: One year of general biology or zoology, or permission of instructor. Also taught as BIOL 5550. (Sp)

AWER 5600 Surface Hydrologic Field Methods (3)*
(D6600)
Hydrologic concepts and terminology taught through collection, analysis, and interpretation of hydrologic data. Emphasizes principles and practice of several hydrologic measurements and water sampling in natural and manmade environments. Prerequisite: SOIL 3000 or instructor’s permission. Also taught as SOIL 5600/6600. (Sp)

AWER 5640 Riparian Ecology and Management (3)
(D7640)
Explores structure and function of riparian ecosystems and management options for maintaining sustainable ecological function. Prerequisite: NR/BIOL 2220, AWER 3700. (Sp)

AWER 5660 Watershed and Stream Restoration (2)
Overview of the current theory and practice of watersheds and streams. Emphasizes field visits with restoration projects and specialists. Prerequisites: AWER/FRWS 5490/4490, AWER/GEOL 5150, FRWS 5610 (or equivalent). (Sp)

AWER 5670 Watersheds and Stream Restoration Practicum (2)
Capstone experience. Development of a restoration plan for a site, involving site planning and design. (Sp)

AWER 5680 Paleoclimatology (3)*
(D6680)
Covers climate through the past four billion years of geologic time. Explores driving forces behind climate changes. Examines data and methods used in paleoclimatic research. Includes discussion of literature and stresses local paleoclimatic records. Three lectures per week, along with field trips. Prerequisite: GEOL/AWER 3600 or permission of instructor. Also taught as GEOL 5680/6680 and BMET 5680/6680. (Sp)

AWER 5760 Remote Sensing: Modeling and Analysis (3)
(D6760)
Advanced techniques in the analysis of the earth’s surface using remotely-sensed imagery and data in a digital format. Projects employ and/or develop research models. (Sp)

AWER 5930 Geographic Information Analysis (4)
(D6930)
Techniques of geographic information systems, data structures, data input and output, and data manipulation and analysis. Prerequisites: STAT 2000 or higher; AWER 4930 or ENVS 3500, or instructor’s permission. (Sp)

AWER 6100 Aquatic Production and Fish Ecology (3)*
(D7100)
Reviews current literature on bacterial, algal, invertebrate, and fish production in lakes, rivers, and the sea. Analyzes physiological, behavioral, population, and community concepts of fish interactions with their environment. Prerequisite: AWER 4500 or equivalent, or instructor’s permission. (Sp)

AWER 6120 Aquatic Production Biology (2)**
(D7120)
Review of current literature on bacterial, algal, invertebrate, and fish production in lakes, rivers, and the sea. Particular emphasis is placed on whole-ecosystem productivity studies. (Sp)

AWER 6130 Terrestrial Ecosystem Modeling (3)
(d5130)
Introduces concepts of terrestrial ecosystem cycles, using computer modeling techniques. Includes discussions of modeling concepts, as well as in-class student projects. Prerequisites: MATH 1050 and NR/BIOL 2220; or permission of instructor. (Sp)

AWER 6150 Fluvial Geomorphology (3)
(d5150)
Focuses on physical processes in streams that control their shape, plan form, slope, bed material, and distribution of channel bars. Emphasizes field analysis of these topics, and application of geomorphology to aquatic ecology and environmental restoration. Prerequisite: GEOL/AWER 3600. Also taught as GEOL 6150/5150. (F)

AWER 6160 Hillslope and Landscape Geomorphology (3)**
Includes basics of hillslope weathering, transport, and hydrologic processes. Surveys classic and recent literature on hillslope-scale and landscape-scale geomorphic research. Three lectures and several Saturday field trips. Prerequisite: GEOL/AWER 3600. Also taught as GEOL 6160. (Sp)

AWER 6170 Fluvial Geomorphology Lab (2)
(d5170)
Field analysis focuses on physical processes in streams which control their shape, plan form, slope, bed material, and distribution of channel bars. Application of geomorphology to aquatic ecology and environmental restoration. Prerequisite: GEOL/AWER 3600. Also taught as GEOL 6170/5170. (F)

AWER 6200 Watershed Analysis (2)**
Explores watershed analysis, which is a procedure used to characterize the human, aquatic, riparian, and upland features, conditions, processes, and interactions within a watershed. Watershed analysis includes ecosystem analysis at the watershed level, providing a systematic way to understand and organize system information for the purpose of understanding the consequences of management actions prior to implementation. (Sp)

AWER 6230 Fish Ecology (2)**
(d7230)
Reviews current literature on physiological, behavioral, population, and the community ecology of fishes. Particular emphasis placed on current literature relevant to management of sport and endangered freshwater species. Prerequisite: AWER 4500 or equivalent, or instructor’s permission. (Sp)

AWER 6240 Graduate Internship/Co-op (1-9) ®
Graduate-level educational experience in internship/cooperative education position approved by department. (F,Sp,Su)

AWER 6250 Remote Sensing of Land Surfaces (4)
(d5250)
Basic principles of radiation and remote sensing. Techniques for ground-based measurements of reflected and emitted radiation, as well as ancillary data collection to support airborne and satellite remote sensing studies in agriculture, geography, and hydrology. Prerequisites: MATH 1100 or 1210; and PHYX 2110 or 2210. Also taught as BIE 5250/6250 and BMET 5250/6250. (Sp)

AWER 6330 Large River Management (3)
(d5330)
Focuses on the scientific basis of river management and the constituencies participating in modern management of large rivers, including water developers, irrigators, municipalities, power consumers, recreationists, environmentalists, and scientists. Primary examples drawn from Colorado, Columbia, Rio Grande, and Missouri river basins. (F)

AWER 6520 Applied Hydraulics (3)**
Basic fluid mechanics applied to wildland watershed systems and directed at nonengineering students. Explores nature of fluid state, fluid motion, and steady uniform and varied flow in open channels, under both subcritical and supercritical conditions. Surveys concepts of boundary layers, turbulence, convection, dispersal, and wave formation in unsteady flows. Emphasizes problem formulation and solving. Prerequisites: AWER 5490/4490; MATH 2280 (recommended). Also taught as CEE 6520. (Sp)
### Course Descriptions

**AWER 6530 Water Quality and Pollution (3)**

Reviews biological and social problems caused by point and nonpoint source water pollution; toxicoology; abiotic and biotic water quality parameters; and use criteria of the Clean Water Act. Graduate-level class will require additional readings of the peer-reviewed literature and an additional class meeting to have in-depth discussions of those readings. Each graduate student will be responsible for making a presentation at the beginning of class, and leading the discussion. (Sp)

**AWER 6550 Assessment of Abundance and Related Parameters for Biological Populations (3)**

Students learn to estimate population abundance and associated error bounds using mark-recapture, area-swept, declining catch, line-transect, and other techniques. Emphasizes sampling design considerations to match objectives of an assessment to appropriate/feasible level of accuracy and precision. (Sp)

**AWER 6600 Surface Hydrologic Field Methods (3)**

Hydrologic concepts and terminology taught through collection, analysis, and interpretation of hydrologic data. Emphasizes principles and practice of several hydrologic measurements and water sampling in natural and manmade environments. Prerequisite: SOIL 3000 or instructor’s permission. Also taught as SOIL 6600/5600. (Sp)

**AWER 6650 Principles in Fishery Management (3)**

Emphasizes management of fish populations within context of community and ecosystem dynamics. Stresses use of simulation models to assess effects of growth, recruitment, and mortality on age-structured populations. (Sp)

**AWER 6680 Paleoclimatology (3)**

Covers climate through the past four billion years of geologic time. Explores driving forces behind climate changes. Examines data and methods used in paleoclimatic research. Includes discussion of literature and stresses paleoclimate records. Three lectures per week, along with field trips. Prerequisite: GEOL/AWER 3600 or permission of instructor. Also taught as GEOL 6680/5680 and BMET 6680/5680. (Sp)

**AWER 6740 Fundamentals of Remote Sensing (3)**

Develops the scientific principles behind remote sensing. Examines the basic physics of electromagnetic radiation and the interactions of radiation with the surface and the atmosphere. Prerequisites: MATH 1060, 1210; PHYX 2210. (F)

**AWER 6760 Remote Sensing: Modeling and Analysis (3)**

Advanced techniques in the analysis of the earth’s surface using remotely-sensed imagery and data in a digital format. Projects employ and/or develop research models. (Sp)

**AWER 6800 Aquatic, Watershed, and Earth Resources Departmental Seminar (1)**

Exposes students to new developments in research and management in the fields of aquatic, watershed, and earth resources. Features participation by students, faculty, and guest lecturers. Students should register for only one semester per year, but attend all year. (F,Sp)

**AWER 6820 Stream Ecology (3)**

Explores structure, function, and dynamics of flowing water ecosystems. Prerequisites: NR/BIOL 2220 and AWER 4500. (F)

**AWER 6870 Ecology Seminar (1)**

The Ecology Center schedules regular seminars throughout the school year with ecological scientists from other institutions participating. Ecology majors are required to attend a minimum of 10 such lectures. Students should register for fall semester, but attend through spring semester. Also taught as BIOL 6870, ENVS 6870, and FRWS 6870. (F,Sp)

**AWER 6900 Graduate Special Topics (1-6)**

Offers credit for special assignments, reading, and seminars beyond regularly scheduled courses. (F,Sp,Su)

**AWER 6910 Directed Study (1-4)**

Offers credit for special assignments, reading, and seminars beyond regularly scheduled courses. (F,Sp,Su)

**AWER 6920 Geographic Information Systems (4)**

Examines structure and operation of Geographic Information Systems (GIS). Explores design, theory, and implementation of GIS software, digitizing, fundamentals of vector and raster GIS processing, georeferencing, map accuracy, and site location. To receive graduate-level credit, students must complete a more rigorous final project directed toward their thesis or dissertation. (F)

**AWER 6930 Geographic Information Analysis (4)**

Techniques of geographic information systems, data structures, data input and output, and data manipulation and analysis. Prerequisites: STAT 2000; AWER 4930 or NR 3600 or instructor’s permission. (Sp)

**AWER 6940 Snow Hydrology (3)**

Focuses on snow science, including atmospheric formation, precipitation, distribution on the landscape, metamorphism prior to melt, and snow pack melt dynamics. Also covers related issues, such as snow melt modeling, remote sensing, water supply, and biogeochemical cycling. Prerequisites: AWER 3700 or 4600 or SOIL 4600 or CEE 3430, or permission of instructor. Also taught as CEE 6940. (Sp)

**AWER 6960 Graduate General Ecology (5)**

General concepts, history, and issues in all major areas of the science of ecology including: environmental biophysics; and physiological, behavioral, evolutionary, community, ecosystem, and applied ecology in both terrestrial and aquatic environments. Also taught as BIOL 6960, ENVS 6960, and FRWS 6960. (F)

**AWER 6970 Thesis Research (1-12)**

Offers credit for field or laboratory research at master’s level. (F,Sp,Su)

**AWER 6990 Continuing Graduate Advisement (1-9)**

Offers credit for students currently enrolled in a master’s program, who are not currently taking classes. Students may be conducting research or waiting for final approval from School of Graduate Studies. (F,Sp,Su)

**AWER 7100 Aquatic Production and Fish Ecology (3)**

Reviews current literature on bacterial, algal, invertebrate, and fish production in lakes, rivers, and the sea. Analyzes physiological, behavioral, population, and community concepts of fish interactions with their environment. Prerequisite: AWER 4500 or equivalent, or instructor’s permission. (Sp)

**AWER 7120 Aquatic Production Biology (2)**

Reviews current literature on bacterial, algal, invertebrate, and fish production in lakes, rivers, and the sea. Particular emphasis is placed on whole-ecosystem productivity studies. (Sp)

**AWER 7230 Fish Ecology (2)**

Reviews current literature on physiological, behavioral, population, and the community ecology of fishes. Particular emphasis placed on current literature relevant to management of sport and endangered freshwater species. Prerequisite: AWER 4500 or equivalent, or instructor’s permission. (Sp)

**AWER 7640 Riparian Ecology and Management (3)**

Explores structure and function of riparian ecosystems and management options for maintaining sustainable ecological function. Prerequisite: NR/BIOL 2220, AWER 3700. (Sp)

**AWER 7800 Aquatic, Watershed, and Earth Resources Departmental Seminar (1)**

Exposes students to new developments in research and management in the fields of...
aquatic, watershed, and earth resources. Features participation by students, faculty, and guest lecturers. Students should register for only one semester per year, but attend all year. (F,Sp)

AWER 7820 Stream Ecology (3)
(d6820)
Explores structure, function, and dynamics of flowing water ecosystems. Prerequisites: NR/Biol 2220 and AWER 4500. (F)

AWER 7900 Graduate Special Topics (1-6) Repeatable
Offers credit for special assignments, reading, and seminars beyond regularly scheduled courses. (F,Sp,Su)

AWER 7910 Directed Study (1-6) Repeatable
Offers credit for special assignments, reading, and seminars beyond regularly scheduled courses. (F,Sp,Su)

AWER 7970 Dissertation Research (1-12) Repeatable
Offers credit for field or laboratory research at doctoral level. (F,Sp,Su)

AWER 7990 Continuing Graduate Advisement (1-9) Repeatable
Offers credit for students currently enrolled in a doctoral program, who are not currently taking classes. Students may be conducting research or waiting for final approval from School of Graduate Studies. (F,Sp,Su)

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Business Administration (BA)

See Department of Business Administration, pages 151-152

BA 1350 Investigation of the role of business in contemporary society, including an introduction to the general problems of business operation. (F)

BA 3080 Operations Research (3) Repeatable
Quantitative methods for resource allocation: linear programming, queuing theory, simulation, project management, etc. Prerequisites: STAT 2300 or 3000. (F,Sp)

BA 3400 QI Corporate Finance (3) Repeatable
How corporations raise and manage capital. Study of modern financial principles, methods, policies, and institutions. Corporate organization, creation, and reorganization. Prerequisites: MATH 1050; ACCT 2010; choose one statistics course from: STAT 1040, 2300, 3000, or PSY 2800. (F,Sp)

BA 3460 Fundamentals of Personal Investing (3) Repeatable
Examination of investment vehicles available to personal investor. Principal emphasis on corporate and government securities. Credit cannot be used toward requirements for finance major.

BA 3500 Fundamentals of Marketing (3) Repeatable
Overview of marketing function, emphasizing concepts and terminology. Includes basic marketing activities of product management, pricing, distribution, promotion, marketing research, and consumer behavior. (F,Sp,Su)

BA 3700 Operations Management (3) Repeatable
Covers the concepts and tools related to managing a business operation. Topics include demand forecasting, operations strategy and resource planning, process layout, lean systems, inventory and quality, and project management. Prerequisite: STAT 2300 or 3000. (F,Sp,Su)

BA 4050 International Retailing (3)
(d6050)
Issues related to retailing in international markets, such as motivations, cultural influence on consumer behavior, and entry strategies.

BA 4070 CI Retail Management (3)
Basic issues related to retail management, such as merchandising, location, promotion, store management, and retail image.

BA 4240 Merchandise Planning and Control (3)
Issues related to pricing, budgeting, open-to-buy, and planning inventory.

BA 4300 International Finance (3)
Overview of international financial management, including international financial markets, exchange rate behavior, and financing international trade. (F,Sp)

BA 4410 Financial Institutions (3)
Role of domestic and international financial institutions in supplying services to consumers, businesses, and government. Prerequisite: BA 3400. (F,Sp)

BA 4420 Insurance (3)
Studied from the standpoint of insurance services consumers, course explores types of life, property, and casualty insurance contracts; nature and uses of life and property insurance; and the organization, management, and government supervision of insurance companies. Prerequisite: BA 3400. (F)

BA 4430 Real Estate Finance (3)
Covers theory, principles, and techniques of real estate investment, emphasizing present value and cash-flow approaches to real estate investment decisions. Prerequisite: BA 3400. (Sp)

BA 4450 Financial Policy (3)
Analyzes working capital management, capital budgeting, capital management, and other short-term and long-term financial decisions. Prerequisite: BA 3400. (F,Sp)

BA 4460 Investments (3)
Provides an understanding of security analysis and portfolio management. Market operations; risk and return, stock, bond, and option analysis; and portfolio theory and creation. Prerequisite: BA 3400. (F,Sp)

BA 4510 Buyer Behavior (3)
Marketing analysis of the decision processes of individuals, households, businesses, and not-for-profit institutions. Builds on concepts from psychology, sociology, anthropology, and economics. Prerequisites: BA 3506; PSY 1010 or SOC 1010 or USU 1340. (F,Sp)

BA 4530 Marketing Research (3)
Management of marketing research function. Basic vs. decisional research, survey research, cost vs. value of information, research design, experimentation, and analysis techniques. Prerequisites: BA 3500; choose one of the following statistics courses: STAT 1040, 2300, 3000, or PSY 2800. (F,Sp)

BA 4540 Marketing Institutions (3)
Examination of strategic decision-making by institutions involved in the marketing channel. Primary emphasis on retail institutions. Explores types of marketing intermediaries, vertical integration, channel member power and conflict, and international channel management issues. Prerequisite: BA 3500. (F,Sp)

BA 4550 Promotion Management (3)
Examines role of promotion concepts in development of a communication strategy. Based on an introduction to the nature of communications, course covers advertising, personal selling, and sales promotion, emphasizing the competitive and strategic value of communications in both the marketplace and society. Prerequisite: BA 3500. (F,Sp)

BA 4590 Global Marketing Strategy (3)
Analytical approach to strategic marketing problems facing the firm competing in global markets. Emphasizes key analytical and decision-making frameworks concerning the global marketing environment and the marketing mix and their impact on the firm’s performance. Prerequisites: BA 4540, 4550. (F,Sp)

Comments:
1Parenthetical numbers preceded by * indicate a dual listing.
**Taught 2005-2006.
***This course is taught alternating years. Check with department for information about when course will be taught.
BA 4720 Production Planning and Control (3)
Examines concepts and tools used in the planning and control of production activity and material flow. Topics include production scheduling, capacity analysis, and push versus pull production. Prerequisite: BA 3700. (F)

BA 4750 Production Simulation (3)
Computer simulation of production environment, including scheduling, routing, labor capacity, inventory, and delivery. Emphasizes just-in-time concepts. Prerequisite: BA 3700. (Sp)

BA 4790 Supply Chain Management (3)
Analysis of the concept of supply chains and how managing them supports operations strategy and organizational competitiveness. Topics include supply management, supply chain alliances, distribution planning, and logistics systems design. Prerequisite: BA 4720. (Sp)

BA 4800 Independent Research and Reading (1-3) ®
BA 4900H Senior Honors Thesis/Project (3)
Creative project that will then be written up, and presented, as a Senior Thesis as required for an Honors Plan. (Sp)

BA 5730 Process Analysis and Improvement (3)
Application of quality management concepts to business processes. Students learn a variety of methods for documenting, analyzing, and improving a process. Topics include the DMAIC Cycle, process mapping, capacity analysis, root cause analysis, mistake proofing, and creative problem solving. Prerequisites: BA 3700; STAT 2300 or 3000. (F)

BA 6050 International Retailing (3)
Issues related to retailing in international markets, such as motivations, cultural influence on consumer behavior, and entry strategies.

BA 6070 Retail Management (3)
Basic issues related to retail management, such as merchandising, location, promotion, store management, and retail image.

BA 6180 Intrasession MBA Workshop (0.5-1) ®
Intensive workshops designed to enhance the MBA experience.

BA 6350 Managerial Economics (3)
Application of concepts and theories, based on managerial economics, to business problems. Addresses cost theory, pricing, market structures, and forecasting.

BA 6420 Financial Problems (3)
Corporate finance case course, dealing with problems in working capital management, capital budgeting, cost of capital problems, and corporate restructuring. (F,Su)

BA 6440 Financial Decision Making (3)
Presentation of financial modelling techniques impacting firm decisions. (Sp)

BA 6520 Marketing Strategy (3)
Advanced case approach to current marketing management problems. Emphasizes concepts, research, techniques, decision making, and marketing strategy development. (Sp,Su)

BA 6540 Special Topics in Marketing (3)
Selected topics in marketing pursued in depth. Topics and instructors vary semester to semester. Current topics include: Marketing Communications and Supplemental Aspects of Electronic Commerce, The Changing Environment of Marketing Institutions, and Buyer Behavior. Prerequisite: BA 6520. (Sp)

BA 6560 Market Analysis and Decision Making (3)
Develops skills necessary to plan and implement an effective marketing strategy. Focuses on role of marketing information in managerial decision making. Uses marketing cases and/or simulation games throughout the course. (F,Sp)

BA 6720 Operations Management (3)
Study of basic process functions in managing a production or service organization, such as inventory control, production control, procurement, quality control, production planning, forecasting, etc. (F,Su)

BA 6740 Decision Making in Operations Management (3)
Selected topics in operations management pursued in depth. Topics and instructors vary from semester to semester. Prerequisite: BA 6720. (Sp)

BA 6860 Business Research Methods (3)
Explores the fundamentals of qualitative and quantitative data collection and analysis. Students design and implement small, integrated research activities, then use the results to make business strategy recommendations. (F,Sp)

BA 6900 Independent Research and Reading (1-3) ®
BA 6960 Professional Paper (3)
A paper of professional quality prepared by each student. Designed to demonstrate the ability to complete a major business-related project and to effectively present the results. (F,Sp,Su)

BA 6970 Thesis (1-6) ®
BA 6990 Continuing Graduate Advisement (1-3) ®

1Admission to this course is restricted to students who have been admitted to a USU major with a career total 2.67 or higher GPA and who have completed at least 40 credits.
2Parenthetical numbers preceded by d indicate a dual listing.
® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.
© This course is also offered by online correspondence and/or CD through Continuing Education Time Enhanced Learning.

Biological and Irrigation Engineering (BIE)

See Department of Biological and Irrigation Engineering, pages 142-145

BIE 1880 Engineering Quantification of Biological Processes (3)
Introduction to engineering practice of biological modeling and quantification of biological processes. Introduction to transport of heat and mass; bioenergetics, thermodynamics, and enzyme kinetics; metabolism; mechanical work processes; and modeling of biological systems. (Sp)

BIE 2330 Engineering Properties of Biological Materials (3)
Relationships between composition, structure, and properties of biological materials. Definition, measurement, and use of mechanical, thermal, electromagnetic, chemical, and biological properties in computation and design. Prerequisites: BIOL 1210, BIE 1880, CHEM 1210, 1230. (F)

BIE 3000 Instrumentation for Biological Systems (2)
Fundamentals of measurement systems used in agricultural, biological, and environmental applications. Selection and use of sensors, data acquisition systems, and elementary controls. Prerequisite: ECE 2200. (Sp)

BIE 3200 Introduction to Unit Operations in Biological Engineering (3)
Introduction to the fundamental unit operations required to process biological materials in bioprocessing, biomedical, and food engineering applications. Integration of biology and chemistry into biological engineering using basic concepts in heat, mass, and energy conservation and transport. Prerequisites: BIE 2330, CHEM 2300. (F)

BIE 3670 Transport Phenomena in Bio-Environmental Systems (3)
Core course in both biological and environmental engineering. Students develop a detailed understanding of the principles, concepts, modes, and methods of calculating heat and mass transfer. Emphasis given to contaminant and nutrient flux, along with their state transformations, in order for the biological or environmental engineer to evaluate options for production, clean-up, and control of bio-environmental systems. Prerequisite: CEE 5500. Also taught as CEE 3670. (Sp)
Soil-water-plant relationships; evapotranspiration and water requirements; effective

BIE 5610 Food and Bioprocess Engineering (d6610)
Standardization and compounding of biomaterials and food products; preservation processing using heat, refrigeration, concentration, and dehydration. Basic unit operations in the bioprocessing industry. Prerequisite: BIE 3200. Also taught as NFS 5610/6610. (F)

BIE 5810 Biochemical Engineering (d6810)
Fundamentals of bioreactor design and bioengineering. Emphasizes mathematical models of microbial and enzymatic processes in environmental and industrial biotechnology. Prerequisites: BIE 3200 and BIE/CEE 3670; or BIE/CEE 3670, CEE/PUBH 3610, and CEE 3640. Also taught as CEE 5810/6810. (F)

BIE 5830 Management and Utilization of Biological Solids and Wastewater (d6830)
Focuses on production, management, and disposal of biosolids and wastewater generated in food processing and wastewater treatment. Emphasizes beneficial use of biosolids and wastewater for agricultural production, forest enhancement, and land reclamation. Prerequisites: BIE 3200, BIE/CEE 3670, CEE/PUBH 3610, CEE 3640. Also taught as CEE 5830/6830. (F)

BIE 6010 Principles of Irrigation Engineering (d5010)
Soil-water-plant relationships; evapotranspiration and water requirements; effective water use; irrigation scheduling; infiltration; irrigation systems planning. Prerequisites: CEE 3430, 3500, ENGR 2200. (F)

BIE 6110 Sprinkle and Trickle Irrigation (d5110)
Sprinkle and trickle irrigation system demand, system selection and configuration, emitter and sprinkler characteristics and sizing, uniformity and efficiency, pipe network layout and sizing, and system operation, management, and maintenance. Prerequisite: BIE 5010/6010. (F)

BIE 6150 Surface Irrigation Design (d5150)
Design and evaluation of surface irrigation systems. Field measurements for evaluating and improving uniformity and efficiency. Simulation of surface systems. Land leveling computation and equipment. Prerequisite: BIE 5010/6010. (F)

BIE 6250 Remote Sensing of Land Surfaces (d5250)
Basic principles of radiation and remote sensing. Techniques for ground-based measurements of reflected and emitted radiation, as well as ancillary data collection to support airborne and satellite remote sensing studies in agriculture, geography, and hydrology. Prerequisites: MATH 1100 or 1210; and PHYX 2110 or 2210. Also taught as AWER 5250/6250 and BMET 5250/6250. (Sp)

BIE 6300 Irrigation Conveyance and Control Systems (d5300)
Design, evaluation, and operation of irrigation distribution systems. Measurement and monitoring of flows and water levels, and canal and pipeline automation. Simulation of system hydraulics. Prerequisite: BIE 5010/6010. (F)

BIE 6550 Groundwater Systems Engineering I (d6550)
Groundwater exploration; well drilling and testing; pumping plant design, operation, and testing; aquifer evaluations; siting of multiple well systems. Development of pumping strategies for water supply and environmental control systems. Introduction to conjunctive use. Prerequisite: BIE 5010/6010. (F)
BIE 6350 Drainage and Water Quality Engineering (3)
(d5350)
Introduction to principles and practices of drainage. Engineering investigation and design of drains. Formation and function of wetlands caused by irrigation and drainage systems. Prerequisite: BIE 6010/5010. (Sp)

BIE 6520 Irrigation Project Operation and Maintenance (3)
(d5520)
Organizing, administering, and financing irrigation and drainage projects. Operation and maintenance of irrigation distribution systems. Simulation of command area water demands. Prerequisite: BIE 6010/5010. (Sp)

BIE 6550 Groundwater Systems Engineering I (3)
(d5550)
Groundwater exploration; well drilling and testing; pumping plant design, operation, and testing; aquifer evaluations; siting of multiple well systems. Development of pumping strategies for water supply and environmental control systems. Introduction to conjunctive use. Prerequisite: BIE 6010/5010. (F)

BIE 6610 Food and Bioprocess Engineering (3)
(d5610)
Standardization and compounding of biomaterials and food products; preservation processing using heat, refrigeration, concentration, and dehydration. Basic unit operations in the bioprocessing industry. Prerequisite: BIE 3200. Also taught as NFS 6610/5610. (F)

BIE 6610 Food and Bioprocess Engineering (3)
(d5610)
Standardization and compounding of biomaterials and food products; preservation processing using heat, refrigeration, concentration, and dehydration. Basic unit operations in the bioprocessing industry. Prerequisite: BIE 3200. Also taught as NFS 6610/5610. (F)

BIE 6610 Food and Bioprocess Engineering (3)
(d5610)
Standardization and compounding of biomaterials and food products; preservation processing using heat, refrigeration, concentration, and dehydration. Basic unit operations in the bioprocessing industry. Prerequisite: BIE 3200. Also taught as NFS 6610/5610. (F)

BIE 6610 Food and Bioprocess Engineering (3)
(d5610)
Standardization and compounding of biomaterials and food products; preservation processing using heat, refrigeration, concentration, and dehydration. Basic unit operations in the bioprocessing industry. Prerequisite: BIE 3200. Also taught as NFS 6610/5610. (F)

BIE 6810 Biochemical Engineering (3)
(d5810)
Fundamentals of bioreactor design and bioengineering. Emphasizes mathematical models of microbial and enzymatic processes in environmental and industrial biotechnology. Prerequisites: BIE 3200 and BIE/CEE 3670; or BIE/CEE 3670, CEE/PUBH 3610, and CEE 3640. Also taught as CEE 6810/5810. (F)

BIE 6830 Management and Utilization of Biological Solids and Wastewater (3)
(d5830)
Focuses on production, management, and disposal of biosolids and wastewater generated in food processing and wastewater treatment. Emphasizes beneficial use of biosolids and wastewater for agricultural production, forest enhancement, and land reclamation. Prerequisites: BIE 3200, BIE/CEE 3670, CEE/PUBH 3610, and CEE 3640. Also taught as CEE 6830/5830. (F)

BIE 6850 Biomaterials Engineering (3)
(d5850)
Explores identification and modification of properties of natural and artificial biomaterials. Design of applications for by-product recovery and recycling, environmental, food processing, and biomedical industries. Commercialization of biomaterial feed stocks, biotechnology output, and bioprocessing by-products into traditional and alternative products. Prerequisites: BIE 2330, BIE/NFS 6610/5610. (F)

BIE 6860 Research Orientation (1)
(d7860)
Promotes familiarization with departmental and graduate school rules, procedures, and research. (F)

BIE 6870 Research Planning (1)
(d7870)
Tools and techniques for writing research proposals and giving presentations. (Sp)

BIE 6930 Special Problems (1-4) ®
Independent study of problems in biological and agricultural engineering. (F,Sp,Su)

BIE 6990 Continuing Graduate Advisement for MS and PhD Students (1-3) ®
(F,Sp,Su)

BIE 7350 Groundwater Systems Engineering II (4)
System analysis techniques applied to aquifer and stream/aquifer management. Development of economically, quantitatively, and environmentally optimal strategies for alternative water policies. Modeling techniques for managing aquifer systems under volumetric, economic, and environmental management goals. Prerequisites: CEE 5470/6470 or 6500. (Sp)

BIE 7600 Advanced Research Topics (3)
Study of advanced biological and engineering topics. Analysis of project scale water management issues, software development, crop modeling, advanced drainage systems, remote sensing, groundwater systems, and other topics taken from the research interests of the faculty. Prerequisite: PhD enrollment. (Sp)

BIE 7860 Research Orientation (1)
Promotes familiarization with departmental and graduate school rules, procedures, and research. (F)

BIE 7870 Research Planning (1)
Tools and techniques for writing research proposals and giving presentations. (Sp)

BIE 7970 Dissertation Research (1-10) ®
(F,Sp,Su)

BIE 7990 Continuing Graduate Advisement for PhD Students (1-9) ®
(F,Sp,Su)

Parenthetical numbers preceded by d indicate a dual listing.
® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

Biology (BIOL)

See Department of Biology, pages 146-150

BIOL 1010 BLS Biology and the Citizen (3) ©
Principles and methods of biology and how they impact the daily life and environment of the individual. (F,Sp,Su)

BIOL 1020 Biological Discovery: A Lab Course (1)
Field and laboratory investigative exercises. Emphasizes observation, hypothesis formulation and testing, data analysis, and writing. (F,Sp)

BIOL 1100 Introduction to Microbiology (3) ©
Biology and the role of microorganisms in the world around us, with emphasis on their contributions to human disease. Offered only through Independent Study. No laboratory component. Not open to students with credit in BIOL 1110. (F,Sp,Su)

BIOL 1110 Elementary Microbiology (4) ©
Biology and role of microorganisms in the world around us, with emphasis on their contributions to human disease. Not intended for biology majors. (F)

BIOL 1210 BLS Biology I (4)
Principles of cell biology, energetics, and genetics; plant structure, function, and development. Three lectures and one lab. To receive University Studies Breadth Life Sciences (BLS) credit, students must complete both BIOL 1210 and either BIOL 1220 or 3300. (F)

BIOL 1220 BLS Biology II (4)
Animal structure, function, and development; principles of evolution, ecology, and behavior. Three lectures and one lab. Prerequisite: BIOL 1210. (Sp)

BIOL 1750 Topics in Biology (Topic) (1-3) ®
(F,Sp)

BIOL 2000 Human Physiology (4) ©
Functioning of the human body, with emphasis upon major organ systems. Medical and athletic examples used to illustrate important concepts. (F,Sp,Su)
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 2010</td>
<td>Human Anatomy</td>
<td>4</td>
<td>Study of the human body, with emphasis on the structure of each of the body’s essential organ systems. Three lectures, one lab. (Sp,Su)</td>
</tr>
<tr>
<td>BIOL 2040</td>
<td>Introduction to Biotechnology</td>
<td>1</td>
<td>Introduces freshmen to the emerging field of biotechnology and the impact this technology has on society. Also taught as ADVS 2040, NFS 2040, and PSB 2040. (Sp)</td>
</tr>
<tr>
<td>BIOL 2220</td>
<td>General Ecology</td>
<td>3</td>
<td>Study of the interrelationships among organisms and their environments, addressing where and how organisms live. Adaptation, population growth, species interactions, biodiversity, and ecosystem function are explored for a wide variety of organisms and ecosystems. Prerequisites: BIOL 1210 and 1220. Also taught as NR 2220. (F,Sp)</td>
</tr>
<tr>
<td>BIOL 2300</td>
<td>Mushroom Identification</td>
<td>1</td>
<td>Lecture course covering taxonomy, ecology, and importance of macro and micro fungi. Also taught as FRWS 2300. (F)</td>
</tr>
<tr>
<td>BIOL 2310</td>
<td>Mushroom Identification Lab</td>
<td>1-2</td>
<td>Lab course acquainting students with basic fungal taxonomic groups. Students collect, preserve, and identify fungi they collect. Edible fungi prepared and eaten. Also taught as FRWS 2310. (F)</td>
</tr>
<tr>
<td>BIOL 2410</td>
<td>Plants and Fungi in the Field</td>
<td>2</td>
<td>Introduction to identification of green plants and macrofungi. Quantitative methods for field studies. Prerequisite: BIOL 1210. (Su)</td>
</tr>
<tr>
<td>BIOL 2700</td>
<td>Predental Orientation and Observation</td>
<td>3</td>
<td>Introduces predental students to the dental curriculum and characteristics of the dental profession. Each student assigned to a practicing dentist for part of the course. Prerequisite: Permission of advisor. (F)</td>
</tr>
<tr>
<td>BIOL 3000</td>
<td>DSC Discovering Utah’s Biodiversity</td>
<td>3</td>
<td>Lecture and field course designed to identify and study local organisms and their role in ecosystems. Topics include ecology, local geology, adaptations to the local environment, and human impacts. Major components include writing, as well as the collection and presentation of data. Prerequisite: Completion of a University Studies Breadth Life Sciences (BLS) course. (F,Sp)</td>
</tr>
<tr>
<td>BIOL 3010</td>
<td>DSC Evolution</td>
<td>3</td>
<td>Origins and evidence for the theory of biological evolution, and its significance for society and science. Prerequisite: University Studies Breadth Life Sciences (BLS) course. (Sp)</td>
</tr>
<tr>
<td>BIOL 3020</td>
<td>DSC Brain and Behavior</td>
<td>3</td>
<td>Introduction to human brain structure and function. Perspectives on development, normal function, aging, illness, diagnosis, and treatment. Topics will range from molecular to cellular to behavioral. Prerequisite: University Studies Breadth Life Sciences (BLS) course. (Sp)</td>
</tr>
<tr>
<td>BIOL 3030</td>
<td>DSC Genetics and Society</td>
<td>3</td>
<td>Course for nonscience majors. Addresses ethical, political, and social implications of advances in genetics and basic genetic principles, as well as contemporary issues in human genetics. Prerequisite: University Studies Breadth Life Sciences (BLS) course. Not open to biology majors or to those with credit in BIOL 3200. (F)</td>
</tr>
<tr>
<td>BIOL 3040</td>
<td>DSC Plants and Civilization</td>
<td>3</td>
<td>Examines the importance of plants as food, shelter, clothing, medicine, and drugs. Social and historical role of plants in aesthetics, religion, energy, biotechnology, human exploration, and migration. Prerequisite: University Studies Breadth Life Sciences (BLS) course. (F)</td>
</tr>
<tr>
<td>BIOL 3050</td>
<td>DSC Insect Biology</td>
<td>3</td>
<td>Examines life systems and anatomy of insects. Relationship of insects to other arthropods, society, and science. Two lectures, one lab. Prerequisite: University Studies Breadth Life Sciences (BLS) course. (F)</td>
</tr>
<tr>
<td>BIOL 3100</td>
<td>CI Bioethics</td>
<td>3</td>
<td>Discussion of current controversial ethical issues in medicine, animal rights, and environmental conservation. (Sp)</td>
</tr>
<tr>
<td>BIOL 3200</td>
<td>QI Principles of Genetics</td>
<td>4</td>
<td>Introduction to transmission, population, and molecular aspects of modern genetics. Prerequisites: BIOL 1210; MATH 1050; CHEM 1110 or 1220. (F,Sp,Su)</td>
</tr>
<tr>
<td>BIOL 3220</td>
<td>QI Field Ecology</td>
<td>2</td>
<td>Field trips and exercises to study ecological patterns and processes in terrestrial and aquatic habitats. Emphasis on hypothesis testing and collection and analysis of data from the field. Prerequisite: BIOL 2220 (may be taken concurrently); MATH 1100 or 1210. Recommended: Course in statistics. (F)</td>
</tr>
<tr>
<td>BIOL 3300</td>
<td>BLS General Microbiology</td>
<td>4</td>
<td>Biology, ecology, and diversity of microorganisms. Emphasis placed on bacteria, viruses, fungi, and protists, and their role in the environment. Two lectures, two labs. Prerequisites: BIOL 1210 (with a grade of C- or better); CHEM 1120 or 2300 or 2310 (may be taken concurrently). To receive University Studies Breadth Life Sciences (BLS) credit, students must complete both BIOL 1210 and 3300. (F,Sp)</td>
</tr>
<tr>
<td>BIOL 3400</td>
<td>Plant Taxonomy</td>
<td>3</td>
<td>Identification of vascular plant species and recognition of families common in northern Utah. Introduction to principles and practices of plant taxonomy. Prerequisite: BIOL 1210. (Sp)</td>
</tr>
<tr>
<td>BIOL 4000</td>
<td>Human Dissection</td>
<td>1</td>
<td>Exposure and dissection of the human body, with an emphasis on bones, joints, muscles, and internal organs. One evening lab per week. Prerequisite: BIOL 2010. (F)</td>
</tr>
<tr>
<td>BIOL 4060</td>
<td>CI Exploring Animal Behavior</td>
<td>3</td>
<td>In-depth investigation into current topics. Students will generate hypotheses; design and complete experiments in field and lab; and prepare a written lab report, book review, and poster for public presentation. Two lectures, one lab. Prerequisite: BIOL 1220, 2220. (Sp)</td>
</tr>
<tr>
<td>BIOL 4100</td>
<td>Genetics Laboratory</td>
<td>2</td>
<td>Experimental approach to genetics using bacteria, fungi, plants, insects, and humans. Students will be introduced to several computer and laboratory techniques, and will design many of the experiments. Prerequisite: BIOL 3200 (may be taken concurrently). (F)</td>
</tr>
<tr>
<td>BIOL 4230</td>
<td>QI Applied Mathematics in Biology</td>
<td>3</td>
<td>Formulation, analysis, and experimental tests of mathematical models in biology. Combines mathematics, computing, experimental design, and statistical analysis while applying the scientific method to biological systems. Lectures, recitations, and a laboratory. Prerequisites: BIOL 1200 and MATH 2250; or permission of instructor. Programming recommended. Also taught as MATH 4230. (Sp)</td>
</tr>
<tr>
<td>BIOL 4250</td>
<td>Internship/Co-op</td>
<td>1-2</td>
<td>Internship/cooperative work experience in biology or prehealth biology to allow student to gain a professional level of experience. Advisor’s signature required. (F,Sp,Su)</td>
</tr>
<tr>
<td>BIOL 4400</td>
<td>QI Plant Physiology</td>
<td>4</td>
<td>Introduction to plant metabolism, water relations, and growth. Prerequisites: BIOL 1220, MATH 1050. (F)</td>
</tr>
<tr>
<td>BIOL 4410</td>
<td>Plant Structure</td>
<td>3</td>
<td>Morphology, anatomy, and development of seed plants, with an emphasis on angiosperms. Two lectures and one lab. Prerequisites: BIOL 1210, 1220. (Sp)</td>
</tr>
<tr>
<td>BIOL 4500</td>
<td>Applied Entomology</td>
<td>3</td>
<td>Fundamentals of insect biology, emphasizing species of economic importance. Principles and tactics of pest management. Laboratory includes survey of beneficial and harmful insects affecting humans and agriculture. Prerequisites: BIOL 1210 and 1220. (Sp)</td>
</tr>
<tr>
<td>BIOL 4700</td>
<td>Natural History Excursion</td>
<td>2</td>
<td>Eight-day trip, which may include museums, aquaria, zoos, nature parks and preserves, biological field stations and research stations, and unique habitats in the western United States. Preparatory study and a written report are required. Maximum of 2 credits may be counted toward major electives. Prerequisite: BIOL 2220. (Sp)</td>
</tr>
</tbody>
</table>
BIOL 4710 Teaching Internship (1)®
Advanced undergraduates function as teaching interns under supervision of faculty member. Only 1 credit may be counted toward Biology degree electives. Prerequisite: Consent of instructor. (F,Sp,Su)

BIOL 4750 Topics in Biology (Topic) (1-3)®
(F,Sp,Su)

BIOL 4760 Independent Study (1-3)®
Directed individual or group study. Prerequisite: BIOL 1220. Not counted as Biology degree elective. (F,Sp,Su)

BIOL 5010 Biogeography (3)
Distributions of plants and animals, including invertebrates, from terrestrial, freshwater, and marine systems, discussed from historical and ecological perspectives. Explores ecological patterns of body size, color, species density, home range, etc., as well as their causes. Prerequisite: BIOL 1220. (F,Sp,Su)

BIOL 5020 QI Modeling Biological Systems (3)
Basic techniques of mathematical and computer simulation applied to a wide variety of biological systems: ecology, physiology, agroecosystems, and cell biology. Model formulation, validation, sensitivity and stability analysis, stochastic systems. Prerequisite: BIOL 1220. (Sp)

BIOL 5030 Individual-Based Models in Ecology and Evolution (3)*
(d6010)1
Examines the nature, application, and student development of computer simulation models that follow the demographic fates and spatial movement of individual organisms in the context of ecological and evolutionary questions. Recommended prior to enrollment: Programming experience (preferably in C), upper-division courses in statistics and ecology or evolution, and BIOL 5020/6020. (Sp)

BIOL 5040 Biophysics of Radiological Health (3)
Brings together sciences relating to nuclear biophysics. Prepares students to be aware of radiological hazards, to safely use radioactive materials, and to comply with relevant laws. Prerequisites: BIOL 1210, 1220, CHEM 1210, 1220, a physics course, and senior standing. Also taught as PHYX 5050. (F,Sp)

BIOL 5050 Principles of Electron Microscopy (3)
Integrative course covering theoretical and applied principles of instruments and techniques necessary to perform biological electron microscopy. Prerequisite: CHEM 1220. (Sp)

BIOL 5100 Neurobiology (3)
(d6100)
Physiology, organization, and development of nervous systems. Examples taken from vertebrate and invertebrate systems. Special emphasis placed on cellular and molecular substrates of electrical excitability. Prerequisites: BIOL 5600 or 5620; CHEM 1220; and PHYX 2120 or 2220. (F)

BIOL 5150 Immunology (3)
Immune response in health and disease. Experimental approach to investigating immune function and abnormalities. Prerequisites: CHEM 1220; BIOL 3200; and BIOL 3300 or 5210. (Sp)

BIOL 5160 Methods in Biotechnology: Cell Culture (3)
Techniques and fundamental knowledge for culturing mammalian and insect cells. Students will learn maintenance, growing, genetic engineering of cells, cytotoxicity, hybridoma creation, cloning, etc. Extensive laboratory experience is provided. Also taught as ADVS 5160, CHEM 5160, NFS 5160, and PSB 5160. (Sp)

BIOL 5170 Introduction to Population Genetics (3)
(d6170)
Examines theoretical and applied aspects of how genes behave in natural and artificial populations of plants and animals. Genetic diversity, population structure, mating systems, selection, mutation, gene flow, genetic drift, population evolution, and quantitative genetics. Prerequisite: BIOL 3200. (Sp)

BIOL 5190 Molecular Genetics (3)
Molecular aspects of genetics, including DNA replication, structure, rearrangement, transposition, recombination, repair, genetic engineering, and gene expression. Prerequisites: BIOL 3200; and CHEM 3700 or 5700. (Sp)

BIOL 5210 Cell Biology (3)
Examines the mechanisms of cell structure and function at the molecular level. Prerequisites: BIOL 1220, 3200; CHEM 2300 or 2320; CHEM 3700 or 5700 highly recommended. (F)

BIOL 5220 Developmental Biology (3)
Examines the mechanisms of biological development using classical embryological and modern molecular and cellular approaches. Prerequisites: BIOL 3200 and 5210; CHEM 3700 and 5700 strongly recommended. (Sp)

BIOL 5240 Methods in Biotechnology: Protein Purification Techniques (3)
Reviews basic methods of protein purification, including scaled-up use of 100L fermenter, large-scale centrifugation, diafiltration, chromatography, and use of BioCAD. Prerequisite: CHEM 3700. Also taught as ADVS 5240, CHEM 5240, NFS 5240, and PSB 5240. (Sp)

BIOL 5250 CI Evolutionary Biology (3)
Current topics in organic evolution from molecular to macroevolutionary scales. Prerequisite: BIOL 3200 or FRWS 4080 or permission of instructor; BIOL/FRWS 2220 recommended. (F,Sp)

BIOL 5260 Methods in Biotechnology: Molecular Cloning (3)
Laboratory-oriented course designed to teach molecular biology techniques such as DNA cloning, genetic probes, polymerase chain reaction, and DNA sequencing. Prerequisite: CHEM 3700 or 5710; or BIOL 3200; or permission of instructor. Also taught as ADVS 5260, CHEM 5260, NFS 5260, and PSB 5260. (F)

BIOL 5280 Quantitative Genetics (3)***
Theory and practice of the genetics of quantitative (continuously-varying) traits. Emphasizes intersection of quantitative genetics with issues in evolution, ecology, and conservation biology. Prerequisites: BIOL 3200, STAT 3000. (Sp)

BIOL 5300 CI Microbial Physiology (4)
Lectures, discussions, and laboratory investigations concerning the physiology, structure, and metabolism of prokaryotic and eukaryotic microbes. Prerequisites: BIOL 3300; MATH 1210. (Sp)

BIOL 5310 Soil Microbiology (3)*
Ecology and diversity of microorganisms in soils. Emphasis on factors controlling microbial activity and the role of microorganisms in organic matter decomposition and nutrient cycling. Prerequisites: BIOL 1210, 1220; CHEM 2300 or 2310; SOIL 3000. Also taught as SOIL 5310. (F)

BIOL 5320 Soil Microbiology Laboratory (2)*
Techniques for measuring microbial activity and diversity in soils. Includes use of molecular and isotope methods. Prerequisite: Concurrent or prior enrollment in BIOL/SOIL 5310. Also taught as SOIL 5320. (F)

BIOL 5330 Virology (3)
Structure, replication, genetics, and molecular biology of viruses. Virus-host interactions. Viral diseases and antiviral agents. Prerequisites: BIOL 3200 and 3300. (Sp)

BIOL 5340 Virology Laboratory (2)
Introduction to laboratory techniques using bacterial and animal viruses. Prerequisite: BIOL 5330 (may be taken concurrently). (Sp)

BIOL 5350 Mycology (3)*
Classification, ecology, genetics, and physiology of the fungi. Two lectures and one lab. Prerequisite: BIOL 1220. (Sp)

BIOL 5370 Molecular Methods in Nutrition Science (2)
(d6370)
Theory of modern techniques used to study macromolecules and ions. Prerequisite: CHEM 3700. Also taught as ADVS/NFS/PSB 5370/5370. (Sp)
BIOL 5400 Advanced Plant Taxonomy (4)***
Survey of vascular plant diversity presented in a phylogenetic and biogeographic context. Introduction to morphologically oriented research in plant taxonomy. Prerequisites: BIOL 3400 and STAT 3000. (F)

BIOL 5410 Introduction to Plant Pathology (4)
Combined lecture-lab course emphasizing concepts in plant pathology. Symptoms and disease-causing organisms are described. Methods of control, the nature of epidemics, and disease prediction. Prerequisites: BIOL 1210, 1220; BIOL 3300 recommended. (F)

BIOL 5420 CI Forest Pathology (2)
Nature, cause, and management of forest diseases. Also taught as FRWS 5420. (Sp)

BIOL 5440 Plant Molecular, Cellular, and Developmental Biology I (3)***
Examines background and recent advances. Students analyze and discuss structure, genome, molecular, development, and photosynthesis topics from a research perspective. Prerequisites: BIOL 3200, 5210; CHEM 3700 or 5710. Also taught as PLSC 5440/6440. (Sp)

BIOL 5450 Plant Molecular, Cellular, and Developmental Biology II (3)***
Examines background and recent advances. Students analyze and discuss cell wall, growth regulator, and environmental response topics from a research perspective. Prerequisites: BIOL 3200, 5210; CHEM 3700 or 5710. Also taught as PLSC 5450/6450. (Sp)

BIOL 5530 Insect Systematics and Evolution (3)
Evolution, biology, and classification of insects, including basic external morphology. Emphasizes role of phylogeny in systematics and importance of systematics in comparative biology. Prerequisite: BIOL 1220. (F)

BIOL 5540 QI Invertebrate Physiology (4)
Physiology of invertebrates relative to structure, function, ecological strategies, and evolutionary trajectories. Laboratory investigations exploiting invertebrate diversity. Prerequisites: BIOL 1220; MATH 1210. (Sp)

BIOL 5550 Freshwater Invertebrates (3)
Ecology, collection, and systematics of freshwater aquatic invertebrates. Focuses on insects, but also covers crustaceans, molluscs, and annelids. Several weekend field trips and a collection are required. Prerequisite: One year of general biology or zoology, or permission of instructor. Also taught as AWER 5550. (Sp)

BIOL 5560 Ornithology (3)***
Surveys evolution, systematics, physiology, anatomy, ecology, behavior, and identification of birds. Includes lectures, laboratory and field exercises, field trips, and an independent project. Attendance required at one Saturday and one Friday-Sunday field trip. Prerequisites: BIOL 1210, 1220; MATH 1050. (Sp)

BIOL 5570 Herpetology (3)
Evolution, adaptations, distribution, natural history, behavior, and identification of amphibians and reptiles of the world, with special emphasis on North American species. Two lectures and one lab. Prerequisite: BIOL 1220. (Sp)

BIOL 5580 Mammalogy (3)
Evolution, adaptations, distribution, natural history, behavior, and identification of mammals of the world, with special emphasis on North American species. Two lectures and one lab. Prerequisite: BIOL 1220. (F)

BIOL 5590 Animal Community Ecology (4)
(d6590)
Concepts and controversies in modern community ecology emphasizing aquatic and terrestrial animals. Covers the community concept, diversity and stability, null models, relative importance of competition and predation, food webs, disturbance, metapopulations, biogeography, and new directions. Prerequisites: BIOL 2220, STAT 3000. (Sp)

BIOL 5600 Comparative Animal Physiology (3)
General principles and mechanisms of gas exchange, circulation, locomotion, nutrition, and neurological and endocrine function in vertebrate and invertebrate animals. Prerequisites: BIOL 1220, CHEM 1220. (F)

BIOL 5610 QI Animal Physiology Laboratory (2)
Laboratory exercises designed to explore principles of animal physiology, using computer simulations, tissue models, and animal preparations. Emphasis placed on hypothesis design and data interpretation. Prerequisite: BIOL 5600 or 5620 (either may be taken concurrently). (F,Sp)

BIOL 5620 Medical Physiology (3)
Cardiovascular, respiratory, endocrine, gastrointestinal, excretory, and nervous system function in the mammalian body. Emphasis on molecular mechanisms. Examples from mammalian diseases used to illustrate key concepts. Prerequisites: BIOL 1220, 2000, or 5600; CHEM 3700 or 5710 (may be taken concurrently). (Sp)

BIOL 5730 Genomic Technologies (4)
Provides theoretical background in genomics/proteomics technologies and laboratory training in advanced techniques. Topics include: whole genome sequencing, transcriptome and proteome characterization, DNA and expressed gene libraries, and operation of modern genomics laboratory equipment. Prerequisites: BIOL 1220, 3200; CHEM 3700 or 5710; CS 2200; STAT 3000. Also taught as CHEM 5730. (Sp)

BIOL 5800 Undergraduate Research (1-3) #
Faculty-directed research in biology. Prerequisites: BIOL 1220 and consent of instructor. Maximum of 3 credits of BIOL 5800 or 5810 are acceptable toward Biology degree elective requirements. (F,Sp,Su)

BIOL 5810 Bachelor’s Thesis (3)
Preparation of a written thesis, based upon individual investigation, under the supervision of faculty. Prerequisites: 3 credits of BIOL 5800 (or concurrent enrollment) and consent of instructor. Maximum of 3 credits of BIOL 5800 or 5810 are acceptable toward Biology degree elective requirements. (F,Sp,Su)

BIOL 6010 Biogeography (3)
(d5010)
Distributions of plants and animals, including invertebrates, from terrestrial, freshwater, and marine systems, discussed from historical and ecological perspectives. Explores ecological patterns of body size, color, species density, home range, etc., as well as their causes. Prerequisite: BIOL 1220. (Sp)

BIOL 6020 QI Modeling Biological Systems (3)
(d5020)
Basic techniques of mathematical and computer simulation applied to a wide variety of biological systems: ecology, physiology, agroecosystems, and cell biology. Model formulation, validation, sensitivity and stability analysis, stochastic systems. Prerequisites: MATH 1220, STAT 3000, programming experience. (F)

BIOL 6030 Individual-Based Models in Ecology and Evolution (3) *
(d5030)
Examines the nature, application, and student development of computer simulation models that follow the demographic fates and spatial movement of individual organisms in the context of ecological and evolutionary questions. Recommended prior to enrollment: Programming experience (preferably in C), upper-division courses in statistics and ecology or evolution, and BIOL 6020/5020. (Sp)

BIOL 6100 Neurobiology (3)
(d5100)
Physiology, organization, and development of nervous systems. Examples taken from vertebrate and invertebrate systems. Special emphasis placed on cellular and molecular substrates of electrical excitability. For graduate (6000-level) credit, additional reading, recitation, and/or writing will be required. Prerequisites: BIOL 5600 or 5620; CHEM 1220; and PHYX 2120 or 2220. (F)

BIOL 6170 Introduction to Population Genetics (3)
(d5170)
Examines theoretical and applied aspects of how genes behave in natural and artificial populations of plants and animals. Genetic diversity, population structure, mating systems, selection, mutation, gene flow, genetic drift, molecular evolution, and quantitative genetics. For graduate (6000-level) credit, additional reading, recitation, and/or writing will be required. Prerequisite: BIOL 3200. (Sp)

BIOL 6180 Molecular Population Genetics Laboratory (5)
Application of molecular techniques to population genetics, ecology, and systematics. Includes experimental and sampling design, and data analysis. Prerequisite: BIOL 6170/5170 or permission of instructor. Also taught as FRWS 6180. (F)
BIOL 6200 Biogeochemistry of Terrestrial Ecosystems (3)**
Inputs, outputs, and cycling patterns of major nutrients. Emphasizes mechanisms for transformations, factors influencing process rates, and the impacts of management and global change on nutrient cycles and air and water quality. Prerequisites: BIOL 1220, SOIL 3000, CHEM 2300 or 2310, or permission of instructor. Also taught as FRWS 6200 and SOIL 6200. (F)

BIOL 6210 Advanced Cell Biology (3)*
Presents most recent advances in cell biology research. Prerequisites: BIOL 3200 and 5210. (F)

BIOL 6250 Graduate Internship (1-6)
Work experience, for which the student is paid, tied to academics in a graduate student’s field of study. Prerequisite: Permission of department head prior to enrollment. (F,Sp,Su)

BIOL 6260 Behavioral Ecology (3)***
Focuses on current topics, emphasizing critical reading and thinking skills. Includes lectures, student presentations, and discussions of primary literature. (Sp)

BIOL 6270 Evolutionary Ecology (3)***
Contemporary topics in evolutionary ecology with emphasis on life history evolution. Prerequisite: BIOL 2220 or permission of instructor. (Sp)

BIOL 6280 Quantitative Genetics (3)***
(d5280)
Theory and practice of the genetics of quantitative (continuously-varying) traits. Emphasizes intersection of quantitative genetics with issues in evolution, ecology, and conservation biology. For graduate (6000-level) credit, additional reading, recitation, and/or writing will be required. Prerequisites: BIOL 3200, STAT 3000. (Sp)

BIOL 6290 Biophysics Radiisotope Tracer Methodology (1-3)
(d5290)
Training for users of radioactive material. Instructor provides guidance and study at each student’s lab on an individual basis. Prerequisites: BIOL/PHYX 5050 and senior or graduate standing. (F,Sp)

BIOL 6370 Molecular Methods in Nutrition Science (2)
(d5370)
Theory of modern techniques used to study macromolecules and ions. Prerequisite: CHEM 3700. Also taught as ADVS/NFS/PSB 6370/5370. (Sp)

BIOL 6440 Plant Molecular, Cellular, and Developmental Biology I (3)***
(d5440)
Examines background and recent advances. Students analyze and discuss structure, genome, molecular, development, and photosynthesis topics from a research perspective. For graduate (6000-level) credit, additional reading, recitation, and/or writing will be required. Prerequisites: BIOL 3200, 5210; CHEM 3700 or 5710. Also taught as PLSC 6440/5440. (Sp)

BIOL 6450 Plant Molecular, Cellular, and Developmental Biology II (3)***
(d5450)
Examines background and recent advances. Students analyze and discuss cell wall, growth regulator, and environmental response topics from research perspective. For graduate (6000-level) credit, additional reading, recitation, and/or writing will be required. Prerequisites: BIOL 3200, 5210, CHEM 3700 or 5710. Also taught as PLSC 6450/5450. (Sp)

BIOL 6510 Insect-Plant Interactions (2)**
Ecology, evolution, and physiology of the interactions between insects and plants, including herbivory, defenses/compensations of plants to insect attack, pollination, and other mutualisms. (F)

BIOL 6520 Ecological Vertebrate Physiology (3)***
Physiological responses and adaptations of vertebrates to physical, chemical, and biological environments. Bioenergetics at the species level. Three lectures. Prerequisites: One course in physiology and one course in ecology. (F)

BIOL 6590 Animal Community Ecology (4)
(d5590)
Concepts and controversies in modern community ecology emphasizing aquatic and terrestrial animals. Covers the community concept, diversity and stability, null models, relative importance of competition and predation, food webs, disturbance, metapopulations, biogeography, and new directions. For graduate (6000-level) credit, additional reading, recitation, and/or writing will be required. Prerequisites: BIOL 2220, STAT 3000. (Sp)

BIOL 6740 Cellular Communication by Small Molecules and Proteins (3)
Using post-translational modifications, small molecules, and protein motifs in cellular communication. Variance in the communication systems related to disease state and/or cell stress and therapeutic strategies to manipulate the communication systems. Prerequisite: CHEM 5700 or equivalent. Also taught as CHEM 6740. (Sp)

BIOL 6750 Topics in Biology (Topic) (1-3) ®
(F,Sp,Su)

BIOL 6800 Biology Seminar (1) ®
Format for general graduate-level seminar topics. (F,Sp,Su)

BIOL 6810 Microbiology Seminar (1) ®

BIOL 6820 Plant Biology/Pathology Seminar (1) ®

BIOL 6830 Entomology Seminar (1) ®

BIOL 6840 Zoology Seminar (1) ®

BIOL 6870 Ecology Seminar (1) ®
The Ecology Center schedules regular seminars throughout the school year with ecological scientists from other institutions participating. Ecology majors are required to attend a minimum of 10 such lectures. Students should register for fall semester, but attend through spring semester. Also taught as AWER 6870, ENVS 6870, and FRWS 6870. (F)

BIOL 6890 Molecular Biology Seminar (1) ®

BIOL 6910 Special Problems (1-3) ®
Individual or group study under faculty guidance. Prerequisite: Permission of instructor. (F,Sp,Su)

BIOL 6960 Graduate General Ecology (5)
General concepts, history, and issues in all major areas of the science of ecology including environmental biophysics; and physiological, behavioral, evolutionary, community, ecosystem, and applied ecology in both terrestrial and aquatic environments. Also taught as AWER 6960, ENVS 6960, and FRWS 6960. (F)

BIOL 6970 Thesis Research (1-12) ®

BIOL 6990 Continuing Graduate Advisement (1-3) ®

BIOL 7550 Topics in Biology (1-3)

BIOL 7970 Dissertation Research (1-12) ®

BIOL 7990 Continuing Graduate Advisement (1-9) ®

1Parenthetical numbers preceded by d indicate a dual listing.
® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.
© This course is also offered by online correspondence and/or CD through Continuing Education Time Enhanced Learning.
Business Information Systems (BIS)

See Department of Business Information Systems, pages 155-159

BIS 1110 Keyboarding (2)
For students with no previous keyboarding experience. Designed so student can touch type and learn basic concepts related to word processing and document formatting. (F,Sp)

BIS 1400 Microcomputer Applications in Business (3)
Using microcomputers at school and work. How to operate a PC. Includes operating systems, word processing, Internet, graphics, database, and spreadsheet applications. Includes preparation for University Studies Computer and Information Literacy examination. Prerequisite: Ability to keyboard at a minimum of 25 wpm. (F,Sp,Su)

BIS 1410 Special Topics (1-3) ©
Selected topics related to using computers in business. (F,Sp,Su)

BIS 1420 Word Processing Applications (3)
Word processing software instruction designed for office applications. Emphasizes creating business documents and improving keyboarding skills. Assumes ability to keyboard by touch at a minimum of 50 wpm. (F,Sp)

BIS 1550 CI Business Correspondence (3)
Development and application of effective business writing skills, emphasizing business correspondence. Includes thorough review of grammar, spelling, and punctuation related to business correspondence. (F,Sp)

BIS 2300 Business Data Communications and Networking (3)
Emphasizes business data communications in a LAN and WAN networking environment. Includes network protocols, cable technology, telecommunications standards, security issues, and general telecommunications management issues. Prerequisite: BIS 1400 or CIL exam. (F,Sp,Su)

BIS 2400 Web Design for Business Applications (3)
Design, development, and evaluation of business documents for electronic media utilizing the worldwide web. Prerequisite: BIS 1400 or CIL exam. (F,Sp,Su)

BIS 2450 Spreadsheets and Databases for Business (3)
Concepts related to integration of microcomputer spreadsheets and databases into business. Use of spreadsheets and databases to accomplish business tasks. Prerequisites: Computer Information Literacy exam or BIS 1400 or equivalent; STAT 1040 or MATH 1030 or 1050 (MATH 1050 or equivalent is required for College of Business majors); and GPA of 2.5 or higher. (F,Sp,Su)

BIS 2520 Integrating Office Technology (3)
Advanced applications of office technology for production of business documents, emphasizing efficient use of word processing, graphics, and desktop publishing. Prerequisites: BIS 1420, 2550. (F,Sp,Su)

BIS 2550 CI Business Communication (3)
Development and application of effective oral and written business communication skills. Language/mechanics, grammar, and document formatting. Prerequisites: ENGL 1010; STAT 1040 or MATH 1030 or 1050 (MATH 1050 or equivalent is required for College of Business majors); and GPA of 2.5 or higher. (F,Sp,Su)

BIS 2600 Office Procedures (3)
Finishing course which integrates office knowledge and skills. Applies administrative activities which are part of the office process. Prerequisites: BIS 2520; BIS 1550 or 2550. (F,Sp)

BIS 3000 Principles of Business and Marketing Education (1) ©
Covers principles of business and marketing education, including professionalism, historical overview of the field, student organizations, advisory committees, applied technology education, and school-to-careers program. (F,Sp)

BIS 3100 DSS Business Information Systems (3) ©
Survey of business uses of information technology, emphasizing vocabulary, concepts, career emphases, and systems components. Includes general systems theory and business functional information subsystems (e.g., accounting, management, finance, and marketing). (F,Sp,Su)

BIS 3140 QI Managing Personal Finances (3) ©
Management of personal business affairs, including insurance, investments, installment buying, and estate planning. Emphasizes personal business affairs as related to economic developments in the public and private sectors. Prerequisite: MATH 1030 or MATH 1050 or STAT 1040. (Sp)

BIS 3300 Clinical Experience I (1)
First business/marketing clinical practicum (40 hours minimum) in middle and secondary schools; must be taken concurrently with BIS 3400 methods class. Required at Level I. Prerequisite: Program admission. (F,Sp)

BIS 3330 Database Management (3)
Theory and application of designing, developing, and maintaining database systems. Principles of management of data resources to support effective information systems in organizations. Prerequisites: BIS 2450 and one programming language. (F,Sp,Su)

BIS 3400 Methods of Teaching Keyboarding and Microcomputing (3)
Psychological principles and methodology for teaching keyboarding, word processing, microcomputing, and accounting. Includes equipment and laboratory needs, classroom management, and lesson planning. Prerequisite: BIS 1420. (F)

BIS 3450 Business Applications Using Visual Basic (3)
Designed to teach nontechnical students to solve business problems with Visual Basic. After students learn key elements of Visual Basic, advanced features of Microsoft Access (which require some knowledge of Visual Basic) are introduced. This course is not for BIS majors who have had C++. Prerequisite: BIS 2450. (F,Sp,Su)

BIS 3500 Management Information Systems Development (3)
Creation of applications to solve business problems or support common functions, such as inventory control, sales management, or personnel management. Students create working systems using widely-used Windows software. Prerequisites: BIS 2450 and CS 1700. (F,Sp,Su)

BIS 3550 Principles of Selling (2) ©
Focuses on the sales process, including prospecting, qualifying customers, planning and delivering the sales presentation, overcoming objections, closing the sale, and satisfying the customer’s needs.

BIS 4300 Clinical Experience II (1)
Second business/marketing clinical practicum (40 hours minimum) in middle and secondary schools; must be taken concurrently with BIS 4400 methods class. Required at Level 2. Prerequisites: Program admission and completion of Level 1. (F,Sp)

BIS 4330 Database Implementation (3)
Application of database concepts using industrial database products. Includes structured query language (SQL) development, database programming development, front- and back-end interface development, web database design, database administration basics, and integration of database tools within a project context. Prerequisite: BIS 3330 or equivalent. (F,Sp)

BIS 4350 Introduction to Training and Development (3)
Introductory course in training and development. Examines various roles of the human resource manager in the training domain. Students learn systems approach to developing and implementing training programs in business. (Sp)

BIS 4400 Business Education and Marketing Education Methods (3)
Instructional methods for conceptual business and marketing classes. Includes methods for advising student organizations, school to careers programs, and relationships between general and applied technology education. Prerequisites: ECON 1500, MHRI 2990, BIS 3140, ACCT 210. (Sp)
BIS 4550 CI Principles of International Business Communications (3)
Culture-general and culture-specific study of business communication in the diverse world of international business from both theoretical and applied perspectives. (Sp)

BIS 4950H Senior Honors Thesis/Project (3)
Creative project that will then be written up, and presented, as a Senior Thesis as required for an Honors Plan. (Sp)

BIS 5050 Advanced Web-Based Management (d6050) Information Systems Development (3)
Students learn how to design, develop, and implement an Internet commerce website. Includes instruction in modeling and building an advanced management website system. Prerequisites: BIS 3330 and 3500. (F,Sp,Su)

BIS 5100 Systems Design and Implementation (3)
Management, evaluation, documentation, maintenance, and reengineering of business information systems projects. Prerequisite: BIS 3330. Corequisite: BIS 5110. (F,Sp)

BIS 5110 Systems Design Laboratory (1)
Required laboratory for BIS 5100, allowing students to complete assigned team projects. (F,Sp)

BIS 5150 Management Support Systems (3)
Survey of information technology to support management activities, including decision support systems, executive information systems, group support systems, electronic meeting systems, and expert systems. Prerequisite: BIS 3100.

BIS 5300 Advanced Data Communications (3)
Principles of data communications, local and wide-area networks, hardware, software, media standards, management, and business applications. Management and strategic use of local-area networks (LANs) and wide-area networks (WANs) to solve business problems. Prerequisite: BIS 2450. (F,Sp)

BIS 5400 Local Area Network Management for Business (3)
(d6400)
Application of networking concepts related to the management of local area networks. Includes topics related to setup, management, and maintenance of local area networks and installation of electronic mail handling systems. (F,Sp,Su)

BIS 5450 Designing Graphical User Interfaces for Electronic Commerce (3)
Integration of specialized web-design software, current multimedia technology (e.g., video/audio streaming, computerized slide shows, graphic animations, digital graphics) and web-design principles to create graphical user interfaces for e-commerce sites. Prior completion of BIS 2400 recommended.

BIS 5500 Business/Marketing Student Teaching Seminar (2)
Capstone seminar focused upon student business teaching issues, professional development, and principles of effective instruction, emphasizing reflective teaching. Must be taken concurrently with BIS 5600. Prerequisites: Level 1 and Level 2 completion; student teaching placement. (F,Sp)

BIS 5630 Business/Marketing Student Teaching (10)
A 13-week culminating student teaching experience in which students assume full-time teaching responsibilities under the direction of cooperating teachers in major and minor fields. Must be taken concurrently with BIS 5500. Prerequisites: Level 1 and Level 2 completion; student teaching placement. (F,Sp)

BIS 5640 E-Commerce Data Interchange Using XML (3)
(d6640)
Designed to build e-commerce applications using XML (Extensible Markup Language) as the underlying technology. Students will also learn to cooperate XML documents, use Extensible Style Sheet language, and use XSQL (an Oracle technology) to tie XML with its database. Prerequisites: BIS 3100, 3330, and 3500.

BIS 5650 Advanced Website Development (3)
(d6650)
Creation of static and dynamic HTML pages, CGI, Perl, and Java script. Students create websites using Access or Oracle as the database backend. This technical course maintains a business focus as a transaction-oriented commercial site. Prerequisites: BIS 3330 and 3500. (F,Sp,Su)

BIS 5660 The Adult Business Learner (3)
(d6660)
Focuses on the adult business learner, the concept of the “learning organization,” and the different types of postsecondary institutions that provide adult training and education in business.

BIS 5700 DSS Internet Management and Electronic Commerce (3)
Familiarizes students with concepts and technologies relating to business and the Internet. Focuses on the new business environment that has evolved through the Internet, as well as associated technologies and strategies. Prerequisite: BIS 1400 or Computer and Information Literacy Examination. Some programming experience is helpful. (F,Sp)

BIS 5800 Security of Business Information Systems (3)
(d6800)
In-depth exploration of security issues in business information systems. Includes workstation, workgroups, intranet, and wide-area network security. Covers development of security policies and procedures. Includes information necessary to pass Certified Information Systems Security Professionals exam. Prerequisite: BIS 3500 or graduate admission. (F,Sp,Su)

BIS 5950 Independent Readings (1-6) ®
Designed for individual student projects as approved by the department. (F,Sp,Su)

BIS 6050 Advanced Web-Based Management Information Systems Development (3)
Students learn how to design, develop, and implement an Internet commerce website. Includes instruction in modeling and building an advanced management website system. Prerequisites: BIS 3330 and 3500. (F,Sp,Su)

BIS 6110 Workshop (1-3) ®
Intensive workshops. (F,Sp,Su)

BIS 6120 Business Information Systems Development (3)
Business information systems development, including analysis, design, and implementation. Students develop a working prototype to solve a real-world information systems problem. (Sp)

BIS 6150 Communication for Business (3)
In-depth study of the process for preparing written business communications and related oral presentations. Preparation of reports relevant to student’s major. Prerequisite: BIS 2550 or equivalent. (F,Sp)

BIS 6180 Intrasession MBA Workshop (0.5-1) ®
Intensive workshops designed to enhance the MBA experience. (F,Sp)

BIS 6200 Business Data Communication Systems (3)
Introduction to business data communications, including concepts, network architecture, data communication software and hardware, distributed information systems, and business communication system services. (F)

BIS 6250 Graduate Internship (1-6) ®
Graduate-level internship in business, industry, or government position approved by department. Requires written learning objectives, performance evaluation, and a final internship written report. Requires 75 hours internship per 1 semester credit. (F,Sp,Su)

BIS 6330 Database Implementation (3)
(d4330)
Application of database concepts using industrial database products. Includes structured query language (SQL) development, database programming development, front- and back-end interface development, web database design, database administration basics, and integration of database tools within a project context. Prerequisite: BIS 3330 or equivalent. (F,Sp)

BIS 6350 Managing Business Training Programs (3)
Examines various management topics in the training and development field, including program development, implementation, and evaluation. Discusses the various roles of training program managers. (F)
BIS 6400 Local Area Network Management for Business (3)
Application of networking concepts related to the management of local area networks. Includes topics related to setup, management, and maintenance of local area networks and installation of electronic mail handling systems. (F, Sp, Su)

BIS 6410 Human-Computer Interface Design (3)
Integrates aspects of industrial psychology, work physiology, human environments, job analysis, and hardware/software engineering in the study of designing effective, efficient input/output interfaces for business information systems.

BIS 6440 Information and Decision Making (3)
Case-based approach to learning role of information technology when making quantitative and qualitative analyses, including statistical techniques to solve business problems through the use of information technology. Prerequisite: At least one graduate or undergraduate class in statistics. (Sp, Su)

BIS 6450 Designing Graphical User Interfaces for Electronic Commerce (3)
Integration of specialized web-design software, current multimedia technology (e.g., video/audio streaming, computerized slide shows, graphic animations, digital graphics) and web-design principles to create graphical user interfaces for e-commerce sites. Prior completion of BIS 2400 recommended.

BIS 6500 Developing Business Information Systems with Advanced Software Concepts (3)
Creation of custom applications to solve typical business problems or support common functions, using Visual Basic programming and OLE Automation with MS Office software. Prerequisite: Knowledge of database and spreadsheet software and BIS 2450. (F, Sp, Su)

BIS 6550 International Business Communication (3)
Culture-general and culture-specific study of business communication in the diverse world of international business, from both theoretical and applied perspectives. (F, Su)

BIS 6600 Business Teaching Internship (1-3) ®
Graduate-level business teaching experience at approved corporate, secondary, or post-secondary sites. (F, Sp, Su)

BIS 6640 E-Commerce Data Interchange Using XML (3)
Designed to build e-commerce applications using XML (Extensible Markup Language) as the underlying technology. Students will also learn to parse XML documents, use Extensible Style Sheet language, and use XSQL (an Oracle technology) to tie XML with its database. Prerequisites: BIS 3100, 3330, and 3500.

BIS 6650 Advanced Website Development (3)
Creation of static and dynamic HTML pages, CGI, Perl, and Java script. Students create websites using Access or Oracle as the database backend. This technical course maintains a business focus as a transaction-oriented commercial site. Prerequisites: BIS 3330 and 3500. (F, Sp, Su)

BIS 6660 The Adult Business Learner (3)
Focuses on the adult business learner, the concept of the “learning organization,” and the different types of postsecondary institutions that provide adult training and education in business.

BIS 6700 Information Systems Strategies for Electronic Commerce (3)
A management-oriented treatment of general information systems principles and topics relating to information systems strategies for electronic commerce, such as business models, mass customization, market research, security and assurance, entrepreneurship, intelligent agents, virtual corporations, electronic payments, and customer service. (F)

BIS 6720 Instruction and Training in Business and Marketing Education (3)
Designed for experienced training and educational personnel. Focuses on ways to improve instructional techniques and approaches. Compares traditional teacher/trainer-style teaching to student-centered teaching and training. (Su)

BIS 6730 Teaching Methods in Business Education, Marketing Education, and Information Systems (3)
Advanced methodology for teaching business, marketing, and information system subjects, including techniques for teaching word processing, keyboarding, Internet, basic business, accounting, marketing, economics, and other business subjects in cognitive, psychomotor, and affective instructional domains. Taught online.

BIS 6750 Business Process Reengineering Using Information Technology (3)
Examines methodologies and state-of-the-art thinking in the area of business process reengineering. Designed to help students understand how organizations manage change in contemporary global business environments by utilizing the latest information systems and technology techniques.

BIS 6760 The Administration and Organization of School-to-Careers Programs in Business (3)
Covers the philosophy of the school-to-careers movement in the U.S., as well as how to organize and administer such a program. Includes discussion of the school-based, linking, and work-based components of such a program.

BIS 6770 Competency-based Instruction (3)
Business teachers learn how to develop competency-based instruction by completing a CBI project. (F, Sp, Su)

BIS 6800 Security of Business Information Systems (3)
In-depth exploration of security issues in business information systems. Includes workstation, workgroups, intranet, and wide-area network security. Covers development of security policies and procedures. Includes information necessary to pass Certified Information Systems Security Professionals exam. Prerequisite: BIS 3500 or graduate admission. (F, Sp, Su)

BIS 6810 Introduction to the Research Process (3) ®
Essential scientific research concepts of theory development and data collection. The technology of research, including writing and funding proposals, experimental study design, and project management. Includes a hands-on research project conducted by the student. (Sp, Su)

BIS 6950 Independent Readings (1-3) ®
Specialized projects for graduate students. (F, Sp, Su)

BIS 6970 Master’s Paper (1-6) ®
Master’s-level thesis or Plan B research credit. (F, Sp, Su)

BIS 6990 Continuing Graduate Advisement (1-3) ®
(F, Sp, Su)

BIS 7250 Graduate Research Internship (1-3) ®
For doctoral students desiring to improve their research capability. Prior approval required. Repeatable to a maximum of six credits. (F, Sp, Su)

BIS 7330 School-Based Internship (3-9) ®
Internship for doctoral candidates preparing to be school supervisors. Repeatable to a maximum of 9 credits. (F, Sp, Su)

BIS 7610 Critical Analysis of Issues (3)
Examines critical analysis/thinking techniques, creative problem solving, and the identification of issues and trends in the field.

BIS 7950 Independent Readings (1-3) ®
Independent readings for graduate students. Repeatable to a maximum of 6 credits. (F, Sp, Su)

BIS 7970 Doctoral Dissertation (1-12) ®
Doctoral-level dissertation research credit. (F, Sp, Su)
Biometeorology (BMET)

See Department of Plants, Soils, and Biometeorology, pages 291-295

**BMET 2000** BPS The Atmosphere and Weather (3)
Survey of the processes governing the behavior of the atmosphere and the phenomenon of weather. Basic physical principles of radiation, energy, evaporation, and heat transport are introduced and connected to atmospheric circulation and weather. (F,Sp)

**BMET 3250** Aviation Weather (3)
Discussion, observation, and analysis of weather important for pilots and those associated with air travel. (Sp)

**BMET 3820** DSC Climate Change (3)
Q1 Emphasizes physical basis of climate (climate dynamics), as well as the mechanisms and processes for its fluctuations on sub-seasonal to interannual time scales (climate variations) and on regional to hemispheric/global time scales. Prerequisites: BMET 2000 or GEOG 1130. Also taught as AWER 3820. (Sp)

**BMET 4300** General Meteorology (3)
Introductory meteorology for students with background in physical sciences. Emphasis placed on physical processes (quantitatively) in the atmosphere, resulting in general weather phenomena around the world. Prerequisite: BMET 2000. (F)

**BMET 5250** Remote Sensing of Land Surfaces (4)
Basic principles of radiation and remote sensing. Techniques for ground-based measurements of reflectance and emitted radiation, as well as ancillary data collection to support airborne and satellite remote sensing studies in agriculture, geography, and hydrology. Prerequisites: MATH 1100 or 1210; and PHYX 2110 or 2210. Also taught as AWER 5250/6250 and BIE 5250/6250. (Sp)

**BMET 5400** Introduction to Meteorology (3)
Designed for senior and graduate students in different fields who desire some basic introduction to meteorology. Bridges a large gap between courses describing meteorological phenomena in broad and simple terms and other courses treating the atmosphere more theoretically. (F)

**BMET 5500** Land-Atmosphere Interactions (3)
Examination of interactions between the surface and atmosphere. Consideration of flows of mass and energy in soil-vegetation-atmosphere continuum, and their linkage to local and regional climates. Detailed study of feedbacks between vegetation and atmosphere. (Sp)

**BMET 5680** Paleoclimatology (3)*
Covers climate through the past four billion years of geologic time. Explores driving forces behind climate changes. Examines data and methods used in paleoclimatic research. Includes discussion of literature and stresses local paleoclimate records.

Three lectures per week, along with field trips. Prerequisite: GEOL/AWER 3600 or permission of instructor. Also taught as GEOL 5680/6680 and AWER 5680/6680.

**BMET 5700** Environmental Measurements (d6700)
Examination of critical instrumentation and principles involved in measuring key properties of terrestrial environment. Consideration of measurements in soils, plants, and atmosphere. (Sp)

**BMET 6250** Remote Sensing of Land Surfaces (4)
Basic principles of radiation and remote sensing. Techniques for ground-based measurements of reflected and emitted radiation, as well as ancillary data collection to support airborne and satellite remote sensing studies in agriculture, geography, and hydrology. Prerequisites: MATH 1100 or 1210; and PHYX 2110 or 2210. Also taught as AWER 6250/5250 and BIE 6250/5250. (Sp)

**BMET 6400** Introduction to Meteorology (3)
(d5400)
Designed for senior and graduate students in different fields who desire some basic introduction to meteorology. Bridges a large gap between courses describing meteorological phenomena in broad and simple terms and other courses treating the atmosphere more theoretically. (F)

**BMET 6410** Applied Agricultural Meteorology (2)
Explores applied concepts in agricultural meteorology, with emphasis on weather-agriculture and microclimate-agriculture relationships. Includes crop modeling applications. Course materials, resources, and teaching provided in cooperation with Iowa State University.

**BMET 6500** Land-Atmosphere Interactions (3)
(d5500)
Examination of interactions between the surface and atmosphere. Consideration of flows of mass and energy in soil-vegetation-atmosphere continuum, and their linkage to local and regional climates. Detailed study of feedbacks between vegetation and atmosphere. (Sp)

**BMET 6680** Paleoclimatology (3)*
(d5680)
Covers climate through the past four billion years of geologic time. Explores driving forces behind climate changes. Examines data and methods used in paleoclimatic research. Includes discussion of literature and stresses local paleoclimate records.

Three lectures per week, along with field trips. Prerequisite: GEOL/AWER 3600 or permission of instructor. Also taught as GEOL 6680/5680 and AWER 6680/5680.

**BMET 6700** Environmental Measurements (d5700)
Examination of critical instrumentation and principles involved in measuring key properties of terrestrial environment. Consideration of measurements in soils, plants, and atmosphere. (Sp)

**BMET 6800** Environmental Biophysics (2)
Explores connections between biosphere and atmosphere at many scales. Introduces processes governing exchanges of mass and energy between surface and atmosphere, as well as connections to climate. Examines role of the biota at local to global scales. (Sp)

**BMET 6910** Special Problems in Climatology (3)®
Study of physical causes and effects of various climate regimes found upon the Earth. Study of the basis and mechanisms of all types of physically-based climate models. Assists students in comprehending relative complexities and applicabilities of the whole range of climate models. (Sp)

® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

*This course is taught alternating years. Check with department for information about when course will be taught.
Business (BUS)  
See College of Business, pages 101-103

BUS 1000 Business Orientation (0.5)  
Orients freshmen and transfer students to College of Business programs, academic and student services, professional organizations, and career possibilities. (F,Sp)

BUS 2250 Introductory Internship (1-9)  
Introductory-level experience in a career-related position approved by the Cooperative Education Office. One credit for every 75 hours of internship experience, with a maximum of 9 credits. A maximum of 12 credits of 2250 and 4250 combined can be counted toward the minimum degree requirements for the College of Business. (F,Sp,Su)

BUS 3250 Discussions With Business Leaders (0.5)  
Students attend Partners in Business Program seminars to examine new methods for improving performance in organizations. Repeatable to a maximum of 1.5 credits. (F,Sp)

BUS 4250 Advanced Internship (1-9)  
Advanced or middle-level internship experience in a career-related position approved by the Cooperative Education Office. One credit for every 75 hours of internship experience, with a maximum of 9 credits. (F,Sp,Su)

BUS 6160 Integrative Pre-MBA Core (18)  
Integrates financial reporting, analysis, and markets; domestic and global economic and legal environments; creation and distribution of goods and services; and human behavior in organizations. Upon completion, students without undergraduate degrees in business are prepared to enter advanced MBA core. (Su)

BUS 6250 Graduate Internship (1-6)  
Graduate-level internship in a career-related position for graduate students wishing to develop or expand their occupational experience. Maximum of 6 credits. (F,Sp,Su)  
* Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

Civil and Environmental Engineering (CEE)  
See Department of Civil and Environmental Engineering, pages 164-169

CEE 1880 Civil and Environmental Engineering Orientation and Computer Applications (1)  
Orients students to programs of the Department of Civil and Environmental Engineering, professional and academic advising, student services, professional societies, and engineering careers. Laboratory activities emphasize problem solving using computer applications, such as spreadsheets and the HP48 Scientific Calculator. (Sp)

CEE 2240 Engineering Surveying (3)  
Experience with a wide variety of common surveying equipment, including use and operation of levels, theodolites, total station equipment, and GPS. Prior to graduation, computer applications and field exercises prepare students for civil engineering employment early in their careers. (F,Su)

CEE 2250 Cooperative Practice I (3)  
Planned work experience in industry. Detailed program must have prior approval. Written report required. Prerequisite: Preprofessional enrollment in either the Civil or Environmental Engineering program. (F,Sp,Su)

CEE 2870 Sophomore Seminar (1)  
Supervised discussion and review of problems encountered by professional engineers. (Sp)

CEE 2890 Environmental Engineering Sophomore Seminar (1)  
Introduces students to the field of environmental engineering, emphasizing design, ethics, and leadership in the environmental engineering profession. Emphasizes creative thinking, organizational skills, team work, professional ethics, and social responsibility. Prerequisite: Sophomore standing in environmental engineering. (Sp)

CEE 3010 Mechanics of Materials (2)  
Includes principal stresses; combined loading and stresses; deflection of beams by direct integration, moment-area, and superposition; and deflection of beams and frames by energy methods and columns. Includes laboratories to demonstrate the mechanical behavior of materials. Prerequisites: ENGR 2000 and 2040. (F)

CEE 3020 Structural Analysis (2)  
Classification of structural types and development of loads. Analysis of both statically determinate and indeterminate structures. Analysis of trusses, beams, frames, cables, and arches. Utilization of approximate methods of analysis focusing on structural behavior. Prerequisite: CEE 3010. (Sp)

CEE 3030 Uncertainty in Engineering Analysis (2)  
Principles of probability and statistics applied specifically to problems in civil and environmental engineering, including transportation, water quality, waste treatment, hydrology, and materials. (F,Sp)

CEE 3080 Design of Reinforced Concrete Structures (3)  
Design of reinforced concrete structural elements, simple and continuous reinforced beams, columns, joints, and one-way slabs. Includes concrete materials laboratory. Prerequisite: CEE 3010. (Sp)

CEE 3210 Introduction to Transportation Engineering (3)  
Introduction to basic concepts of roadway geometric design, and intersection and highway capacity analysis. Other topics include: traffic flow characteristics, traffic studies, signal design, and transportation project evaluation. Prerequisite: CEE 3030. (Sp)

CEE 3430 Engineering Hydrology (3)  
Processes and practical problems in: surface and groundwater hydrology, the hydrological cycle, rainfall-run-off and flood analysis, regional groundwater flow and well hydraulics, and the design of water supply systems. Prerequisite: CEE 3500 or AWER 3700 or SOIL 5650. (Sp)

CEE 3500 Civil and Environmental Engineering Fluid Mechanics (3)  
Explores fluid properties, hydrostatics, fluid dynamics similarity, energy and momentum principles, closed conduit flow, open channel flow, and flow measurement. Includes laboratory exercises in flow measurement, open channel flow, pipe friction, physical modeling, and data collection. Prerequisites: MATH 1220; MATH 2210 or 2250; ENGR 2000. (F,Sp)

CEE 3510 Civil and Environmental Engineering Hydraulics (3)  
Steady flow in open channel and closed circuits, nonuniform flow in open channels, combined energy losses in pipelines, and distribution in pipe networks. Includes laboratory and computer exercises in data collection, pipe networks, and unsteady and nonuniform flow. Prerequisite: CEE 3500. (F,Sp)

CEE 3610 Environmental Management (3)  
Introduction to environmental health, emphasizing relationships among environmental quality, public health, environmental and occupational health regulations, human health risk assessment, institutions, and engineered systems in environmental health management. Prerequisites: CHEM 1210; BIOL 1210 or Breath Life Sciences course. Also taught as PUBH 3610. (F)

CEE 3640 Water and Wastewater Engineering (4)  
Engineering analysis and design of processes for treatment of water and wastewater. Major topics include water quality evaluation; physical, chemical, and biological treatment systems; design of facilities for production of drinking water and for treatment and reclamation of municipal and industrial wastewater; and management of residuals from water and wastewater treatment facilities. Laboratory evaluation of physical and chemical treatment technologies. Computer applications for process modeling and analysis. Prerequisite: CEE/PUBH 3610. (Sp)

CEE 3670 Transport Phenomena in Bio-Environmental Systems (3)  
Core course in both biological and environmental engineering. Students develop a detailed understanding of the principles, concepts, modes, and methods of calculating heat and mass transfer. Emphasis given to contaminant and nutrient flux, along with their state transformations, in order for the biological or environmental engineer to evaluate options for production, clean-up, and control of bio-environmental systems. Prerequisites: CEE 3500 and MAE 2400. Also taught as BIE 3670. (Sp)
CxEE 3780  Solid and Hazardous Waste Management  (3)
Introduction to integrated management of municipal and industrial solid waste; household, commercial, and industrial hazardous waste; and resource recovery and recycling principles. Three lectures augmented by weekly laboratory to provide students with experience in wet laboratory, computer modeling, and field trip experiences related to modern solid and hazardous waste management principles. Prerequisite: Junior standing in environmental engineering. (F)

CxEE 3870  Professional/Technical Writing in Civil and Environmental Engineering  (2)
Gives CEE students intensive practice with oral and written communication in business and technical CEE writing. Requires concurrent enrollment in CEE/PUBH 3610. (F)

CxEE 3880  Civil Engineering Design I  (1)
Introduction to senior engineering students’ integrated design experience. Design project is identified and proposal for its completion during the senior year is produced. Emphasizes project scheduling, and completion of design proposal. Prerequisite: CEE 3870. (Sp)

CxEE 3890  Civil Engineering Design I  (1)
Introduction to senior environmental engineering students’ integrated design experience. Design project identified and proposal for its completion during the senior year is produced, under mentoring of course instructor. Emphasizes project identification, project scope, manpower and materials budgeting, project scheduling, and completion of design proposal. Prerequisites: CEE/PUBH 3610; CEE 3640 and CEE/BIE 3670 (must be taken concurrently). (Sp)

CxEE 4200  Engineering Economics  (2)
Applications of the mathematics of finance to engineering decision making. Prerequisite: Senior year of engineering or instructor’s consent. (F)

CxEE 4300  Engineering Soil Mechanics  (4)
Physical and mechanical properties of soils. Topics include: classification, permeability, soil stresses and settlement analysis, soil strength, slope stability, lateral earth pressures, introduction to foundations, numerical solutions, and computer applications. Prerequisites: CEE 3500 (taken concurrently) and ENGR 2040. (Sp)

CxEE 4790  CI  Environmental Engineering Design II  (2)
Provides senior environmental engineering students with integrated design experience in two-semester sequence. Design projects proposed in CEE 3890 completed under mentoring of course instructor. Emphasizes team work, scheduling, design calculations, and completion of design report. Prerequisites: CEE 3890 and concurrent enrollment in environmental engineering technical elective course during fall semester. (F)

CxEE 4870  CI  Civil Engineering Design II  (2)
Provides senior engineering students with integrated design experience in two-semester sequence. Design projects proposed in Junior Design Proposal placed on team work, scheduling, design calculations, and completion of design report. Prerequisite: CEE 3880; senior design technical elective should be taken concurrently. (F)

CxEE 4880  CI  Civil Engineering Design III  (2)
Provides senior engineering students with integrated design experience in two-semester sequence. Design projects started in CEE 4870 will be completed with presentation, report, and defense of design project. Prerequisite: CEE 4870. (Sp)

CxEE 4890  CI  Environmental Engineering Design III  (2)
Provides senior environmental engineering students with integrated design experience in two-semester sequence. Completion of design projects begun in CEE 4790, with presentation, report, and defense. Prerequisite: CEE 4790. (Sp)

CxEE 4930  Independent Study  (1-3) ®
Laboratory design or research project on problem selected by student. Requires review of literature, preparation of technical or research project, completion of design or research project, and preparation of report. (F,Sp,Su)

CxEE 5010  Matrix Analysis of Structures and Introduction to Finite Elements  (3)
Analysis of structures using matrix methods. Application of software based on the stiffness method to practical analysis problems. Introduction of Finite Element method based on stiffness approach and mathematical derivation of simple finite elements, along with application to practical problems. Prerequisite: CxEE 3010. (F)

CxEE 5020  Finite Element Methods in Solid Mechanics I  (3)
Introduction to finite element methods and their application to the analysis and design of mechanical engineering systems. Prerequisite: MAE 3040. Also taught as MAE 5020. (F)

CxEE 5050  Design of Wood and Masonry Structures  (3)
Design of beams, columns, joints, walls, and diaphragms in both wood and masonry materials. Prerequisites: CEE 3640. Also taught as CEE 5050. (F)

CxEE 5060  Mechanics of Composite Materials I  (3)
Stress-strain relations for nonisotropic composites, such as fiber-reinforced plastic laminates, properties and their uses, strength and life determination, and methods for design using composite materials. Prerequisite: MAE 3040 or CCEE 3640. Also taught as MAE 5060. (F)

CxEE 5070  Structural Steel Design  (3)
Structural steel design using load and resistance factor design (LRFD) method. Focuses on design of structural beams, columns, and connections utilizing steel design codes. Prerequisite: CCEE 3080. (F)

CxEE 5080  Numerical Methods in Elasticity  (3)

CxEE 5100  Infrastructure Evaluation and Renewal  (3)
Evaluation of existing structural systems and techniques to improve their performance. Focuses on structures which are seismically deficient. Prerequisites: CEE 3080, 5070. (Sp)

CxEE 5190  Geographic Information Systems for Civil Engineers  (3)
(d6190)
Introduction to GIS concepts addressing data structures, spatial entities, and queries. Topics include location referencing methods, data collection techniques, current applications, and institutional and organizational issues. (Sp)

CxEE 5220  Traffic Engineering  (3)
(d6220)
Topics covered include characteristics, measurements, and analysis of volume, speed, density, and travel time; capacity and level of service analysis; signalization and traffic control devices. (Sp)

CxEE 5230  Geometric Design of Highways  (3)
(d6230)
Principles of highway location and planning, with full consideration of economic, environmental, and other impacts. Capacity analysis of intersections and highways, passing-lane design, and risk-cost based horizontal and vertical alignment design. Introduction to design software through coursework and term projects. Prerequisite: CCEE 3210. (Sp)

CxEE 5240  Urban and Regional Transportation Planning  (3)
(d6240)
Examination of travel demand forecasting, data collection, and survey data analysis techniques. Focuses on transportation-land use interactions and impact of market-based policies on travel demand. Theories and applications of traditional and advanced trip distribution, mode choice, and route assignment models. (F)

CxEE 5250  Environmental Engineering Cooperative Practice  (2)
Applied environmental employment with primary focus of work experience related to one of the environmental engineering specialty areas. Prerequisites: Senior status and permission of instructor. (F,Sp,Su)

CxEE 5350  Foundation Analysis and Design  (3)
(d6350)
Applications of theories studied in soil mechanics. Design considerations for various foundation types, including shallow foundations, driven piles, drilled shafts, walls,
soil anchorages, and mechanically-stabilized earth support systems. Field investigation
techniques and computer applications. Prerequisite: CEE 4300. (F)

CEE 5380 Earthquake Engineering (d6380)
Covers wide variety of earthquake engineering topics, including seismology and
earthquake source characterization, strong ground motion, seismic hazard analysis,
wave propagation, soil dynamics, ground response, local site effects, liquefaction,
seismic slope stability, soil improvement, vibrational analyses, and structural seismic
design. Prerequisite: CEE 4300. (Sp)

CEE 5430 Groundwater Engineering (d6430)
Basics of contaminant transport and fate in soil water and vapor, design of ground-
water recovery systems, and subsurface contamination remediation, including inter-
ceptor wells, well fields, stream-aquifer interactions, soil vapor extraction, separate
phase recovery, biodegradation of soluble plumes, and air emissions. (F)

CEE 5450 Hydrologic Modeling (d6450)
Case studies of hydrologic modeling and decision methods: (1) Real-time flood
warning; (2) extended streamflow prediction; (3) probabilistic water resource man-
gement; and (4) physical modeling of ungauged basins. Prerequisite: CEE 3430. (Sp)

CEE 5460 Water Resources Engineering (d6460)
Engineering design course covering a wide range of topics, including: surface and
groundwater hydrology, statistical analysis, water law, hydroelectric power, water
supply, irrigation, flood control, wastewater, drainage, dams and reservoirs, pipe-
lines, open channels, and planning. (F)

CEE 5470 Sedimentation Engineering (d6470)
Explores river response, sediment transport, sediment and watershed yield, flow re-
stance, scour and erosion, and floodplain management. Prerequisite: CEE 3500. (Sp)

CEE 5500 Open Channel Hydraulics with an Emphasis on Gradually Varied Flow (d6500)
Theory and applications of steady uniform and gradually varied flow under both subcritical and supercritical flow conditions. Solutions to multiple-network canal sys-
tems by solving systems of combined ordinary differential and algebraic equations.
Method for defining natural channel systems and solving steady-state flows in them.
Prerequisites: CEE 3500, 3510. (F)

CEE 5540 Hydraulic Structures Design (d6540)
Design of a variety of hydraulic structures is explored, both in the classroom and lab-
oratory. Integrates student-developed, original computer programs; commercially
available software; field trips; and hands-on laboratory design projects to further stu-
dents’ understanding of hydraulic structures. Prerequisites: CEE 3500 and 3510. (F)

CEE 5550 Hydraulics of Closed Conduits (d6550)
Includes design and operation of piping systems; economics; feasibility and impact
of pipelines; pipe, pump, and valve selection; transient and cavitation analysis; and
pipeline operation and filling. Prerequisites: CEE 3500 and 3510. (Sp)

CEE 5560 Environmental Hydraulics (d6560)
Design of hydraulic structures, spillways, energy dissipators, fish passage, reservoir
operation, ocean outfalls, and pumping stations. Includes principles of design and im-
pact of structures on the environment, and the environmental properties and hydrau-
lics of fluids. Prerequisite: CEE 3500. (F)

CEE 5610 Environmental Quality Analysis (d6610)
Familiarizes students with various methods used for analysis of chemical parameters
in environmental samples (water, soil, and air). Provides students with skills enabling
them to make proper selection/evaluation of analytical procedure and evaluate data
generated. Prerequisite: CHEM 1210. (F)

CEE 5620 Aquatic Chemistry (d6620)
Provides students with understanding of principles of aquatic chemistry, emphasizing
chemical equilibria, acid-base reactions, complex formation, oxidation-reduction re-
actions, complex formation, and dissolution chemistry. Prerequisites: CHEM 1210,
CEE 3640. Also taught as SOIL 5620. (F)

CEE 5670 Hazardous Chemicals Handling and Safety (d6670)
Provides students with necessary skills and knowledge for working safely in areas as-
associated with hazardous chemicals. Topics covered include: regulations, exposure
routes, toxicology, chemical and physical hazards, personal protective equipment,
sampling, monitoring, decontamination, and emergency response procedures. Prereq-
usite: CHEM 1210. Also taught as PUBH 5670. (F)

CEE 5680 Soil Based Hazardous Waste Management (d6680)
Engineering management of hazardous wastes present in the vadose zone, including
extraction, containment, and biological, chemical, and physical destruction technolo-
gies. Aspects include engineering characterization, problem definition, treatment, and
monitoring. Analysis and design emphasized through problems, examinations, and
report writing. Prerequisites: CEE/PUBH 3610, CEE 3640, 3870, CEE/BIE 3670.
(Sp)

CEE 5690 Natural Systems Engineering (d6690)
Application of modeling tools commonly utilized in water resources systems for as-
essment of environmental impacts associated with engineered systems. Topics in-
clude: water resources modeling; physical, chemical, and biological process effects;
assessment methods; data integration techniques; and impact assessment. Taught sec-
ond half of fall semester. Prerequisites: CEE/PUBH 3610, CEE 3500, 3510, 3640.
(F)

CEE 5700 Field Sampling Techniques for Natural Systems Engineering (d6700)
Provides students with hands-on approach to utilizing several of the most commonly
applied spatial and temporal sampling techniques for data acquisition in support of
natural systems modeling. Explores standard and advanced surveying techniques for
water quality, stream geomorphology, and hydraulics, utilizing levels, total stations,
laser levels, GPS, and hydroacoustic technologies. Integrative sampling strategies
across spatial and temporal scales emphasized for multi-disciplinary studies. Taught
first half of fall semester. Prerequisite: CEE 5690/6690. (F)

CEE 5710 Pollution Prevention and Industrial Ecology (d6710)
Explores pollution prevention and waste minimization concepts, focusing on imple-
mentation of these concepts in design of production processes and products. Discus-
sion of pollution prevention/waste minimization concepts, energy and materials
conservation, Life Cycle Analysis, materials and process audits, industrial process
design for waste minimization and energy conservation, packaging, and ISO 14000.
Prerequisites: CEE/BIE 3670, CEE 3780, MAE 2400. (Sp)

CEE 5720 Natural Systems Modeling (d6720)
Provides hands-on approach to utilizing several of the most commonly applied mod-
celing tools employed to estimate physical, chemical, and biological impacts of exist-
ing and proposed water resource systems. Focuses on utility and climatization of
specific modeling approaches, while also stressing integrative multi-disciplinary na-
ture of impact assessment frameworks. Prerequisite: CEE 5690/6690. (Sp)

CEE 5730 Analysis and Fate of Environmental Contaminants (d6730)
Provides students with understanding of methods used in analysis of environmental
samples for organic contaminants. Examines various properties and processes deter-
mining the fate of organic contaminants in the environment. Taught first half of
spring semester. Prerequisites: CHEM 1210, 2300. Also taught as PUBH 5730/6730.
(Sp)

CEE 5750 Air Quality Measurements (d6750)
Laboratory-based course designed to familiarize participants with federally-approved
reference measurement techniques for ambient and source air pollutants. Also pro-
vides understanding of temporal and spatial pollutant behavior. (Sp)

CEE 5760 Hydraulic Structures Field Course (d6760)
Week-long course, with one day of in-class lectures and four days of field trips. In-
introduces students to field applications of hydraulic structures design. Field trips may involve backpacking to remote areas. (F,Su)

CEE 5790 Accident and Emergency Management (3)
Introduction to fundamentals of accident, hazard, and emergency management. Topics include legislation; chemical safety fundamentals; fire, explosion, and spill fundamentals; contaminant air transport fundamentals; hazard and risk assessment; dispersion applications; and hazard and risk management applications. Prerequisite: CHEM 1220. Also taught as PUBH 5790. (Sp)

CEE 5810 Biochemical Engineering (3)
(d6)10 Fundamentals of bioreactor design and bioengineering. Emphasizes mathematical models of microbial and enzymatic processes in environmental and industrial biotechnology. Prerequisites: BIE 1200 and BIE/CEE 3670; or BIE/CEE 3670, CEE/PUBH 3610, and CEE 3640. Also taught as BIE 5810/6810. (F)

CEE 5830 Management and Utilization of Biological Solids and Wastewater (3)
Focuses on production, management, and disposal of biosolids and wastewater generated in food processing and wastewater treatment. Emphasizes beneficial use of biosolids and wastewater for agricultural production, forest enhancement, and land reclamation. Prerequisite: CEE/BIE 3670. Also taught as CEE 5830/6830. (F)

CEE 5860 Air Quality Management (3)
Introduction to air quality management. Explores the legislation, sources, behaviors, and effects of regulated and unregulated air pollution, control technologies, and air dispersion modeling. Prerequisites: CEE 3640, 3780, CEE/BIE 3670, MAE 2400. (F)

CEE 5870 Hazardous Waste Incineration (3)
Provides introduction to hazardous waste incineration principles. Topics include: thermodynamics, stoichiometry, thermochemistry, chemical kinetics, energy recovery, pollution control systems, and incinerator design principles. Prerequisites: CEE/BIE 3670, CEE 3780, MAE 2400; CEE 5860 (may be taken concurrently). (Sp)

CEE 5880 Remediation Engineering (3)
(d6)10 Physical, chemical, and biological principles associated with remediation of hazardous waste contaminated soil, water, sediments, and air. Topics include: source removal and source control, product recovery, chemical treatment methods, biological remediation concepts, in situ processes, ex situ processes, and integrated process design. Prerequisites: CEE 3430, 3640, 3780, CEE/PUBH 3610. (F)

CEE 5900 Cooperative Practice II (3)
A planned work experience in industry. Detailed program must have prior approval. Written report required. (F,Sp,Su)

CEE 6010 Finite Element Methods in Solid Mechanics II (3)
(d6)10 Advanced theory and applications of finite element methods to both static and dynamic solid mechanics problems. Prerequisite: MAE 5020. Also taught as MAE 6010. (Sp)

CEE 6020 Structural Stability (3)**
Elastic and inelastic buckling of columns; analysis of beam columns, thin-walled beams of open cross-section. Stability analysis of frame and plate structures. Large deflection theory. Historical notes on stability of structures. Computer applications. Prerequisite: CEE 3010. (F)

CEE 6030 Structural Optimization (3)*
Introduction to optimization techniques for linear and nonlinear, univiable, and multivariable functions with or without constraints. Computer applications, and applications to structural design. Prerequisite: CEE 3010 or instructor’s consent. (Sp)

CEE 6040 Structural Reliability (3)*
Elements of probability theory and its application to structural engineering and mechanics. Statistical distribution of loads. Uncertainties in material parameters and their effects in design. Reliability-based safety analysis and computer applications. Prerequisite: Instructor’s consent. (F)

CEE 6050 Experimental Methods in Structural Engineering (3)**
Experimental techniques used in research and design in structural engineering and mechanics. Structural models. Theory and practical applications. Development of principles used to design research projects. Prerequisite: Instructor’s consent. Also taught as MAE 6050. (Sp)

CEE 6070 Mechanics of Composite Materials II (3)
Second course in composite materials. Stress-strain states of laminated composite structures, including interlaminar stresses, failure criteria, and hygrothermal stresses. Prerequisite: MAE 5060. Also taught as MAE 6070. (F)

CEE 6080 Numerical Methods in Elasticity (3)

CEE 6090 Theory of Plates and Shells (3)
Introduction to plate and shell theories. Development of bending and buckling of plates and shells through classical theory. Prerequisite: MAE 3040 or CEE 3010. Also taught as MAE 6090. (F)

CEE 6130 Structural Dynamics and Seismic Design (3)
(d6)10 Development and solutions for equations of motion for single- and multi-degree of freedom systems. Dynamic analysis by Modal Superposition and Response Spectra. Design of structures for seismically active areas. Also taught as MAE 6130. (Sp)

CEE 6180 Dynamics and Vibrations (3)
Fundamentals of two-dimensional and three-dimensional rigid body dynamics, including Newtonian, Lagrangian, and Leavitt Energy Methods. Equations of motion, mode shapes, and natural frequencies for continuous media and multi-degree-of-freedom systems. Prerequisite: MAE 5310 or CEE 6130. Also taught as MAE 6180. (Sp)

CEE 6190 Geographic Information Systems for Civil Engineers (3)
(d6)10 Introduction to GIS concepts addressing data structures, spatial entities, and queries. Topics include location referencing methods, data collection techniques, current applications, and institutional and organizational issues. (Sp)

CEE 6200 Pavement Design (3)
Design and analysis of flexible and rigid pavements for highways and runways, including the design of overlays. Equal emphasis on current practice and advanced concepts of pavement management. Prerequisite: CEE 3010. (F)

CEE 6210 Transportation Systems Analysis (3)
Introduces systems approach to analysis of transportation services and infrastructure. Focuses on basic and advanced concepts, including operations research techniques, simulation, and artificial intelligence. Topics include facility sizing and location, financial and economic analysis of investment projects, and privatization. Prerequisite: CEE 3030 or equivalent. (F)

CEE 6220 Traffic Engineering (3)
(d6)20 Topics covered include characteristics, measurements, and analysis of volume, speed, density, and travel time; capacity and level of service analysis; signalization and traffic control devices. (Sp)

CEE 6230 Geometric Design of Highways (3)
(d6)20 Principles of highway location and planning, with full consideration of economic, environmental, and other impacts. Capacity analysis of intersections and highways, passing-lane design, and risk-cost based horizontal and vertical alignment design. Introduction to design software through coursework and term projects. Prerequisite: CEE 3210. (Sp)

CEE 6240 Urban and Regional Transportation Planning (3)
(d6)20 Examination of travel demand forecasting, data collection, and survey data analysis techniques. Focuses on transportation-land use interactions and impact of market-based policies on travel demand. Theories and applications of traditional and advanced trip distribution, mode choice, and route assignment models. (F)
CEED 6250 Transportation Data/Safety Analysis (3)
Statistical analysis of transportation data, including safety and risk assessment. Regression and multivariate analysis, such as discriminant analysis, canonical correlation, and factor analysis. In-depth study of selected methodologies for analyzing transportation safety and designing counter measures. Prerequisite: CEE 3210 or equivalent. (Sp)

CEED 6260 Public Transportation (3)
Principles of planning, design, and operation of transit systems in urban and rural areas. Determination of optimal route alignments, schedules, and station/stop spacings. Exploration of innovations in financing and pricing, including cost-cutting techniques. (Sp)

CEED 6270 Traffic Operations Analysis (3)
Traffic flow fundamentals, macroscopic and microscopic models of traffic flow, shock wave analysis, car following principles, queuing systems, and simulation. (Sp)

CEED 6290 Transportation Network Analysis (3)
Analytical approaches and algorithms to the formulation and solution of the equilibrium assignment problem for transportation networks. Emphasis on user equilibrium, comparison with system optimal stochastic user equilibrium, origin-destination matrix estimation, and network design problems. (F)

CEED 6300 Earth Structures (3)
Design and construction of earth and rockfill dams, embankments, excavations, and retaining structures. Prerequisites: CEE 4300, 5350/6350. (Sp)

CEED 6310 Environmental Geotechnics (3)
Geotechnical aspects of environmental systems, with concentration on waste containment facilities. Prerequisite: CEE 4300. (F)

CEED 6320 Deep and Shallow Foundations (3)
Analysis, design, and construction of deep and shallow foundations. Prerequisites: CEE 4300, 5350/6350. (Sp)

CEED 6330 Ground Reinforcement, Improvement, and Treatment (3)
Theory, design, and construction methods for ground reinforcement, improvement, and treatment applications. Prerequisites: CEE 4300, 5350/6350. (F)

CEED 6340 Laboratory and Field Methods in Geotechnical Engineering (3)
Subsurface investigation, field testing and instrumentation, and laboratory testing. Prerequisites: CEE 4300, 5350/6350. (F)

CEED 6350 Foundation Analysis and Design (3)
Applications of theories studied in soil mechanics. Design considerations for various foundation types, including shallow foundations, driven piles, drilled shafts, walls, soil anchorages, and mechanically-stabilized earth support systems. Field investigation techniques and computer applications. Prerequisite: CEE 4300. (F)

CEED 6360 Geotechnical Principles (3)
Theoretical soil behavior. Hydraulic conductivity, compression, and shearing properties. Prerequisites: CEE 4300, 5350/6350. (F)

CEED 6370 Buried Structures (3)
Analysis of structural performance of buried structures (pipes, tanks, silos, etc.) using principles of mechanics of materials and finite element methods. Prerequisite: CEE 4300. (Sp)

CEED 6380 Earthquake Engineering (3)
(d5380)
Covers wide variety of earthquake engineering topics, including seismology and earthquake source characterization, strong ground motion, seismic hazard analysis, wave propagation, soil dynamics, ground response, local site effects, liquefaction, seismic slope stability, soil improvement, vibrational analyses, and structural seismic design. Prerequisite: CEE 4300. (Sp)

CEED 6400 Physical Hydrology (3)
Fundamentals of hydrologic cycle and hydrologic processes. Precipitation, infiltration, runoff generation, evaporation and transpiration, and snowmelt. Representation of hydrologic processes in hydrologic models. Prerequisite: CEE 3430. (F)

CEED 6410 Water Resource Systems Analysis (3)
Systems formulation of decision problems. Solution by simulation and optimization, constrained and unconstrained optimization algorithms, case studies and applications to water supply, and quality and ecosystems management. (Sp)

CEED 6420 Engineering Risk Assessment and Risk Management (3)
Comprises both quantitative risk assessment techniques and a range of issues in risk management. Examples drawn from various civil engineering subdisciplines such as: environmental engineering, geotechnical engineering, hydraulics and hydrology, structural engineering, transportation engineering, and water resource management. (Sp)

CEED 6430 Groundwater Engineering (3)
(d5430)
Basics of contaminant transport and fate in soil water and vapor, design of groundwater recovery systems, and subsurface contamination remediation, including interceptor wells, well fields, stream-aquifer interactions, soil vapor extraction, separate phase recovery, biodegradation of soluble plumes, and air emissions. (F)

CEED 6440 Geographic Information Systems in Water Resources (3)
(d5440)
Principles and operation of geographic information systems. Spatial hydrologic modeling done by developing a digital representation of the environment in the GIS, then adding functions simulating hydrologic processes. Includes term project on use of GIS in water resources. (F)

CEED 6450 Hydrologic Modeling (3)
(d5450)
Case studies of hydrologic modeling and decision methods: (1) Real-time flood warning; (2) extended streamflow prediction; (3) probabilistic water resource management; and (4) physical modeling of ungauged basins. Prerequisite: CEE 3430. (Sp)

CEED 6460 Water Resources Engineering (3)
(d5460)
Engineering design course covering a wide range of topics, including: surface and groundwater hydrology, statistical analysis, water law, hydroelectric power, water supply, irrigation, flood control, wastewater, drainage, dams and reservoirs, pipelines, open channels, and planning. (F)

CEED 6470 Sedimentation Engineering (3)
(d5470)
Explores river response, sediment transport, sediment and watershed yield, flow resistance, scour and erosion, and floodplain management. Prerequisite: CEE 3500. (Sp)

CEED 6480 Subsurface Flow and Transport Processes (3)
In-depth coverage of unsaturated and saturated water flow, well hydraulics, salt water intrusion, and multiphase flow applicable to groundwater resources management and remediation. Includes basics of nonreactive and reactive mass transport processes due to various pollution events, and remediation strategies. Addresses special topics related to free-product recovery and migration, and vapor phase transport as applicable to remediation of hazardous-waste contaminated subsurface. (Sp)

CEED 6490 Integrated River Basin/Watershed Planning and Management (3)
Reviews fundamental building blocks of water resource institutions, emphasizing creation of institutions which are sensitive to a particular culture, economic, and political environment. Addresses institutional mission and regulatory roles, public participation, property and water rights, and elements of production. (Sp)

CEED 6500 Open Channel Hydraulics with an Emphasis on Gradually Varied Flow (3)
Theory and applications of steady uniform and gradually varied flow under both subcritical and supercritical flow conditions. Solutions to multiple-network canal systems by solving systems of combined ordinary differential and algebraic equations. Method for defining natural channel systems and solving steady-state flows in them. Prerequisites: CEE 3500, 3510. (F)

CEED 6510 Numerical and Statistical Methods for Civil Engineers (3)
Engineering applications of approximation and interpolation, solution methods for
ordinary differential equations, numerical solution of partial differential equations, nonparametric and parametric probability and regression estimation, and Monte Carlo and uncertainty analysis. (F)

CEE 6520 Applied Hydraulics (3)
Basic fluid mechanics applied to wildland watershed systems and directed at nonengineering students. Explores nature of fluid state, fluid motion, and steady uniform and varied flow in open channels, under both subcritical and supercritical conditions. Surveys concepts of boundary layers, turbulence, convection, dispersal, and wave formation in unsteady flows. Emphasizes problem formulation and solving. Prerequisites: AWER 5490/4490; MATH 2280 (recommended). Also taught as AWER 6520. (F)

CEE 6530 Unsteady Flows in Open Channels and Numerical Solutions of St. Venant Equations (3)
Derivation and physical meaning of the St. Venant equations, types of water waves, solutions to unsteady free surface flows based on the characteristics, and direct and iterative implicit methods of solution. Emphasizes solving unsteady flow problems in channel systems. Prerequisite: CEE 6500. (Sp)

CEE 6540 Hydraulic Structures Design (3)
(f5540)
Explores design of a variety of hydraulic structures, both in the classroom and laboratory. Integrates student-developed, original computer programs; commercially available software; field trips; and hands-on laboratory design projects to further students' understanding of hydraulic structures. Prerequisites: CEE 3500 and 3510. (F)

CEE 6550 Hydraulics of Closed Conduits (3)
(g5550)
Includes design and operation of piping systems; economics; feasibility and impact of pipelines; pipe, pump, and valve selection; transient and cavitation analysis; and pipeline operation and filling. Prerequisites: CEE 3500 and 3510. (Sp)

CEE 6560 Environmental Hydraulics (2)
(d5560)
Design of hydraulic structures, spillways, energy dissipators, fish passage, reservoir operation, ocean outfalls, and pumping stations. Includes principles of design and impact of structures on the environment, and the environmental properties and hydraulics of fluids. Prerequisites: CEE 3500. (F)

CEE 6570 Potential Fluid Flow (2)*
Application of the principles and methods of classical hydromechanics to the solution of problems. Closed form solution to inviscid fluid flows obtained using complex variables and conformal mappings. Prerequisite: CEE 3510 or MAE 3420. Also taught as MAE 6570. (F)

CEE 6580 Intermediate Fluid Mechanics (3)
Survey of mathematical methods used in fluid mechanics, including: potential flow solutions (complex variables), laminar flow and turbulent flow solutions, boundary layer theory, and introduction to dispersion in fluid. (F)

CEE 6590 Evaluation of Hydrologic Modeling Systems (3)
Focuses on different techniques for evaluating the performance, diagnosing the model structure, and assessing the uncertainty of hydrologic modeling systems. Examines mathematical and systems theory methods for examining the interrelation between model inputs and outputs. Prerequisite: CEE 6400. (Sp)

CEE 6600 Environmental Chemistry of Inorganic Contaminants (2)
Inorganics of environmental concern discussed in terms of processes affecting their behavior in soil and water systems. Laboratory-scale experiments and computer models used to evaluate this behavior. Explores remediation of environmental systems contaminated with inorganic pollutants. Taught second half of spring semester. Prerequisite: CEE/SOIL 5620. (Sp)

CEE 6610 Environmental Quality Analysis (3)
(d5610)
Familiarizes students with various methods used for analysis of chemical parameters in environmental samples (water, soil, and air). Provides students with skills enabling them to make proper selection/evaluation of analytical procedure and evaluate data generated. Prerequisite: CHEM 1210. (F)

CEE 6620 Field Sampling and Analysis of Environmental Systems (3)
Explores applied field sampling, as well as field and laboratory techniques used in the monitoring of environmental media. Includes theory and practice of field site monitoring and measurement of physical, chemical, and biological processes in the environment. Prerequisite: Consent of instructor. (F)

CEE 6630 Process Dynamics in Environmental Engineering Systems (2)
Fundamental principles used in analysis and simulation of environmental systems. Emphasizes reaction kinetics, mass transfer, reactor analysis and design, and development and solution of mathematical models to describe natural and engineered environmental systems. Taught first half of fall semester as prerequisite to CEE 6660. Prerequisites: CEE 3500, 3510. (F)

CEE 6640 Physical and Chemical Environmental Process Engineering (3)
Principles of physical and chemical environmental engineering processes, including sedimentation, filtration, gas transfer, aeration, absorption, ion exchange, membrane processes, coagulation, flocculation, precipitation, oxidation, reduction, and disinfection. Process modeling and analysis applications in treatment of water, wastewater, industrial wastes, vapor treatment, and soil remediation. Prerequisites: CEE/SOIL 5620, CEE 6630. Corequisite: CEE 6670. (Sp)

CEE 6650 Biological Processes in Environmental Engineering (2)
Theory and design of biological processes used in environmental engineering. Stoichiometric, energetic, and kinetic analysis of biological treatment processes; modeling and design of suspended growth and fixed-film processes for treatment of municipal, industrial, and hazardous wastes; nutrient removal; and bioremediation. Prerequisites: CEE 6630, 6640, 6710. (Sp)

CEE 6660 Environmental Data Analysis and Experimentation (2)
Data analysis and experimental design for environmental science and engineering. Graphical data analysis, parametric and nonparametric statistics, frequency distributions, hypothesis testing, propagation of variance, censored data, correlation and causation, parameter estimation, factorial experimental design and response surfaces, environmental monitoring and uncertainty. (F)

CEE 6670 Environmental Process Laboratory (2)
Laboratory testing to demonstrate physical, chemical, and biological principles utilized in environmental engineering processes. Corequisites: CEE 6640, 6650. (Sp)

CEE 6680 Soil Based Hazardous Waste Management (2)
(d5680)
Engineering management of hazardous wastes present in the vadose zone, including extraction, containment, and biological, chemical, and physical destruction technologies. Aspects include engineering characterization, problem definition, treatment, and monitoring. Analysis and design emphasized through problems, examinations, and report writing. Prerequisites: CEE/PUBH 3610, CEE 3640, 3870, CEE/BIE 3670. (Sp)

CEE 6690 Natural Systems Engineering (3)
Application of modeling tools commonly utilized in water resources systems for assessment of environmental impacts associated with engineered systems. Topics include: water resources modeling; physical, chemical, and biological process effects; assessment methods; data integration techniques; and impact assessment. Taught second half of fall semester. Prerequisites: CEE/PUBH 3610, CEE 3500, 3510, 3640. (F)

CEE 6700 Field Sampling Techniques for Natural Systems Engineering (2)
(d5700)
Provides students with hands-on approach to utilizing several of the most commonly applied spatial and temporal sampling techniques for data acquisition in support of natural systems modeling. Explores standard and advanced surveying techniques for water quality, stream geomorphology, and hydraulics, utilizing levels, total stations, laser levels, GPS, and hydroacoustic technologies. Integrative sampling strategies across spatial and temporal scales emphasized for multi-disciplinary studies. Taught first half of fall semester. Prerequisite: CEE 6690/5690. (F)
CEE 6710 Environmental Engineering Microbial Ecology (2)
Principles of microbial ecology applied to engineered and natural systems. Taught first half of fall semester. Prerequisites: BIOL 3300, CEE/PUBH 3610. (F)

CEE 6720 Natural Systems Modeling (3)
(d5720)
Provides hands-on approach to utilizing several of the most commonly applied modeling tools employed to estimate physical, chemical, and biological impacts of existing and proposed water resource systems. Focuses on utility and limitation of specific modeling approaches, while also stressing integrative multi-disciplinary nature of impact assessment frameworks. Prerequisite: CEE 6690/5690. (Sp)

CEE 6730 Analysis and Fate of Environmental Contaminants (3)
(d5730)
Provides students with understanding of methods used in analysis of environmental samples for organic contaminants. Examines various properties and processes determining the fate of organic contaminants in the environment. Taught first half of spring semester. Prerequisites: CHEM 1210, 2300. Also taught as PUBH 6730/5730. (Sp)

CEE 6740 Environmental Quality Modeling (3)
Development and application of mathematical models for conventional and toxic pollutants in environmental systems. Description of advection, dispersion, sediment transport, partitioning, interphase transfer, and transformation kinetics applied to organic and inorganic pollutants. Equilibrium, steady state, and nonsteady systems. Prerequisite: CEE 6630. (Sp)

CEE 6750 Eco-Hydraulics for Natural Systems Engineering (4)
Provides students with advanced multi-disciplinary modeling course in the application of hydraulics and water resource modeling in light of impact assessment frameworks for natural systems modeling. Focuses on application on one-dimensional and two-dimensional hydraulic modeling as basis for examining quantitative impacts on stream and riparian ecosystems under altered flow, as well as channel conditions with particular emphasis on fish and aquatic macro-invertebrates. Prerequisite: CEE 6690/5690. (F)

CEE 6800 Division of Environmental Engineering Seminar (1)
Environmental engineering graduate seminar for faculty and student research presentations. (F,Sp)

CEE 6810 Biochemical Engineering (3)
(d5810)
Fundamentals of bioreactor design and bioengineering. Emphasizes mathematical models of microbial and enzymatic processes in environmental and industrial biotechnology. Prerequisites: BIE 3200 and BIE/CEE 3670; or BIE/CEE 3670, CEE/PUBH 3610, and CEE 3640. Also taught as BIE 6810/5810. (F)

CEE 6830 Management and Utilization of Biological Solids and Wastewater (3)
(d5830)
Focuses on production, management, and disposal of biosolids and wastewater generated in food processing and wastewater treatment. Emphasizes beneficial use of biosolids and wastewater for agricultural production, forest enhancement, and land reclamation. Prerequisite: BIE/CEE 3670. Also taught as BIE 6830/5830. (F)

CEE 6840 Application of Technology Transfer for Teachers (2) ®
Focuses on application of modern instructional strategies to the transfer of technology and science to the public education setting. Part of a series of six courses. Prerequisite: Participation in an In*Step Science Program in the public schools. (F,Sp,Su)

CEE 6850 Atmospheric and Air Pollution Chemistry (3)
Provides students with training in the fundamentals of natural and anthropogenically impacted atmospheric chemistry, primarily focusing on tropospheric meteorology, kinetics, and photochemistry, including gas-phase, aqueous-phase, and aerosol-forming reactions. Prerequisite: CEE 5680/5680 or upper-level chemistry or consent of instructor. (Sp)

CEE 6900 Directed Reading (1-3) ®
Prerequisite: Instructor’s consent. (F,Sp,Su)

CEE 6930 Special Problems (1-4) ®
Independent or group study of engineering problems not covered in regular course offerings. Prerequisite: Instructor’s consent. (F,Sp,Su)

CEE 6940 Snow Hydrology (3)
Focuses on snow science, including atmospheric formation, precipitation, distribution on the landscape, metamorphism prior to melt, and snow pack melt dynamics. Also covers related issues, such as snow melt modeling, remote sensing, water supply, and biogeochemical cycling. Prerequisites: AWER 3700 or 4600 or SOIL 4600 or CEE 3430, or permission of instructor. Also taught as AWER 6940. (Sp)

CEE 6970 Thesis Research (1-6) ®
Prerequisite: Instructor’s consent. (F,Sp,Su)

CEE 6990 Continuing Graduate Advisement (1-9) ®
Prerequisite: Instructor’s consent. (F,Sp,Su)

CEE 7050 Plasticity (3)
Analysis of stresses, deformation, and collapse in devices constructed of plastic material. Prerequisite: MAE 6040 or CEE 6080/5080 or instructor’s consent. Also taught as MAE 7050. (Sp)

CEE 7080 Advanced Plate and Shell Theory (3)
Analysis of plate and shell structures by classical and numerical methods. Emphasis on numerical solutions. Prerequisite: Instructor’s consent. Also taught as MAE 7080. (F)

CEE 7110 Constitutive Modeling and Structural Response of Engineering Materials (3)**
Constitutive modeling of reinforced concrete, metals, soils, and composite materials. Plasticity and endochronic theories. Finite element modeling and predictive analysis of two- and three-dimensional structures. Computer applications and implementations. Prerequisite: Instructor’s consent. (F)

CEE 7120 Advanced Topics in Civil Engineering (3)
Discussion of current research topics conducted by civil and other engineering faculty and staff at USU and elsewhere. Offered on either arranged or regular basis. Topics and times can be arranged with instructor and advisor. Prerequisite: Instructor’s consent. (F,Sp,Su)

CEE 7150 Effective Engineering Instruction (1)
Seminar-style course designed to give PhD candidates insight and guidance for becoming effective engineering instructors. (F)

CEE 7160 Successful Faculty Strategies (1)
Seminar-style course designed to give PhD candidates insight and guidance into the expectations and approaches for becoming successful university faculty members. (Sp)

CEE 7170 Research Methods in Engineering (1)
Seminar-style course designed to give PhD candidates insight and guidance into research methods in engineering. (F)

CEE 7200 Planning and Design of Airports (3)
Aspects of airport location, financing, and marketing. Introduces demand forecasting techniques, airside and landside capacity analysis, and facility sizing techniques. Design of terminal building components, configuration, layout of concessions, and signing. Discussion of surface access issues and environmental aspects of airport development. Prerequisite: CEE 6240/5240. (Sp)

CEE 7270 Travel Demand and Supply Analysis (3)

CEE 7300 Theoretical Soil Mechanics (3)
Advanced studies of stress distribution in soil masses, shear strength, consolidation, constitutive modeling, and finite applications. Prerequisite: CEE 6360. (Sp)
CEE 7310 Fundamentals of Soil Behavior (3)**
The influence of clay mineralogy, clay chemistry, and soil origin on the engineering properties of soil. Prerequisite: CEE 6360. (F)

CEE 7320 Advanced Soil Dynamics (3)**
Advanced studies in the response of soil structures and foundations to dynamic loads. Prerequisite: CEE 6360. (F)

CEE 7430 Stochastic Hydrology (3)***
Stochastic description of hydrologic variability in time, space, and space-time. Markov processes, time series synthesis and forecasting, spectral analysis, spatial interpolation and random field simulation, data imputation, and parameter estimation for physical models. Lattice and Markov chain Monte Carlo methods, simulated annealing, and Gibbs processes. Applications to rainfall, streamflow, groundwater quality, and subsurface characterization. (Sp)

CEE 7460 Advanced Topics in Hydrology (3) ®
Topics of prominent current interest for advanced MS and PhD students. Can be repeated for credit with consent of instructor. (Sp)

CEE 7470 Continuous and Macro-Scale Hydrologic Modeling (3)
Presents existing different approaches to the modeling of continuous hydrologic systems and long-term forecasting. Reviews and analyzes lumped and distributed catchment and macroscale hydrologic models, as well as state-of-the-art computer codes. Prerequisite: CEE 6440. (F)

CEE 7520 Mathematical Methods for Civil and Environmental Engineers (3)
Applications of advanced mathematical methods to analyze civil and environmental engineering problems, including analysis of dynamical systems, solutions to nonlinear and stochastic differential equations, Fourier analysis, and neural networks. (Sp)

CEE 7580 Advanced Finite Element Analysis in Fluid Mechanics (3)
Application of the finite element method of analysis to problems in fluid mechanics. Use of higher order element to two- and three-dimensional flows. Prerequisites: CEE 3510, CEE/MAE 6570; or MAE 3420, 5020. Also taught as MAE 7580. (Sp)

CEE 7580 Advanced Finite Element Analysis in Fluid Mechanics (3)
Application of the finite element method of analysis to problems in fluid mechanics. Use of higher order element to two- and three-dimensional flows. Prerequisites: CEE 3510, CEE/MAE 6570; or MAE 3420, 5020. Also taught as MAE 7580. (Sp)

CEE 7970 Dissertation Research (1-10) ®
Prerequisite: Instructor’s consent. (F,Sp,Su)

CEE 7990 Continuing Graduate Advisement (1-9) ®
Prerequisite: Instructor’s consent. (F,Sp,Su)

CHEM 1130 General Chemistry Laboratory (1)
Laboratory course designed to accompany CHEM 1110. Covers basic aspects of general chemistry. (Sp)

CHEM 1210 Principles of Chemistry I (4)
First of a two-semester sequence, covering fundamentals of chemistry. Designed for science and engineering students. Prerequisite: Math ACT score of at least 25, or MATH 1050 or higher. High school chemistry recommended. (F,Sp)

CHEM 1220 BPS Principles of Chemistry II (4)
Continuation of CHEM 1210. Prerequisite: CHEM 1210. (F,Sp,Su)

CHEM 1230 Chemical Principles Laboratory I (1)
Laboratory course designed to be taken concurrently with CHEM 1210. Experiments cover acids/bases, thermochemistry separations, molecular weights, gases, and spectroscopy. Prerequisite: CHEM 1210 (may be taken concurrently). (F,Sp)

CHEM 1240 Chemical Principles Laboratory II (1)
Continuation of CHEM 1230. Normally taken concurrently with CHEM 1220. Experiments cover elementary kinetics, electrochemistry, gravimetric analysis, chromatography, and equilibria. Prerequisite: CHEM 1230. (F,Sp)

CHEM 1990 Introduction to the Chemistry and Biochemistry Professions (1) ®
Seminar-format course designed to expose students to exciting areas of chemistry and biochemistry. Includes seminars on topical issues presented by faculty and invited guests. Discussion of career options. (Sp)

CHEM 2300 Principles of Organic Chemistry (3)
Shape, bonding, nomenclature, stereochemistry, physical properties, and reactivity of organic molecules is covered for a range of molecules, beginning with simple alkanes and finishing with some of the more complex abiotic and biotic organic molecules known today. Prerequisite: CHEM 1210. (F)

CHEM 2310 Organic Chemistry I (4)
First of a two-semester sequence, covering physical properties, nomenclature, mechanisms of reactions, and biological relevance of organic and biorganic molecules. (F)

CHEM 2320 Organic Chemistry II (4)
Continuation of CHEM 2310. Prerequisite: CHEM 2310 or CHEM 2300 and permission of instructor. (Sp)

CHEM 2330 Organic Chemistry Laboratory I (1)
Laboratory course designed to accompany CHEM 2310. Covers basic aspects of experimental organic chemistry. Prerequisites: CHEM 1210 and 1230. (F,Sp)

CHEM 2340 Organic Chemistry Laboratory II (1)
Continuation of CHEM 2330. Prerequisite: CHEM 2330. (F,Sp)

CHEM 3060 QI Physical Chemistry (3)

CHEM 3070 QI Physical Chemistry (3)

CHEM 3080 CI Physical Chemistry Laboratory I (1)
Experimental work to accompany CHEM 3060. Corequisite: CHEM 3060. (F)

CHEM 3090 CI Physical Chemistry Laboratory II (1)
Continuation of CHEM 3080. Experimental work to accompany CHEM 3070. Corequisite: CHEM 3070. (Sp)

CHEM 3510 Intermediate Inorganic Chemistry (2)
Survey of basic structure, bonding, and reactivity across the periodic table. Prerequisite: CHEM 1220. (Sp)
CHEM 3520 Inorganic Chemistry Laboratory (1)
Covers basic aspects of inorganic synthesis and compound characterization. Corequisite: CHEM 3510. (Sp)

CHEM 3600 QI Quantitative Analysis (3)
Basic theory and laboratory practice in analytical chemistry, including introduction to multiple equilibria and chemical separation methods. Prerequisites: CHEM 1230, 1240, MATH 1050. (F)

CHEM 3610 Quantitative Analysis Laboratory (1)
One three-hour laboratory per week. Must be taken concurrently with CHEM 3600. Prerequisites: CHEM 1230, 1240, MATH 1050. (F)

CHEM 3650 DSC Environmental Chemistry (3)**
Survey of issues and chemical nature of environmental problems, including air, soil, and water pollution. Prerequisite: CHEM 1010 or 1120 or 1220. (Sp)

CHEM 3700 Introductory Biochemistry (3)
Brief survey of the chemistry of biologically important compounds and their role in microbial, animal, and plant metabolism. Prerequisite: CHEM 2300 or 2310. (Sp)

CHEM 3710 Introductory Biochemistry Laboratory (1)
Laboratory course designed to accompany CHEM 3700. Corequisite: CHEM 3700. (Sp)

CHEM 4250 Cooperative Experience (1-2) ®
Planned work outside the University. Specific experience must receive prior approval for credit to be earned. Consult advisor or department head for details. (F,Sp,Su)

CHEM 4800 CI Research Problems (1-3) ®
Directed undergraduate research. Departmental permission required. (F,Sp,Su)

CHEM 4990 CI Undergraduate Seminar (1) ®
Writing and speaking skills necessary for presenting scientific information. (F,Sp)

CHEM 5070 Biophysical Chemistry (3)
Biological applications and theories of physical chemistry. Equilibrium, thermodynamics, chemical kinetics, transport properties, and spectroscopy. Prerequisites: CHEM 1220; MATH 1220; and PHYX 2120 or 2220. (F)

CHEM 5160 Methods in Biotechnology: Cell Culture (3)
Techniques and fundamental knowledge for culturing mammalian and insect cells. Students will learn maintenance, growing, genetic engineering of cells, cytotoxicity, hybridoma creation, cloning, etc. Extensive laboratory experience is provided. Also taught as ADVS 5160, BIOL 5160, NFS 5160, and PSB 5160. (Sp)

CHEM 5240 Methods in Biotechnology: Protein Purification Techniques (3)
Reviews basic methods of protein purification, including scaled-up use of 100L fermenter, large-scale centrifugation, diafiltration, chromatography, and use of BioCAD. Prerequisite: CHEM 3700. Also taught as ADVS 5240, BIOL 5240, NFS 5240, and PSB 5240. (Sp)

CHEM 5260 Methods in Biotechnology: Molecular Cloning (3)
Laboratory-oriented course designed to teach molecular biology techniques such as DNA cloning, genetic probes, polymerase chain reaction, and DNA sequencing. Prerequisite: CHEM 3700 or 5710; or BIOL 3200; or permission of instructor. Also taught as ADVS 5260, BIOL 5260, NFS 5260, and PSB 5260. (Sp)

CHEM 5520 Advanced Inorganic Chemistry (2)
Advanced treatment of the structure/bonding/reactivity relationships across the periodic table. Prerequisites: CHEM 3670, 3510. (F)

CHEM 5530 Advanced Synthesis Laboratory (2)
Laboratory course in advanced synthetic techniques, including vacuum lines, inert atmosphere, Schlenk manipulations, liquid ammonia solvent, and tube furnace reactions. Prerequisites: CHEM 2340, 3070, 3520. (Sp)

CHEM 5640 Instrumental Analysis (3)
Theory and application of physicochemical methods of analysis. Chromatography. Selected electrochemical and optical methods. Prerequisites: CHEM 3080, 3610. (Sp)

CHEM 5650 Instrumental Analysis Laboratory (2)
Laboratory course to accompany CHEM 5640. Two three-hour labs per week. Prerequisites: CHEM 3080, 3610. (Sp)

CHEM 5670 Intermediate Environmental Chemistry (3)**
Survey of chemical processes and pollutants in the environment. Sampling and analysis of pollutants to determine chemical fate. Prerequisites: CHEM 3600 and 3610; CHEM 3070 recommended. (Sp)

CHEM 5680 Environmental Chemistry Laboratory (2)**
Laboratory course to accompany CHEM 5670. Field sampling and laboratory analysis of air, water, and soil samples. Method building and hypothesis testing. Prerequisites: CHEM 3600, 3610. Corequisite: CHEM 5670. (Sp)

CHEM 5700 General Biochemistry I (3)
General biochemistry for science majors, including proteins, enzymes, catalysis, bioenergetics, and catabolic metabolism. Prerequisite: CHEM 2320. (F)

CHEM 5710 General Biochemistry II (3)
Continuation of CHEM 5700. General biochemistry for science majors, including anabolic metabolism, DNA, RNA, and protein synthesis. Prerequisite: CHEM 5700. (Sp)

CHEM 5720 General Biochemistry Laboratory (2)
Prerequisite: CHEM 5710 (may be taken concurrently). (Sp)

CHEM 5730 Genomic Technologies (4)
Provides theoretical background in genomics/proteomics technologies and laboratory training in advanced techniques. Topics include: whole genome sequencing, transcriptome and proteome characterization, DNA and expressed gene libraries, and operation of modern genomics laboratory equipment. Prerequisites: BIOL 1220, 3200; CHEM 3700 or 5710; CS 2200; STAT 3000. Also taught as BIOL 5730. (Sp)

CHEM 6010 Quantum Chemistry (3)*
Quantum mechanics applied to chemical problems. Theory of atoms and molecules. Prerequisites: CHEM 3070, MATH 2250. (F)

CHEM 6020 Molecular Spectroscopy (3)*
Spectroscopy of atoms and molecules. Prerequisite: CHEM 6010. (Sp)

CHEM 6250 Curricular Practical Training (1-6) ®
Work experience tied to academics, in the graduate student’s major field of study, either chemistry or biochemistry, for which the student is paid. Prerequisite: Permission of department head prior to enrollment. (F,Sp,Su)

CHEM 6300 Advanced Modern Organic Chemistry (3)*
Covers topics in molecular structure, reaction mechanisms of organic molecules, and physical organic chemistry. Prerequisites: CHEM 2320, 3070. (F)

CHEM 6500 Reactivity and Mechanisms in Inorganic Chemistry (3)
Inorganic reactions and mechanisms relevant to areas of main group, transition metals, and bioinorganic and organometallic chemistry. Prerequisite: CHEM 5520. (Sp)

CHEM 6510 Chemical Applications of Group Theory (1)
Introduction to symmetry point groups and theorems of group theory for application to structure, bonding, and spectroscopy. Some familiarity with linear algebra is recommended. Prerequisite: CHEM 3070. (F)

CHEM 6600 Modern Chemical Analysis (3)**
Methodology and statistical treatment of chemical data, experimental design, quality control, and chemical separations. Prerequisite: CHEM 5640. (Sp)

CHEM 6700 Advanced Biochemistry I (3)
Advanced-level biochemistry course intended for biochemistry MS and PhD students. Covers proteins, enzyme mechanism, nucleic acid structure and function, and catabolic metabolism at a level appropriate for students preparing for the qualifying examination. This course (which is co-instructed with CHEM 5700, with additional projects for CHEM 6700) cannot be taken for credit by students who have previously taken CHEM 5700 for credit. (F)
CHEM 6710 Advanced Biochemistry II (3)
Advanced-level biochemistry course intended for biochemistry MS and PhD students. Covers anabolic metabolism and bioinformation processes at a level appropriate for students preparing for the qualifying examination. This course (which is co-instructed with CHEM 5710, with additional projects for CHEM 6710) cannot be taken for credit by students who have previously taken CHEM 5710 for credit. (Sp)

CHEM 6720 Advanced Biochemistry Laboratory (2) ®
To obtain advanced laboratory skills, students complete specific laboratory experiments in research laboratories of departmental faculty members. (F,Sp)

CHEM 6730 Principles of Enzymology (3)*
Mechanisms of enzyme action, emphasizing recent advances in enzymology, including theory and modern experimental approaches to elucidation of mechanism. Prerequisite: CHEM 5700 or equivalent. (Sp)

CHEM 6740 Cellular Communication by Small Molecules and Proteins (3)**
Using post-translational modifications, small molecules, and protein motifs in cellular communication. Variances in the communication systems related to disease state and/or cell stress and therapeutic strategies to manipulate the communication systems. Prerequisite: CHEM 5700 or equivalent. Also taught as BIOL 6740. (Sp)

CHEM 6750 Principles of Metabolic Regulation (3)*
Integration and regulation of mammalian metabolism. Communication among cells and tissues, molecular mechanisms of signal transduction (including protein phosphorylation and proteolytic activation), activation of transcription factors, and regulation of gene expression. Prerequisite: CHEM 5700 or equivalent. (Sp)

CHEM 6760 Principles of Bioenergetics (3)*
Global biological energy cycles including carbon, nitrogen, and sulfur cycles; respiration; electron transfer; and energy transduction. Prerequisite: CHEM 5700 or equivalent. (Sp)

CHEM 6910 Special Problems in Chemistry and Biochemistry (1-4)
Selected problems in chemistry and biochemistry. Registration permitted only with written permission from department head. (F,Sp,Su)

CHEM 6970 Thesis Research (1-10) ®
Research for MS degree. (F,Sp,Su)

CHEM 6990 Continuing Graduate Advisement (1-3) ®
(F,Sp,Su)

CHEM 7020 Statistical Mechanics (3) **
Statistical mechanics with applications to research problems of current interest. Prerequisite: CHEM 6010.

CHEM 7030 Special Topics in Physical Chemistry (Topic) (3)*** ®
Covers special areas of current interest and activity in physical chemistry. (F,Sp)

CHEM 7300 Reactions and Synthesis in Modern Organic Chemistry (3)**
Reactions of modern organic chemistry and their application to organic synthesis. Prerequisite: CHEM 6300. (Sp)

CHEM 7310 Molecular Structure/Spectroscopy of Organic Compounds (3)*
Modern methods of predicting and determining molecular structure of organic compounds using advanced computational and spectroscopic tools. Prerequisite: CHEM 6300. (F)

CHEM 7330 Special Topics in Organic Chemistry (Topic) (3)*** ®
Covers special areas of current interest and activity in organic chemistry. Prerequisite: CHEM 6300. (F,Sp)

CHEM 7500 Coordination Chemistry (3)***
Theory and spectroscopy of transition metal coordination complexes. Prerequisites: CHEM 3070, 6500, 6510. (Sp)

CHEM 7510 Bioinorganic Chemistry (1-3)***
Advanced systematic study of metallobiochemical structure and function. Prerequisite: CHEM 6500. (F)

CHEM 7530 Special Topics in Inorganic Chemistry (Topic) (3)*** ®
Topics of current interest in inorganic chemistry. Prerequisite: CHEM 6500. (Sp)

CHEM 7600 Analytical Spectroscopy (3)**
Practical description of spectroscopy-based analysis, emphasizing instrumentation and methods. Prerequisites: CHEM 5640, graduate standing, or instructor’s permission. (Sp)

CHEM 7610 Chemical Separations (3)*
Survey of theory and practice of modern chemical separations, including extractions, chromatography, distillation, and phase separations. Prerequisite: CHEM 5640 or instructor’s permission. (F)

CHEM 7620 Electrochemistry (3)***
Survey of electrochemistry with emphasis on electrochemical analysis. Prerequisite: CHEM 5640. (F)

CHEM 7640 Special Topics in Analytical Chemistry (Topic) (1-3)*** ®
Topics may include electronics from the scientist’s perspective, laser-based spectroscopy, mass spectrometry, and chemometrics. Prerequisite: CHEM 6600. (F,Sp)

CHEM 7770 Special Topics in Biochemistry (Topic) (2-3)*** ®
Topics of current interest in biochemistry.

CHEM 7800 Seminar (1) ®
Graduate seminar. (F,Sp,Su)

CHEM 7970 PhD Dissertation Research (1-12) ®
(F,Sp,Su)

CHEM 7990 Continuing Graduate Advisement (1-9) ®
(F,Sp,Su)

**Taught 2005-2006.
***Contact Department of Chemistry and Biochemistry for information about when this course will be taught.
© Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.
© This course is also offered by online correspondence and/or CD through Continuing Education Time Enhanced Learning.

Chinese (CHIN)
See Department of Language, Philosophy, and Speech Communication, pages 244-248

CHIN 1010 Chinese First Year I (4)
Communicative competencies in the four language skills: speaking, listening, reading, and writing with exposure to cultures and customs. Native speaker instructor. (F)

CHIN 1020 Chinese First Year II (4)
Communicative competencies in the four language skills: speaking, listening, reading, and writing with exposure to cultures and customs. Native speaker instructor. Prerequisite: CHIN 1010 or equivalent. (Sp)

CHIN 2010 Chinese Second Year I (4)
Second-year overview of speaking, listening, reading, and writing with exposure to cultures and customs. Native speaker instructor. Prerequisite: CHIN 1020 or equivalent. (F)

CHIN 2020 Chinese Second Year II (4)
Second-year overview of speaking, listening, reading, and writing with exposure to cultures and customs. Native speaker instructor. Prerequisite: CHIN 2010 or equivalent. (Sp)
CHIN 3010 Chinese Third Year I (4)
First segment of the third-year overview of speaking, listening, reading, and writing, with additional exposure to cultures and customs. Readings include excerpts from televised drama. Prerequisite: CHIN 2020 or equivalent. (F)

CHIN 3020 Chinese Third Year II (4)
Second segment of the third-year overview of speaking, listening, reading, and writing, with additional exposure to cultures and customs. Readings include short essays, Chinese proverbs and folktales, and other literary selections. Prerequisite: CHIN 3010 or equivalent. (Sp)

CHIN 3100 Readings in Contemporary Chinese Culture (3)
Introduction to contemporary Chinese culture through readings from newspapers and other source materials. Prerequisite: CHIN 2020 or equivalent. (Sp)

CHIN 3510 Chinese Business Language (3)
Designed to develop students’ business Chinese language skills in speaking, listening, reading, and writing, as well as cultural competence. Classwork focuses on Chinese business terms, business conversation, and basic business practices, as well as the Chinese cultural environment. Prerequisite: CHIN 2020 or equivalent. (F)

CHIN 3880 Individual Readings in Chinese (1-2)
Individual study of selected readings in Chinese. Designed to broaden student’s reading comprehension beyond the level addressed in CHIN 3020. Prerequisite: Instructor’s permission. (F,Sp)

CHIN 4920 Chinese Language Tutoring (1) ®
Allows students to develop tutoring skills by assisting professors in lower-division courses or fulfilling instructional duties for a comparable amount of time in the language laboratory, public schools, or similar activities with departmental approval. May be repeated to a maximum of 3 credits. (F,Sp,Su)

® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

Classics (CLAS)
See Department of History, pages 221-225

CLAS 1100 The Latin and Greek Element in English (3)*
Survey of classical word roots in English, with a view to enhancing students’ comprehension of English vocabulary and its Indo-European heritage. (F)

CLAS 3210 Classical Mythology (3)*
Introduces major myths of the Classical world. Explores how these myths serve as keys to understanding the documents and arts of Classical civilization. (Sp)


Communicative Disorders and Deaf Education (COMD)
See Department of Communicative Disorders and Deaf Education, pages 170-173

COMD 2400 Orientation and Observation (1) ®
Introduces students to the professional responsibilities required of communicative disorders and deaf education specialists in a variety of employment settings. Observation of normal/abnormal communication abilities. Language, hearing, and speech disorders. (F,Sp)

COMD 2500 Language, Speech, and Hearing Development (3)

COMD 2910 CI Sign Language I (4)
Introduction to American Sign Language and Deaf Culture. Basic study of grammatical structure of ASL, as well as the history and folklore associated with the culture. Students have ample opportunities for laboratory practice of ASL. Course taught in a no-voice, total immersion atmosphere. (F,Sp,Su)

COMD 3050 Practicum and Methods in Teaching Children who are Deaf and Hard of Hearing (1-3) ®
Students investigate various aspects of teaching methods through field experiences in the classroom, curriculum and effective teaching assessment, observation and reflections, and guest speakers focusing on areas of mathematics and science in the primary grades. (F,Sp)

COMD 3080 American Sign Language Practicum (1) ®
Provides opportunities for practice and continued improvement of receptive and expressive skills in American Sign Language. (F,Sp)

COMD 3100 Fundamentals of Anatomy for Speech and Language (3)
Basic study of the structures and functions associated with the subprocesses of speech and hearing, including respiration, phonation, resonation, articulation, neurology, and hearing. Prerequisite: BIOL 2000 or 2010. (F)

COMD 3120 Disorders of Articulation and Phonology (3)
Introduction to articulation and phonological disorders and related problems. Emphasis directed at evaluation, management, and measures of success. Principles of programming are presented. Prerequisites: COMD 2500 and 3500. (Sp)

COMD 3400 Acoustics and Anatomy of the Ear (3)
Principles of physical acoustics as applied to Communicative Disorders. Course includes anatomy, physiology, and metabolism of the human auditory system. (F)

COMD 3500 Phonetics/Developmental Phonology (3)
Study of the development of the phonological subsystem in English and the acoustic and physiological characteristics of speech sounds. (F)

COMD 3650 Clinical Processes and Behavior (2)
A consideration of clinical management as an interactive process. Interpersonal sensitivity, technical knowledge and skills, professional infection-control measures, and behavior modification are core considerations. Prerequisites: COMD 2500 and PSY 1010. (Sp)

COMD 3700 Basic Audiology (3)
Study of pure tone audiometry, including clinical masking, speech audiometry, and clinical immittance measures. Laboratory exercises are required. Prerequisite: COMD 3400. (F)

COMD 3910 Sign Language II (4)
Provides a more in-depth study of American Sign Language, Deaf folklore and literature, and the grammatical structure of ASL. Focuses on unique number systems, idioms, lexicalized fingerspelling, and ASL poetry. Course taught with a total immersion approach, with ample opportunities for practice with fluent users of ASL in the lab. Prerequisite: COMD 2910 or instructor approval. (F,Sp,Su)

COMD 4100 CI Clinical Practicum in Speech-Language Pathology (1-2) ®
Supervised diagnostic and treatment practicum with individuals with communication disorders. Prerequisites: COMD 2500, 3120, 3650, and permission of instructor. (F,Sp,Su)

COMD 4400 Clinical Practicum in Audiology (1-2) ®
Supervised diagnostic and treatment practicum with individuals with hearing loss. Prerequisites: COMD 3400, 3650, 3700, and consent of instructor. (F,Sp,Su)

COMD 4600 Senior Thesis (1-6) ®
Student-initiated research project under faculty supervision. Prerequisites: Satisfaction of grade point average, instructor recommendation, and approval of Honors Committee. (F,Sp,Su)

COMD 4630 Teaching Speech to Deaf and Hard of Hearing Children (3)
Evaluative and instructional models, processes, and methodologies in the development of speech for children who are deaf and hard of hearing. (Sp)
Courses are offered in a variety of formats, including lecture, laboratory, and practicum. Some courses are available online, and some are offered in a hybrid format combining online and in-person components. Prerequisites are noted for each course, and students are encouraged to consult with an advisor to plan their course of study.

The following courses are offered in Communicative Disorders and Deaf Education (COMD).

**COMD 4750** Teaching the English Language to Individuals who are Deaf and Hard of Hearing (3) Evaluation and teaching of the English language to individuals who are deaf and hard of hearing. Language development and remediation using structure, modeling, natural approach, and grammar. Prerequisite: COMD 2500. (Sp)

**COMD 4760** Early Intervention for Children who are Deaf and Hard of Hearing (3) Family-centered early intervention for infants and young children who are deaf and hard of hearing. Identification, testing, hearing aids, communication, auditory, language, and emerging literacy programming, parent, and family programs, mentoring. (F)

**COMD 4770** Audiology and Teachers of Children who are Deaf and Hard of Hearing (3) Focuses on the fields of hearing science and audiology and how information from these disciplines relates to education of deaf and hard of hearing children. (F)

**COMD 4780** Socio-Cultural Aspects of Deafness (3) Leads students to understand how society, political institutions, and education have impacted the Deaf culture. (Sp)

**COMD 4790** Psychological Principles and Individuals who are Deaf and Hard of Hearing (3) Psychological theories and research used to describe the deaf and hard of hearing. Exploration of principles that can be used in helping these individuals achieve emotional well-being. Also taught as PSY 4790/6790. (Sp)

**COMD 4910 CI** Sign Language III (4) Students receive individual, detailed feedback concerning their expressive ASL skills. Students present material in American Sign Language, with a focus on improving identified areas of weakness. Cooperative learning is encouraged. Experiences with fluent users of ASL and interpreter mentors via the lab provide students with basic interpreting skills. Prerequisites: COMD 2910 and 3910; or instructor approval. (F,Sp)

**COMD 4920** Sign Language IV (4) Basic concepts of linguistics are explored, as well as an in-depth analysis of ASL history, grammatical structure, and ASL poetry. Students apply linguistic principles to the analysis of American Sign Language, with ample opportunities to interact with fluent users of ASL via the lab experience. Prerequisites: COMD 2910 and 3910; or permission of instructor. (F,Sp)

**COMD 5000** Institute in Communicative Disorders and Deaf Education (0.5-3) Special colloquial offerings in communicative disorders and deaf education. (F,Sp,So)

**COMD 5010** School-Based Practices (2) Prepares students in acquiring knowledge regarding the roles and responsibilities of school-based speech-language pathologists and audiologists, as well as the manner in which services are addressed for children having communication disorders. Prerequisites: COMD 3120, 5200. (Sp)

**COMD 5070** Speech Science (3) Explores contemporary theory, research findings, clinical applications, and laboratory experiences in measurement and analysis of normal speech production. Speech subsystems of respiration, phonation, articulation, and resonance are examined in detail through the collection and analysis of physiologic data. (F)

**COMD 5100** Language Science (3) Study of clinical analysis of syntactic and morphological properties of speech. (Sp)

**COMD 5200** Language Assessment and Intervention for Preschool Children (4) Preschool assessment and intervention, including language sampling and analysis procedures, test administration and interpretation, informal language assessment, intervention goals and objectives, planning clinical management, language facilitation strategies, teaching approaches, classroom-based language intervention, and enhancing emergent literacy. Prerequisite: COMD 2500 or equivalent. (Sp)

**COMD 5330** Aural Rehabilitation (3) Ramifications of hearing loss among children and adults and rehabilitative audiologic techniques and programs. (Sp)

**COMD 5600** Classroom Teaching Using American Sign Language (3) Emphasizes development and presentation of lesson plans for different grade levels. Focuses on developing students’ abilities in moving from and linking Language 1 (American Sign Language) and Language 2 (the written form of English). Prerequisites: COMD 2910, 3910, and 4910. (F)

**COMD 5610** Introduction to Education of the Deaf and Hard of Hearing (3) Overview of the history of educating children who are deaf and hard of hearing. Presents an overview of techniques, anatomy of the ear, and different philosophical views for teaching people who are deaf and hard of hearing. (F)

**COMD 5620** Teaching School Subjects to Students who are Deaf and Hard of Hearing (3) Focuses on effective strategies for teaching students who are deaf and hard of hearing across curricular subject areas. Emphasizes infusion of language and reading into all content areas. (F)

**COMD 5730** Children with Multiple Disabilities and Hearing Loss (3) Students will obtain a basic understanding of the problems and characteristics of children who have hearing loss plus one or more disabling conditions. Teaching strategies will also be discussed. (F)

**COMD 5740** Teaching Reading to Deaf and Hard of Hearing Children (3) Exploration of resources and methods used to teach reading to deaf and hard of hearing children. Discussion of current research regarding the effectiveness of these methods and ideas for improving reading instruction. (F)

**COMD 5860** Interdisciplinary Training in Assistive Technology I (3) Provides interdisciplinary training in assistive technology, focusing on assistive devices related to powered mobility, seating and positioning, computer access, and augmentative and alternative communication. Prerequisite: Departamental permission. (F)

**COMD 5870** Interdisciplinary Training in Assistive Technology II (3) Provides advanced training in assistive technology, focusing on assistive devices related to cognitive, hearing, visual, and dual sensory impairments. Funding issues also addressed. (Sp)

**COMD 5900** Independent Study (1-6) Selected work individually assigned, handled, and directed. Problems of mutual interest to students and the instructor are investigated and reported. (F,Sp,Su)

**COMD 6020** Language Assessment and Intervention for School-age Children and Adolescents (3) Curriculum-based assessment and intervention. Emphasizes communication and literacy development of students with language impairments. Narrative and written language assessment procedures. Intervention strategies for language acquisition in conversation, narration, and expository discourse. Prerequisite: COMD 5200 or equivalent. (F)

**COMD 6030** Disorders of Fluency—Stuttering (3) Provides understanding of theory, nature, etiologies, and principles of diagnosis and treatment of communication disorders related to stuttering and other disorders of fluency. (F)

**COMD 6040** Communication Disorders Related to Orofacial Anomalies (3) Nature, etiologies, and principles of diagnosis and treatment of communication disorders related to orofacial anomalies. Prerequisite: Graduate standing. (Sp)
COMD 6050  Professional Practice in Speech-Language Pathology  (2)
Lecture, discussion, and guest presenters on various professional practice topics pertaining to speech-language pathology. Prerequisite: Graduate standing. (F)

COMD 6100  Advanced Clinical Practicum in Speech-Language Pathology  (1-3)
Supervised diagnostic and treatment practicum with individuals with communication disorders. Prerequisites: COMD 2500, 3120, 3650, or equivalent, and permission of instructor. (F,Sp,Su)

COMD 6120  Adult Disorders of Motor Speech and Swallowing  (4)
Considers the neurological substrates and clinical manifestation of dysarthria, apraxia, and dysphagia in the adult population. Addresses diagnostic methods and management of these disorders. (Sp)

COMD 6130  Neuropathologies of Speech and Language  (4)
Study of neuropathologies of speech and language associated with aphasia, traumatic brain injury, right hemisphere syndrome, dementia, and degenerative neurological diseases. (F)

COMD 6140  Pediatric Neurogenic Disorders  (3)
Global perspective of normal pediatric development. Study of neuro lesions pathologies and effects on respiration, phonation, and articulation. Also addresses assessment and intervention of oral-motor skills for speech and swallowing purposes. (Sp)

COMD 6200  Internship in Public Schools—Speech-Language Pathology  (1-4) ®
Supervised public school practicum in speech-language pathology. (F,Sp,Su)

COMD 6210  Bilingual/Bicultural Services  (2)
Study of the cultural, linguistic, educational, and socioeconomic status of individuals with speech-language disabilities from ethnic or linguistic minority groups. (F)

COMD 6220  Severe Communication Impairments  (3)
Study of assessment and treatment strategies for individuals with severe communication impairments, including those requiring augmentative and alternative communication systems. (Sp)

COMD 6230  Introduction to Research in Communicative Disorders  (3)
Introduction to experimental research designs, including educational research and development, causal-comparative, correlational, and qualitative research. Includes research reviews, research proposals, threats to internal and external validity, and statistical/practical significance. Prerequisite: PSY 2800. (Sp)

COMD 6300  Externship in Speech-Language Pathology  (1-9) ®
Supervised off-campus externship in speech-language pathology. Prerequisite: Consent of instructor. (F,Sp,Su)

COMD 6370  Educational Audiology  (3)
Management of deaf and hard of hearing children in the regular schools. Population and individual profiles, evaluation and staffing, models of delivery, integration considerations, remedial and facilitative programming. (F)

COMD 6430  Speech Communication and Hearing Loss  (3)
History of listening and speech programs for the hearing impaired. Hearing aids and FM systems, as well as computer and electronic devices used in supporting the speech of this population. Discussion of cochlear implants, the palatometer, and TranSonic hearing aids. (F)

COMD 6630  Teaching Speech to Deaf and Hard of Hearing Children  (3)
Evaluative and instructional models, processes, and methodologies in the development of speech for children who are deaf and hard of hearing. (Sp)

COMD 6640  Strategies for Teaching Children who are Deaf and Hard of Hearing  (3)
Provides clinical experience in practicing teaching strategies. Emphasizes evaluation, teaching groups, and tutoring children in speech, listening, and English. Includes lecture, demonstration, observation, and practice in classrooms for the deaf. Prerequisite: COMD 4630/6630. (F)

COMD 6650  Strategies for Teaching English Language to Children who are Deaf and Hard of Hearing  (3)
Practical methods for applying theories of teaching the English language in classrooms where deaf and hard of hearing children are educated. Prerequisite: COMD 4750/6750. (F)

COMD 6660  INSITE Training  (1-3)
Training in implementation of the INSITE Model. Early home intervention for infants and young children having a combination of sensory impairments and other disabilities. (F,Sp,Su)

COMD 6670  AHEAD Training  (1-3)
Training in implementation of the AHEAD Model. Early intervention services for families and child care providers of children with noncategorical disabilities, birth to three years, in home and child care settings. (F,Sp,Su)

COMD 6680  SKI*HI Training  (1-3)
Training in implementation of the SKI*HI Model. Early home intervention for infants and young children who are deaf and hard of hearing, and their families. (F,Sp,Su)

COMD 6690  Early Intervention for Infants and Toddlers with Vision Impairment and Their Families  (1-3)
Students will gain an understanding of and develop skills in working with infants and toddlers who are visually impaired and their families. (F,Sp,Su)

COMD 6700  Practicum in Education of Children who are Deaf and Hard of Hearing  (1-3) ®
Supervised diagnostic and remedial casework in education of the deaf and hard of hearing. (F,Sp,Su)

COMD 6710  Mainstreaming Children who are Deaf and Hard of Hearing  (3)
Rationale and procedures used to successfully mainstream children with hearing loss. Also methods of evaluating programs where children with hearing loss are to be placed. (F)

COMD 6720  Serving Preschoolers with Vision Impairment and Their Families  (1-3)
To provide students with knowledge and skills in working with children with visual impairments in the preschool setting. (F,Sp,Su)

COMD 6730  Children with Multiple Disabilities and Hearing Loss  (3)
Students will obtain a basic understanding of the problems and characteristics of children who have hearing loss plus one or more disabling conditions. Teaching strategies will also be discussed. (F)

COMD 6740  Teaching Reading to Deaf and Hard of Hearing Children  (3)
Exploration of resources and methods used to teach reading to deaf and hard of hearing children. Discussion of current research regarding the effectiveness of these methods and ideas for improving reading instruction. (F)

COMD 6750  Teaching the English Language to Individuals who are Deaf and Hard of Hearing  (3)
Exploration of the English language to individuals who are deaf and hard of hearing. Language development and remediation using structure, modeling, natural approach, and grammar. Prerequisite: COMD 2500. (Sp)

COMD 6760  Early Intervention for Children who are Deaf and Hard of Hearing  (3)
Family-centered early intervention for infants and young children who are deaf and hard of hearing. Identification, testing, hearing aids, communication, auditory, language, and emerging literacy programming, parent and family programs, mentoring. (F)

COMD 6770  Audiology and Teachers of Children who are Deaf and Hard of Hearing  (3)
Focuses on the fields of hearing science and audiology and how information from these disciplines relates to education of deaf and hard of hearing children. (F)
COMD 6780 Socio-Cultural Aspects of Deafness (3)
Leads students to understand how society, political institutions, and education have impacted the Deaf culture. (Sp)

COMD 6790 Psychological Principles and Individuals who are Deaf and Hard of Hearing (3)
Psychological theories and research used to describe the deaf and hard of hearing. Exploration of principles that can be used in helping these individuals achieve emotional well-being. Also taught as PSY 6790/4790. (Sp)

COMD 6800 Student Teaching—Day-School Program (6-12)®
Full-time student teaching in a day-school program for the deaf. (F)

COMD 6810 Disorders of Phonation (3)
Advanced consideration of issues and methods in the diagnosis and treatment of voice problems associated with the larynx and the respiratory tract. (Sp)

COMD 6820 Principles of Intervention for Children who are Deaf and Hard of Hearing (3)
Application of teaching principles to classrooms for the deaf and hard of hearing. Practicum with children is part of this course. Prerequisites: COMD 6640, 6650, and permission of instructor. (Sp)

COMD 6830 Student Teaching—Residential (6-12)
Full-time student teaching at a residential school for the deaf. Prerequisite: Permission of instructor. (Sp)

COMD 6850 Seminar in Communicative Disorders and Deaf Education (1-3)®
Research and analysis of selected topics. (F,Sp,Su)

COMD 6860 Interdisciplinary Training in Assistive Technology I (3)
(d5860)
Provides interdisciplinary training in assistive technology, focusing on assistive devices related to powered mobility, seating and positioning, computer access, and augmentative and alternative communication. Prerequisite: Departmental permission. (F)

COMD 6870 Interdisciplinary Training in Assistive Technology II (3)
(d5870)
Provides advanced training in assistive technology, focusing on assistive devices related to cognitive, hearing, visual, and dual sensory impairments. Funding issues also addressed. (Sp)

COMD 6880 Methods and Procedures in Early Intervention (3)
Teaches specific methods and procedures necessary for working in early intervention programs serving families of infants and young children with hearing loss, including assessment procedures, specific home visit delivery procedures, and methods of working with support professionals and team members. (Sp)

COMD 6900 Independent Study (1-9)®
Prerequisite: Permission of instructor. (F,Sp,Su)

COMD 6910 Sign Language III (4)
(d4910)
Students receive individual, detailed feedback concerning their expressive ASL skills. Students present material in American Sign Language, with a focus on improving identified areas of weakness. Cooperative learning is encouraged. Experiences with fluent users of ASL and interpreter mentors via the lab provide students with basic interpreting skills. Prerequisites: COMD 2910 and 3910; or instructor approval. (F,Sp)

COMD 6920 Sign Language IV (4)
(d4920)
Basic concepts of linguistics are explored, as well as an in-depth analysis of ASL history, grammatical structure, and ASL poetry. Students apply linguistic principles to the analysis of American Sign Language, with ample opportunities to interact with fluent users of ASL via the lab experience. Prerequisites: COMD 2910 and 3910; or permission of instructor. (F,Sp)

COMD 6950 Practicum in Early Childhood—Deaf (3-9)®
Supervised student practicum in a preschool, infant, home-based program for children who are deaf or hard of hearing. (F,Sp)

COMD 6960 Master’s Project (1-4)®
This experience provides student with opportunity to design and carry out a creative project which is closely related to his or her area of teaching specialty. May require a written report. (F,Sp,Su)

COMD 6970 Thesis (1-7)®
Prerequisite: Permission of instructor. (F,Sp,Su)

COMD 6990 Continuing Graduate Advisement (1-9)®
(F,Sp,Su)

COMD 7200 Introduction to Clinical Practice (2)®
Supervised diagnostic practicum for first-year students in the Audiology Program. Prerequisite: Admission to the Audiology Program. (F,Sp,Su)

COMD 7300 Intermediate Clinical Practicum (2)®
Supervised diagnostic practicum for second-year students in the Audiology Program. Prerequisite: Admission to the Audiology Program. (F,Sp,Su)

COMD 7310 Psychoacoustics and Instrumentation (3)
Covers psychoacoustic aspects of human audition, with emphasis on application in the clinical setting. Explores basic electronics and audio systems. Prerequisite: Admission to the Audiology Program. (F)

COMD 7320 Amplification I (1-4)
Hearing aid types and uses, hearing aid components and characteristics, electroacoustic performance, hearing aid candidacy and hearing aid evaluation, and hearing aid fitting and orientation. Prerequisite: Admission to the Audiology Program. (Sp)

COMD 7330 Supervision Internship (1-7)®
Provides extensive supervisory experience for advanced students. Internship is for a period of time to be specified by the department and cooperating agency. Prerequisite: Permission of instructor. (F,Sp,Su)

COMD 7340 Pediatric Audiology (3)
Provides students with understanding of normal auditory development and theoretical, clinical, and practical issues involved in screening, assessment, and management of children with hearing loss. Prerequisite: Admission to the Audiology Program. (Sp)

COMD 7350 Advanced Audiology (2)
Special auditory testing for site of lesion in the conductive, sensory, neural, and central auditory systems. Emphasizes Immittance Battery and Otoacoustic Emissions Battery. Tests for assessment of functional hearing loss are also included. Sensitivity and specificity of auditory tests are treated. Test results related to auditory disease process. Prerequisite: Admission to the Audiology Program. (F)

COMD 7380 Clinical Audiology (3)
Provides detailed information regarding common pediatric disorders leading to hearing loss. Includes information about diagnosis and appropriate management of these disorders. Prerequisite: Admission to the Audiology Program. (F)

COMD 7400 Advanced Clinical Practicum (2-4)®
Supervised clinical practicum for third-year students in the Audiology Program. Prerequisite: Admission to the Audiology Program. (F,Sp,Su)

COMD 7410 Noise and Hearing Conservation (3)
Principles of noise hazard evaluation, effects of noise on the auditory mechanism, and development and maintenance of an effective hearing conservation program. Prerequisite: Admission to the Audiology Program. (F)

COMD 7420 Amplification II (1-4)
Applications of advanced hearing aid circuitry, especially digital and digitally programmable hearing aids. Presentation of various aspects of measuring hearing aid satisfaction. Tinnitus management and cochlear implants area also treated. Hearing
**Computer Science (CS)**

**Course Descriptions**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
<th>Prerequisite:</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMD 7430</td>
<td>Electrophysiology</td>
<td>(3)</td>
<td>Provides students with extensive working knowledge of early, middle, and late evoked potentials. Upon completion of this class, students should be capable of providing comprehensive services requiring evoked potentials. Prerequisite: Admission to the Audiology Program. (F)</td>
<td></td>
</tr>
<tr>
<td>COMD 7460</td>
<td>Adult Aural Rehabilitation</td>
<td>(3)</td>
<td>Focuses on traditional aural rehabilitation models, amplification, counseling, speech reading, and assistive listening devices. Upon course completion, students should be able to effectively use these elements to assist adults in compensating for hearing impairment. Prerequisite: Admission to the Audiology Program. (Sp)</td>
<td></td>
</tr>
<tr>
<td>COMD 7470</td>
<td>Educational Audiology Management</td>
<td>(3)</td>
<td>Plans for assessing children who are deaf and hard of hearing in schools. Management plans for audiological services, as well as appropriate intervention strategies for children. Students develop plans and present methods for bringing change to schools. Prerequisite: COMD 6370. (F)</td>
<td></td>
</tr>
<tr>
<td>COMD 7490</td>
<td>Medical Aspects of Audiology: Adult</td>
<td>(3)</td>
<td>Study of the etiology, symptomatology, audiological manifestations, and medical treatment of various pathological conditions of the auditory system. Prerequisite: Admission to the Audiology Program. (Sp)</td>
<td></td>
</tr>
<tr>
<td>COMD 7510</td>
<td>Supervision in Communicative Disorders</td>
<td>(2)</td>
<td>Principles and supervision in Communicative Disorders and Deaf Education. Emphasizes clinical and educational supervision as these styles relate to individuals who are deaf and hard of hearing or who have communicative disorders. (Su)</td>
<td></td>
</tr>
<tr>
<td>COMD 7530</td>
<td>Balance Evaluation and Management</td>
<td>(3)</td>
<td>Explores techniques and technology for vestibular and balance assessment, including electronystagmography, videonystagmography, rotational testing, and posturography. Prerequisite: Admission to the Audiology Program. (Sp)</td>
<td></td>
</tr>
<tr>
<td>COMD 7800</td>
<td>Clinical Residency in Audiology</td>
<td>(6) <img src="1" alt="repeat" /></td>
<td>Twelve-month full-time clinical practicum experience in one or more off-campus clinical sites. Prerequisite: Admission to the Audiology Program. (F,Sp,Su)</td>
<td></td>
</tr>
<tr>
<td>COMD 7810</td>
<td>Research Seminar in Educational Audiology</td>
<td>(1-3) <img src="1" alt="repeat" /></td>
<td>Identification of research problem, consideration of research strategies and methods, application of research and statistical concepts in departmental focus, interaction with faculty. (F,Sp,Su)</td>
<td></td>
</tr>
<tr>
<td>COMD 7820</td>
<td>Research Seminar in Audiology</td>
<td>(1) <img src="1" alt="repeat" /></td>
<td>Facilitates development of student audiology projects. Further enables students to become competent clinician-researchers in the field of audiology. Prerequisite: Admission to the Audiology Program. (F)</td>
<td></td>
</tr>
<tr>
<td>COMD 7850</td>
<td>Residency Seminar</td>
<td>(3) <img src="1" alt="repeat" /></td>
<td>Internet-based seminar in current clinical-related topics for fourth-year students in the Doctorate of Audiology Program. Prerequisite: Admission to Doctorate of Audiology Program. (F,Sp,Su)</td>
<td></td>
</tr>
<tr>
<td>COMD 7860</td>
<td>Practice Management in Audiology</td>
<td>(3)</td>
<td>Audiology business and practice management. Discussion of business set-up, the business plan, managerial accounting and financial analysis, marketing, pricing, reimbursement, record keeping, and forensics. Prerequisite: Admission to the Audiology Program. (Sp)</td>
<td></td>
</tr>
<tr>
<td>COMD 7870</td>
<td>Audiology Capstone Project</td>
<td>(1-6) <img src="1" alt="repeat" /></td>
<td>Under the direction of his or her advisory committee, student develops a clinically-related project. This project is a creative work at a doctoral level and worthy of publication or presentation. Prerequisite: Admission to the Audiology Program. (F,Sp,Su)</td>
<td></td>
</tr>
<tr>
<td>COMD 7900</td>
<td>Independent Study</td>
<td>(1-2) <img src="1" alt="repeat" /></td>
<td>Advanced students, under direction of a faculty member, will study independently; however, departmental permission is necessary. (F,Sp,Su)</td>
<td></td>
</tr>
<tr>
<td>COMD 7910</td>
<td>Independent Research</td>
<td>(1-2) <img src="1" alt="repeat" /></td>
<td>Advanced students, under direction of a faculty member, will do research in an area of interest to themselves. (F,Sp,Su)</td>
<td></td>
</tr>
<tr>
<td>COMD 7970</td>
<td>Dissertation</td>
<td>(1-9) <img src="1" alt="repeat" /></td>
<td>Variable credit for dissertation project in connection with the doctoral program emphasis in educational audiology. (F,Sp,Su)</td>
<td></td>
</tr>
<tr>
<td>COMD 7990</td>
<td>Continuing Graduate Advisement</td>
<td>(1-9) <img src="1" alt="repeat" /></td>
<td>※ Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation. (F,Sp,Su)</td>
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</tr>
</tbody>
</table>

*Parenthetical numbers preceded by ![d](1) indicate a dual listing.

**Computer Science (CS)**

See Department of Computer Science, pages 174-178

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
<th>Prerequisite:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 1010</td>
<td>BPS Foundations of Computer Science, and the Application of Computer Science to the Investigation of Physical Systems and Phenomena</td>
<td>(3)</td>
<td>Investigation of computers and computing in today’s society, including the basic scientific and mathematical concepts that underlie computer science, computing, and computer systems. No prerequisites. (F,Sp,Su)</td>
<td></td>
</tr>
<tr>
<td>CS 1020</td>
<td>Campus Computing and Beyond</td>
<td>(1)</td>
<td>Hands-on laboratory for CS 1010. Introduces the campus network and the Internet. Emphasizes general problem-solving strategies and skills associated with computer and application software use. (F,Sp,Su)</td>
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</tr>
<tr>
<td>CS 1050</td>
<td>Problem Solving with Computers</td>
<td>(3)</td>
<td>Investigates problem-solving using methodologies of computer science. Emphasizes techniques used by computer scientists to solve problems, as well as the scientific method. Develops problem-solving methodology for both new and traditional computer applications. (F,Sp)</td>
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</tr>
<tr>
<td>CS 1700</td>
<td>Introduction to Computer Science—CS 1</td>
<td>(3)</td>
<td>Introduction to science of problem solving, programming, program development, algorithm analysis, and data structures. Students will learn to develop correct software in a current programming language environment. Computer science majors must enroll in CS 1710 concurrently with CS 1700. Prerequisite: MATH 1050 or Math ACT score of at least 23. (F,Sp,Su)</td>
<td></td>
</tr>
<tr>
<td>CS 1710</td>
<td>Introduction to Computer Science—CS 1 Lab</td>
<td>(1)</td>
<td>One-hour lab taught in conjunction with CS 1700. Students learn to develop correct software in a hands-on structured environment. Computer science majors are required to pass both the laboratory and the lecture, and are required to enroll in CS 1700 concurrently with CS 1710. For students not majoring in computer science, this laboratory is advised, but not required, for CS 1700. Prerequisite: MATH 1050 or Math ACT score of at least 23. (F,Sp,Su)</td>
<td></td>
</tr>
<tr>
<td>CS 1720</td>
<td>Q1 Introduction to Computer Science—CS 2</td>
<td>(3)</td>
<td>Introduction to science of problem solving, programming, program development, algorithm analysis, and data structures. Students will learn to develop correct software in a current programming language environment. Prerequisite: CS 1700. (F,Sp,Su)</td>
<td></td>
</tr>
<tr>
<td>CS 2200</td>
<td>Q1 Algorithms and Data Structures—CS 3</td>
<td>(3)</td>
<td>Introduction to science of problem solving, programming, program development, algorithm analysis, and data structures. Students will learn to develop correct software in a current programming language environment. Prerequisite: CS 1720. (F,Sp,Su)</td>
<td></td>
</tr>
<tr>
<td>CS 2250</td>
<td>Cooperative Work Experience</td>
<td>(1-9) <img src="1" alt="repeat" /></td>
<td>Provides credit for students working at a participating firm under faculty supervision. Prerequisite: Permission of instructor. (F,Sp,Su)</td>
<td></td>
</tr>
<tr>
<td>CS 2370</td>
<td>Software Engineering</td>
<td>(3)</td>
<td>Science of small and large software project development, taught in team and project management format. Students complete a well-documented functional product, working in teams of four to five students. Prerequisite: CS 2200. (F,Sp)</td>
<td></td>
</tr>
</tbody>
</table>
CS 2550  Computer Organization (3)
Fundamental building blocks of digital computers, and the underlying theories upon which these building blocks are assembled. Introduction to information representation, number systems, combinational logic circuits, sequential logic circuits, and instruction sets. Programming such systems at the assembly level. Prerequisites: CS 1700 and MATH 1050. (F,Sp)

CS 3000  Undergraduate Seminar (1)
Serves as a capstone course for the pre-computer science curriculum, as well as an introduction to the advanced standing curriculum. Also discusses issues of computer science as a career and discussion of the advanced standing test. Prerequisite: CS 2200. (F,Sp)

CS 3010  DSC Information Acquisition, Analysis, and Presentation (3)
CI QI
Introduces students to use of scientific method and computer technology in analysis of multi-faceted problem, and presentation of that analysis. Each semester, built around single topic such as global warming. Prerequisites: Completion of University Studies Computer and Information Literacy (CIL) and Quantitative Literacy (QL) requirements. (F,Sp,Su)

CS 3100  Operating Systems and Concurrency (3)
Design and implementation of operating systems. UNIX will be used as one example, but all categories of operating systems will be discussed. Presentation of the concept of concurrency as it applies to operating system design and application. Prerequisite: CS 2200. (F,Sp)

CS 3410  DSC Algorithm Development: JAVA/Internet (3)
CI QI
Introduces students to algorithm development and programming for JAVA-based applications, especially those dealing with the Internet. Examines computer-based representation, storage, retrieval, and transmission of information, along with the algorithms used to perform such operations. Prerequisites: CS 1700 and completion of University Studies Computer and Information Literacy (CIL) and Quantitative Literacy (QL) requirements. (F,Sp)

CS 3420  QI Algorithm Development: C# and .NET (3)
Introduces students to algorithm development and programming for C#-based applications, especially those dealing with the Internet. Examines computer-based representation, storage, retrieval, and transmission of information, along with the algorithms used to perform such operations. Prerequisites: CS 1700 and completion of University Studies Computer and Information Literacy (CIL) and Quantitative Literacy (QL) requirements. (Sp)

CS 3500  DSC Algorithm Development: Visual BASIC/Graphical User (3)
QI
Introduces students to algorithm development and programming in Visual BASIC, with special emphasis on graphical user interfaces for Windows applications and environments. Prerequisites: Completion of University Studies Computer and Information Literacy (CIL) and Quantitative Literacy (QL) requirements. (Su)

CS 3510  DSC Algorithm Development: COBOL/Business (3)
QI
Introduces students to algorithm development and programming in COBOL. Special emphasis given to applications and algorithms for use in business and information processing applications. Prerequisites: Completion of University Studies Computer and Information Literacy (CIL) and Quantitative Literacy (QL) requirements. (F)

CS 3550  Computer Architecture (3)
Architecture of a computer system, as viewed by the programmer. Topics such as memory management, RISC vs. CISC, pipelining, parallelism, interrupts, and networking discussed in detail. Includes several homework assignments, at least one of which deals with interrupts and interrupt-driven applications. Prerequisite: CS 2550. (F,Sp)

CS 4250  Cooperative Work Experience (1-9) ®
Provides credit for students working at a participating firm under faculty supervision. Prerequisite: Permission of instructor. (F,Sp,Su)

CS 4700  Programming Languages (3)
Theories of programming design and implementation. Introduction to variety of programming languages, showing how they represent trade-offs with respect to these theories. Prerequisite: CS 2200. (F,Sp)

CS 4720  Computer Networking I (3)
Focuses on client/server model, which is the dominant architectural model for today's computer systems. Explores the network underlying this model, specifically examining the topology, protocol(s), user interface(s), and hardware. Emphasizes the general theory and functionalities underlying the client/server model and computer networks in general. Prerequisite: CS 2200 or permission of instructor. (F)

CS 4730  Computer Networking II (3)
Focuses on client/server model, which is the dominant architectural model for today's computer systems. Emphasizes the specifics of the products of today's dominant network companies, which are currently Novell and Microsoft. Completion of this course prepares students for certification under such products. Prerequisite: CS 4720. (Sp)

CS 4950  Undergraduate Research (1-4) ®
Participation in research projects, under supervision of a computer science faculty member. Prerequisites: CS 2200 and permission of instructor. (F,Sp,Su)

CS 5000  Theory of Computability (3)
Theory of computation, including presentation of computability, decidability, and complexity. Includes formal grammars, finite and pushdown automata, and turing machines. Prerequisites: CS 2200, MATH 3310. (Sp)

CS 5050  Advanced Algorithms (3)
Study of algorithms and their analysis, including: design by induction, algorithms involving sequences and sets, graph algorithms, geometric algorithms, algebraic algorithms, reductions, NP-completeness, and parallel algorithms. Prerequisites: CS 2200, MATH 3310. (F,Sp)

CS 5100  Graphical User Interfaces and Windows Programming (4)
Design principles of GUIs and philosophy, structure, and programming in Windows environments. Prerequisite: CS 2200. (Sp)

CS 5200  Distributed and Network Programming (4)
Introduction to programming concepts and techniques for distributed and networked environments. Explores concurrency, process synchronization, network protocols, connectionless and connection-oriented communications, network architectures and topology, load balancing, and transmission media. Prerequisite: CS 3100. (F)

CS 5300  Compiler Construction (4)
Review of programming language structures, translation, loading, execution, and storage allocation. Compilation of declarations, expressions, statements, and procedures/functions. Organization and design of a compiler. Prerequisite: CS 4700. (F)

CS 5370  Advanced Software Engineering (3)
Advanced software engineering concepts, including the improvement process, requirements acquisition, development process models, object-oriented design, and software testing. Student cannot receive credit for both CS 5370 and CS 6370. Prerequisite: CS 2370. (F)

CS 5400  Computer Graphics I (4)
Introduction to concepts of graphical techniques. Digital and pictorial representation of information. Prerequisites: CS 2200; MATH 1220; MATH 2250 or 2270. (F)

CS 5450  Multimedia Systems (4)*
Introduction to concepts and techniques underlying multimedia-based systems. Deals with both the hardware aspects of multimedia systems (e.g., transfer rates, capacities, resolution, etc.) and the software requirements of such systems. Each student required to develop a multimedia-based system. Prerequisite: CS 2200. (Sp)

CS 5500  Parallel Algorithms (3)
Examines basic techniques for designing parallel algorithms, such as balanced trees, pointer jumping, partitioning, pipelining, accelerated cascading, list ranking, and tree contraction. Consideration of classic parallel algorithms in graphs, merging, sorting, planar geometry, string matching, and randomized techniques. Prerequisite: CS 2200. (Sp)
Computer Science (CS)
Course Descriptions

CS 5600  AI: Problem Solving and Expert Systems (3)
Introduction to practical artificial intelligence methods for building problem solving and expert systems. Covers search, knowledge representation, and reasoning. Students will develop projects in LISP and expert system shells. Prerequisite: CS 2200. (F)

CS 5620  Computer Science Applications in Bioinformatics I (3)
Introduction to the information technology and computational methods used to study genomes, as well as their structure, diversity, and evolution. Explores usage of these methodologies for storage, retrieval (mining), processing, analysis, and visualization of biological information. Prerequisites: CS 2200; BIOL 1220, 3200; STAT 3000. (Sp)

CS 5630  Computer Science Applications in Bioinformatics II (3)
Builds on material presented in CS 5620 by presenting more advanced topics in bioinformatics, such as sequence alignment, data mining, machine learning, evolutionary algorithms, neural networks, etc. Prerequisite: CS 5620. (F)

CS 5650  CVPRIP I: Computer Vision, Pattern Recognition, and Image Processing (3)
Introduction to theories and techniques of machine intelligence, with emphasis on pattern recognition, computer vision, fuzzy logic, and neural networks. Prerequisites: CS 2200, MATH 2270, STAT 2000. (F)

CS 5700  Object-Oriented Software Development (3)
Study of fundamental object-oriented principles, e.g., abstraction, encapsulation, classification, and inheritance. Application of these principles in all phases of software development, with emphasis on analysis, design, and testing. Introduction to software design patterns. Prerequisite: CS 2370. (F)

CS 5800  Introduction to Database Systems (3)
Comparison of various database systems. Normal forms, protection, concurrency, security and integrity, and distributed and object-oriented systems. Prerequisite: CS 2200. (F)

CS 5850  Systems Analysis (3)
Theory and practice of analysis, design, and implementation of information systems. Students will construct an information system. Prerequisite: CS 5800. (Sp)

CS 5890  Topics in Computer Science (Topic) (1-4) ®
Current topics in computer science as determined by advances in the field. Prerequisite: CS 2200 and permission of instructor. (F,Sp,Su)

CS 5950  Independent Study (1-6) ®
Provides for independent study of selected topics. Prerequisites: CS 2200 and permission of instructor. (F,Sp,Su)

CS 6100  MultiAgent Systems (3)
MultiAgent systems are composed of multiple interacting computing elements, known as agents. Agents are software systems with two important capabilities: first, autonomous actions; and second, interacting with other agents by engaging in cooperation, coordination, and negotiation. Prerequisite: CS 5200. (F)

CS 6200  Distributed System Design (3)
Examines advanced design concepts related to development of distributed software systems. Students learn how to model and evaluate communication protocols and study techniques for time coordination, distributed process synchronization, object replication and migration, and distributed transaction processing. Students also learn about Common Object Request Broker Architecture (CORBA). Prerequisite: CS 5200 or ECE 6600. (Sp)

CS 6250  Cooperative Work Experience, Graduate (1-9) ®
Provides credit for students working at a participating firm under faculty supervision. Prerequisite: Permission of instructor. (F,Sp,Su)

CS 6300  Supercomputers for Sequential and Parallel Computers (3)
Analysis and optimization for sequential and parallel computers, including loop restructuring, concurrency analysis, vector analysis, and optimizations for shared and distributed memory computers. Prerequisite: CS 5300. (Sp)

CS 6370  Software Engineering with a Project (3)
Advanced software engineering concepts, including the improvement process, requirements acquisition, development process models, object-oriented design, and software testing. Students will work in teams, developing significant software products. Student cannot receive credit for both CS 5370 and CS 6370. Prerequisite: CS 2370. (F)

CS 6400  Computer Graphics II (3)*
Study of computer rendering of three-dimensional objects. Object representation, hidden surface removal, and shading. Ray tracing of synthetic scenes using mathematically defined surfaces. Prerequisite: CS 5400. (Sp)

CS 6500  Advances in Parallel Systems (3)
Survey of current advances in parallel processing and concurrent systems. Review of current scientific literature to understand current issues, problems, and progress in advanced topics of parallel processing. Students read, summarize, report, and discuss up-to-date scientific papers in the field. Prerequisite: CS 5500. (F)

CS 6550  Parallel Computing Systems (3)
Design of large-scale parallel systems. Explores machine organizations SIMD and/or MIMD modes of parallelism, emphasizing interconnection patterns among processors. Discussion of low-level parallel processing algorithms. Presents case studies of existing and proposed systems. Prerequisite: CS 5500. (F)

CS 6600  AI: Advanced Intelligent Systems (3)
Investigation of advanced techniques for creating intelligent systems. Covers machine learning, reasoning under uncertainty, decision making, natural language understanding, and advanced knowledge representation. Students develop projects in LISP and expert system shells. Prerequisite: CS 5600. (Sp)

CS 6630  Fuzzy Logic and its Application (3)
Introduces students to machine learning and problem solving techniques based on fuzzy logic. Prerequisite: CS 2200 and advanced standing; or instructor’s permission. (F)

CS 6650  Neural Networks and Evolutionary Algorithms (3)
Advanced course in theories and techniques of machine intelligence, emphasizing pattern recognition, neural networks, and evolutionary algorithms. Prerequisites: CS 2200 and advanced standing in computer science; or instructor’s permission. (Sp)

CS 6690  AI: Advanced Topics in Artificial Intelligence (Topic) (3)
Advanced course in selected theories and techniques of artificial intelligence. Prerequisite: Permission of instructor. (Sp)

CS 6700  Object-Oriented Models, Methods, and Tools (3)
Study of object-oriented concepts, principles, techniques, development processes, and tools across all areas of software engineering, with special emphasis on current research topics. Prerequisite: CS 5700. (F)

CS 6800  Theory of Relational Databases (3)
Graduate-level relational database course covering constraints and normal forms, mathematical models and provable properties, minimality, graphs, and synthesis. Prerequisite: CS 5800. (Sp)

CS 6890  Topics in Computer Science (Topic) (1-4) ®
Current topics in computer science as determined by advances in the field. Prerequisite: Permission of instructor. (F,Sp,Su)

CS 6900  Seminar (1)
Series of one-hour seminars on current research topics presented by computer science faculty. Prerequisite: Permission of instructor. (F)

CS 6950  Directed Readings in Computer Science (1-4) ®
Directed reading on advanced topics in computer science. Prerequisite: Permission of instructor. (F,Sp,Su)

CS 6970  Thesis and Research (1-9) ®
Graduate research in computer science. Prerequisite: Permission of instructor. (F,Sp,Su)
CS 6990  Continuing Graduate Advisement  (1-6) ®
Prerequisite: Permission of instructor. (F,Sp,Su)

CS 7350  Patterns in Computer Software Systems  (3)
Investigates patterns in computer software systems and how they can be better cataloged, understood, and reused to improve development productivity and quality. Includes readings of current literature, writing research papers, and participation in group discussions. Prerequisite: CS 5700. (Sp)

CS 7380  Software Testing  (3)*
Explores current issues, including testing object-oriented software, test data generation and sufficiency, domain-based testing, functional testing, and code-based testing. Prerequisite: Permission of instructor. (F)

CS 7500  Fault-Tolerant Systems  (3)
Advanced study of design and implementation of operating systems for fault-tolerant parallel and distributed systems. Topics chosen will provide students with knowledge of current research issues, practices, and techniques for the design and development of such systems. Prerequisite: Permission of instructor. (Sp)

CS 7550  Interconnection Networks for Parallel Computer Systems  (3)
Explores the design of large-scale parallel processing systems generally suited for multi-microprocessor implementation. Emphasizes interconnection patterns among the processing elements in parallel processors. Prerequisite: Permission of instructor. (F)

CS 7650  Advanced CVPRIP: Computer Vision, Pattern Recognition, and Image Processing  (3)
Investigates new developments in representation and processing of gray-level and color images, including thresholding, segmentation, curve detection, etc. Also examines visual perception, as well as statistical and syntactical pattern classification. Prerequisite: Permission of instructor. (Sp)

CS 7660  Robotics and Autonomous Systems  (3)
Surveys current advances in robotic and autonomous systems. Reviews current scientific literature in the field, with emphasis on understanding the problems solved and the approaches used. Prerequisite: Permission of instructor. (F)

CS 7670  Data Mining and Machine Learning  (3)
Covers cutting-edge research in machine learning, data mining, and intelligent information retrieval. Focuses on how these topics related to data mining. Prerequisite: Permission of instructor. (Sp)

CS 7900  Seminar  (2)
Series of lectures and presentations on current topics in computer science. Students participate by giving presentations. As part of the course, students are expected to prepare their dissertation proposal. Prerequisite: Permission of instructor. (Sp)

CS 7910  Special Topics in Intelligent Systems (Topic)  (3) ®
Discussion of current topics in intelligent systems, such as parallelism and software systems. Prerequisite: Permission of instructor. Taught on demand. (F,Sp,Su)

CS 7920  Special Topics in Parallelism (Topic)  (3) ®
Topics of current interest in the area of parallelism. Prerequisite: Permission of instructor. (F,Sp,Su)

CS 7930  Special Topics in Software Systems (Topic)  (3) ®
Topics of current interest in the area of software systems. Prerequisite: Permission of instructor. (F,Sp,Su)

CS 7940  Brain Building  (3)
Examines the state of the techniques associated with the building of artificial brains. Prerequisite: Instructor’s permission. (Sp)

CS 7950  Reading and Reports  (1-4) ®
Directed reading on cutting-edge topics in computer science. Prerequisite: Permission of instructor. (F,Sp,Su)

CS 7970  Dissertation Research  (1-15) ®
PhD dissertation research. Prerequisite: Permission of instructor. (F,Sp,Su)

CS 7990  Continuing Graduate Advisement  (1-6) ®
Continuing PhD-level advisement. Prerequisite: Permission of instructor. (F,Sp,Su)

* Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

*This course is taught alternating years. Check with department for information about when course will be taught.

Dance West Summer (DE)
See Department of Health, Physical Education and Recreation, pages 217-220

DE 1700W  Jazz  (1) ®
Provides training and experience in the styles of jazz, one of the popular forms of American dance. (Su)

DE 1800W  Dance West Performance  (1-3) ®
Students will learn dances to be performed in “The West: America’s Odyssey.” Prerequisite: Audition. (Su)

DE 1840W  Beginning Classical Ballet  (2) ®
A discipline in recognized classic form. Includes barre exercises, port de bras, and center practice in balance, jumping, and turns. (Su)

DE 1870W  Beginning Classical Modern Dance  (2) ®
Designed to develop coordination, ease, and poise in handling the body. Focuses on dance as an art using the body as a medium of expression. (Su)

DE 2850W  Intermediate Classical Ballet  (2) ®
Barre exercises, port de bras, and center practice in balance, jumps, beats, and turns with more emphasis on exactness and precision of line. Prerequisite: One year of ballet or permission of instructor. (Su)

DE 2880W  Intermediate Classical Modern Dance  (2) ®
Stresses alignment of the skeletal structure, freedom and movement of the torso, and technical work enabling the dancer to secure the natural axis of balance. Prerequisite: One year modern dance or permission of instructor. (Su)

DE 3800W  Advanced Ballet  (3) ®
Pointe and Pas de Deux. Intensified center floor work concentrating on longer adagio and allegro combinations. Prerequisite: Five years of ballet or permission of instructor. (Su)

DE 4500W  American Character Ballet  (3) ®
History through movement from seventeenth century European dance through contemporary styles. (Su)

® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

Electrical and Computer Engineering (ECE)
See Department of Electrical and Computer Engineering, pages 187-190

ECE 1010  Introduction to Electrical and Computer Engineering  (2)
Basic concepts and techniques for electrical and computer engineering majors. Introduction to analog and digital electronics with fundamental laboratory skills. Two lectures and one lab. Prerequisites: MATH 1050 and 1060; or AP Calculus score of at least 3 on the AB test; or Math ACT score of at least 27. Enrollment limited to electrical engineering and computer engineering majors only. (F)

ECE 2200  Electrical Engineering for Nonmajors  (4)
Introduction to electrical engineering, including DC circuits, electronic circuits, digital circuits, and power circuits. Not for ECE majors. Three lectures, one lab. Prerequisite: MATH 1210. (F)

ECE 2410  Electrical Circuits  (3)
Introduction to electrical circuits and basic circuit elements. Circuit theory, analysis techniques, and introduction to design. DC analysis. First-order inductive and capaci-
ECE 2420  Electrical Circuits Laboratory (1)
Introduction to measurements and use of laboratory instrumentation. Basic circuit design and analysis. Introduction to computer-aided design and analysis. Must be taken concurrently with ECE 2410. (F,Sp)

ECE 2530  Digital Circuits (3)
Design of combinational and sequential logic circuits with discrete and programmable logic devices. Simulations and timing analysis. Use of CAD tools. Design of digital systems. Corequisite: ECE 2540. (F,Sp)

ECE 2540  Digital Circuits Laboratory (1)
Laboratory course to accompany ECE 2530. Corequisite: ECE 2530. (F,Sp)

ECE 3260  DSC Science of Sound (3)
Applications of principles of acoustics (study of sound) to everyday life. Explores physical acoustics, psychoacoustics, musical acoustics, and architectural acoustics. Uses algebra and reasoning to solve problems in acoustics. (F)

ECE 3410  Electronic Systems I (3)
Fundamentals of transistors, operational amplifiers, and other integrated circuits, along with their utilization in amplifiers, switches, and other applications. Laboratory work required. Prerequisite: ECE 2410. Corequisite: ECE 3620. (F)

ECE 3420  Electronic Systems II (4)
Design of electronic circuits for applications in instrumentation, communication, control, and power systems. Three lectures, one lab. Prerequisite: ECE 3410. (Sp)

ECE 3620  Circuits and Signals (3)
Continuation of basic circuit concepts. Second-order response, time-domain analysis of higher-order systems. Impulse response and convolution. Transform domain analysis of circuits and systems. Some lab and computational work required. Prerequisite: MATH 2250, ECE 2410, CS 1720. Corequisite or prerequisite: PHYX 2220. (F)

ECE 3640  Signals and Systems (3)
Systems realizations. Time and transform domain analysis of discrete-time systems. Vector-space concepts and Fourier series. Fourier transforms in continuous and discrete time. Some lab and computational work required. Prerequisite: ECE 3620. (Sp)

ECE 3710  Microcomputer Hardware and Software (4)
Synthesis of microcomputer systems, including interfacing, component analysis, signaling requirements, and programming. Covers architecture basics, including instruction sets, assembly language programming, loading, timing, and interrupts. Includes hands-on implementation. Three lectures, one lab. Prerequisites: ECE 2410, 2530, CS 1720. (F,Sp)

ECE 3720  Microcomputer Systems Programming (3)
Advanced assembly language and systems programming concerned with performance and I/O. Study of modern computer architecture issues, such as caching, pipelining, concurrent instruction execution, memory access time, and role and structure of device drivers. Prerequisite: ECE 3710. (Sp)

ECE 3820  Design I (2)
Students work on an engineering project as part of a multidisciplinary team. Emphasizes engineering design, project management, technical writing, technical presentations, and project documentation. Prerequisite: Professional standing. (Sp)

ECE 3860  Transmission Lines (1)
Covers transmission line analysis and high frequency effects, including reflections, standing waves and interference, VSWR, crosstalk, and coupling. Intended to be taken by computer engineers. Meets simultaneously with ECE 3870 during the first five weeks of the semester. Prerequisites: ECE 2410, PHYX 2220, MATH 2250. (F)

ECE 3870  Electromagnetics I (3)
Discussion of Maxwell’s equations, electromagnetic waves, power and energy, reflection and refraction processes, transmission lines, waveguides, and antennas. Explores electrostatic and magnetostatic fields produced by charge and current distributions, as well as electromagnetic forces and materials. Prerequisites: ECE 2410, MATH 2210, 2250, PHYX 2220. (F)

ECE 4250  Internship/Co-op (3) #
Planned, career-related work experience in industry. Students must register with USU Co-op Office and have program approved by the ECE co-op advisor. Written report required. Prerequisite: Professional standing. (F,Sp,Su)

ECE 4310  Control Systems (3)
Study of analog and computer controlled systems, classical and modern control system design methods, s-domain and z-domain transfer function models, state space, dynamics of linear systems, and frequency domain analysis and design techniques. Introduction to controllability and observability, and full-state pole placement controller design. Laboratory work required. Prerequisite: ECE 3640. (F)

ECE 4740  Computer and Data Communications (3)
Systems approach to computer and data communications. Includes transmission lines, hardware controllers, computer interfaces, and protocols relating to local and wide area networks. Prerequisite: ECE 3720. (F)

ECE 4840  CI Design II (3)
Individual or team engineering project, including design, development, and testing. Interdisciplinary projects strongly encouraged. Design reviews and written progress reports required. Prerequisite: ECE 3820. (F,Sp,Su)

ECE 4850  CI Design III (2)
Individual or team engineering project, including design, development, and testing. Interdisciplinary projects strongly encouraged. Written and oral reports required, describing technical details of design project. Prerequisites: Senior standing and ECE 4840 (may be taken concurrently). (F,Sp,Su)

ECE 4930  Special Studies for Undergraduates (1-3) #
Independent or group study of engineering problems not covered in regular course offerings. (F,Sp,Su)

ECE 5020  Computational Methods for Electrical Engineers (3)
(d6020)
Advanced computing methods for electrical engineers, such as numerical integration and differentiation, finding roots and extrema, matrix manipulations, interpolation, Fourier methods, solution of differential and partial differential equations (finite differences, finite difference time domain, finite element, method of moments). Emphasis on practical applications. Prerequisites: ECE 3870 and C/C++ or MATLAB programming. (F,Sp)

ECE 5230  Spacecraft Systems Engineering (3)
Spacecraft communications, telemetry systems, and command and data handling. Introduction to astrodynamics and orbit design. Electrical power generation and storage. Spacecraft subsystems (e.g., guidance, navigation, and control). Prerequisites: Either ECE 2200, or both ECE 2410 and 2530. (F)

ECE 5320  Mechatronics (4)
Principles, modeling, interfacing, and signal conditioning of motion sensors and actuators. Hardware-in-the-loop simulation and rapid prototyping of real-time closed-loop computer control of electromechanical systems. Modeling, analysis, and identification of discrete-time or sampled-data dynamic systems. Commonly used digital controller design methods. Introduction to nonlinear effects and their compensation in mechatronic systems. Laboratory work and a design project required. Three lectures and one lab. Prerequisite: ECE 4310. (Sp)

ECE 5430  Advanced Electronic Circuits (3)
Analysis, design, and application of analog integrated circuits in electronic systems. Laboratory work required. Prerequisite: ECE 3420. (F)

ECE 5460  Digital VLSI System Design I (d6460)
Team-oriented design of large digital systems using hardware description languages. Schematic capture and standard-cell libraries. Behavioral system modeling and simulation. Preparation of behavioral models for floor-planning, testability, and design synthesis. Extensive use of CAD tools. Design project. Prerequisite: ECE 5530. (Sp)
ECE 5470 Digital VLSI System Design II (3)
Continuation of ECE 5460/6460. Logic synthesis, timing analysis, and structural simulation and back annotation. Design refinement to the point of final mask artwork production. Design validation through LVS, DRC, and gate-level or device-level simulation. Formal methods of circuit verification. Extensive use of CAD tools. Design project. Prerequisite: ECE 5460/6460. (F)

ECE 5480 Electromagnetic Compatibility (3)
Introduces concepts and techniques of electromagnetic compatibility to students who will be designing and working with high-speed electronic systems. Prerequisites: ECE 3640, 3870. (Sp)

ECE 5530 Digital System Design (3)
Presents modern top-down, bottom-up approach to design of digital systems, emphasizing programmable devices. Extensive use of CAD tools. Designing with ABEL, and introduction to designing with Verilog HDL. Laboratory work required. Prerequisite: ECE 2530. (F,Sp)

ECE 5630 Introduction to Digital Signal Processing (3)
Theory and principles of digital signal processing, including discrete-time signals and systems, Z-Transforms, Fourier analysis, FIR and IIR digital filter design, discrete Fourier transforms, and multi-rate processing. Laboratory work required. Prerequisite: ECE 3640. (F)

ECE 5640 Real-Time Processors (3)
Real-time processor architectures and methods used for digital signal processing. Includes C and assembly language programming, modern DSP architectures, tools for real-time system development, and finite word-length effects. Laboratory includes implementation of hardware-based real-time systems. Laboratory work required. Prerequisites: ECE 3640 and 3710. (Sp)

ECE 5660 Communication Systems I (3)
Explores fundamentals of analog and digital communication systems. Focuses on modulation, demodulation, detection, and synchronization. Prerequisites: ECE 3640 and MATH 5710; or graduate standing. (Sp)

ECE 5740 Concurrent Programming (3)
Analysis of problems associated with the use of multiple threads and processes (e.g., deadlock, livelock, and starvation) and methods for avoiding them. Proper usage of synchronization operations (mutual exclusion, critical sections, semaphores, and monitors) and communication operations (message passing, remote procedure calls, remote method invocation, and rendezvous). Extensive programming exercises in C and JAVA. Prerequisites: ECE 3720 and CS 3100 or graduate standing. (Sp)

ECE 5750 High-Performance Microprocessor Architecture (3)
Modern architecture fundamentals, instruction set analysis and design, pipelined and superscalar architectures, software/hardware interaction, memory hierarchy, and virtual memory stresses processor-specific low-level code optimization. Prerequisite: ECE 3710 or equivalent. (Sp)

ECE 5770 Microcomputer Interfacing (4)
Design of hardware and software interfaces to microcomputers for instrumentation and control applications. Three lectures, one lab. Prerequisite: ECE 3710. (Sp)

ECE 5780 Real-Time Systems (4)
Real-time system design and implementation of basic concepts, including interrupts and controllers, context switch, concurrent processes, semaphores, message passing, rate monotonic and deadline scheduling, hardware system design and test issues, and typical engineering practice. Includes hands-on implementation. Three lectures, one lab. Prerequisite: ECE 3720. (F)

ECE 5800 Electromagnetics II (3)
General plane wave solution of Maxwell’s equations, potential functions, radiation, 2-D solution to Laplace’s equation, and fundamental electromagnetic theory. Prerequisite: ECE 3870. (F)

ECE 5810 Microwaves I (3)
Impedance matching, microwave network analysis, waveguides, nonlinear elements, analysis and design of power dividers, filters, and ferromagnetic circuits. Laboratory work required. Prerequisite: ECE 5800. (Sp)

ECE 5820 Electromagnetics Laboratory (3)
Measurement theory, practice, and safety. Design and characterization of microwave filters, amplifiers, and antennas. Also includes practical considerations. Prerequisites: ECE 3420 and 3870; or equivalent. (F)

ECE 5850 Antennas I (3)
Theory and application of electromagnetic radiation and radiating structures. Emphasis on antenna designs for modern wireless communications and radar systems. Prerequisite: ECE 3870. (F)

ECE 5870 Wireless Communication and Laboratory (3)
Characteristics of the physical channel, fading and multipath, frequency reuse, interference, and system capacity. Equalization, diversity, and channel coding. Laboratory experiments focus on design issues and tradeoffs in a wireless communication system. Prerequisite: ECE 3870. Corequisite: ECE 5660. (F)

ECE 5930 Special Topics in Electrical and Computer Engineering (1-4)
Independent or group study of engineering problems not covered in regular course offerings. (F,Sp,Su)

ECE 6010 Stochastic Processes in Electronic Systems (3)
Introduction to stochastic processes in communications, signal processing, digital systems, and control. Topics include continuous and discrete random processes, correlation and power spectral density, optimal filtering, Markov chains, and queuing theory. Prerequisite: Graduate status. (F)

ECE 6020 Computational Methods for Electrical Engineers (3)
Advanced computer methods for electrical engineers, such as numerical integration and differentiation, finding roots and extrema, matrix manipulations, interpolation, Fourier methods, solution of differential and partial differential equations (finite differences, finite difference time domain, finite element, method of moments). Emphasis on practical applications. Prerequisites: ECE 3870 and C/C++ or MATLAB programming. (F,Sp)

ECE 6030 Mathematical Methods for Signals and Systems (3)
Signal representation using vector spaces. Linear algebraic techniques for signal modeling and estimation. Optimal detection and estimation algorithms, with applications. Prerequisite: Graduate status. (F)

ECE 6100 Electromagnetics Seminar (1)
Weekly seminar or colloquium for advanced electromagnetics students. Taught on demand. (Sp)

ECE 6240 Space Environment and Engineering (3)
Study of space environment and models used for engineering analysis. Topics include considerations for engineering in the space environment, such as plasma interactions, debris, chemical reactions, radiation effects, and thermal issues. Also taught as PHYX 6240. (F)

ECE 6250 Graduate Internship/Co-op (1-3)
Planned work experience in industry. Detailed program; must have prior approval. Written report required. Prerequisite: Permission of instructor. (F,Sp,Su)

ECE 6320 Linear Multivariable Control (3)
Modeling, analysis, and design of multi-input, multi-output control systems, including both state space and transfer matrix approaches, with an emphasis on stability. Prerequisite: ECE 4310, MAE 5310, or equivalent. Also taught as MAE 6320. (F)

ECE 6330 Nonlinear and Adaptive Control (3)
Methods of nonlinear and adaptive control system design and analysis. Includes qualitative and quantitative theories, graphical methods, frequency domain methods, sliding surface design, linear parameter estimation methods, and direct and indirect adaptive control techniques. Prerequisite: ECE/MAE 6320. Also taught as MAE 6330. (Sp)

ECE 6340 Spacecraft Attitude Control (3)
Spacecraft attitude dynamics and controls. Spin stabilized, three axis, and dual spin modes. Attitude determination techniques. Prerequisite: ECE 5320. Also taught as MAE 6340. (Sp)
ECE 6350  Robotics (3)
Fundamentals of robotic systems, including kinetics, kinematics, sensors, actuators, control algorithms, motion planning, and computer systems. Integration of critical design components to develop complete systems. Robotic manipulator analysis and design. Applications in manufacturing. Mobile robots, including wheeled, legged, and alternative locomotion robots. Prerequisite: ECE/MAE 6320 or instructor approval. Also taught as MAE 6350. (Sp)

ECE 6430  Topics in VLSI (3)
Topics in VLSI, including device-level VLSI, fabrication technologies, analog VLSI design, and semiconductor device physics. Use of CAD tools. Taught on demand.

ECE 6460  Digital VLSI System Design I (3) *(d5460)*
Team-oriented design of large digital systems using hardware description languages. Schematic capture and standard-cell libraries. Behavioral system modeling and simulation. Preparation of behavioral models for floor-planning, testability, and design synthesis. Extensive use of CAD tools. Design project. Prerequisite: ECE 5530. (Sp)

ECE 6470  Digital VLSI System Design II (3) *(d5470)*
Continuation of ECE 6460/5460. Logic synthesis, timing analysis, and structural simulation and back annotation. Design refinement to the point of final mask artwork production. Design validation through LVS, DRC, and gate-level or device-level simulation. Formal methods of circuit verification. Extensive use of CAD tools. Design project. Prerequisite: ECE 6460/5460. (F)

ECE 6490  Radar I (3)
Emphasizes the system aspects of radar. After introducing the basic concepts of radar, methods for the prediction of radar performance are developed and the principles of CW, FM, MTI, and tracking radars are presented. Prerequisites: ECE 3640 and 3870 or equivalent knowledge. (Sp)

ECE 6600  Computer Networking I (3)
Topics include network topology, flow, capacity and queuing analysis, detailed description of the standard layers, and specific networking systems, including local area networks. Some lab work included. (F)

ECE 6620  Introduction to Digital Image Processing (3)*
Digital processing theory and techniques for two-dimensional signals. Topics include two-dimensional transforms, image perception, sampling, modeling, enhancement, and data compression. Prerequisites: ECE 5630 and 6010. (Sp)

ECE 6670  Communication Systems II (3)
Communication over bandlimited channels, equalization, multiple antenna systems, space-time codes, spread spectrum, CDMA, OFDM. Prerequisites: ECE 5660, 6010, 6030. (F)

ECE 6750  Concurrent Systems Engineering I (3)*
Reliable and efficient software design for multiprocessor and multiprocessor applications on real-time or embedded systems. Use of CASE tools to develop substantial concurrent programs for single and multiprocessor systems. Prerequisite: BS degree in Electrical and Computer Engineering or Computer Science. (Sp)

ECE 6760  Fault-tolerant Systems (3)*
Methods for design and implementation of fault-tolerant computer systems, emphasizing small real-time and embedded applications. Detection, assessment, confinement, and treatment of faults. Checkpointing, rollback, and secure protocols. Fault-tolerance on distributed systems. Prerequisite: BS degree in Electrical and Computer Engineering or Computer Science. (F)

ECE 6780  Device Drivers (3)
Design and implementation of UNIX and Windows device drivers. Includes hardware/software design tradeoffs in light of modern operating systems. Students implement working device drivers. Prerequisite: ECE 5780. (Sp)

ECE 6800  Electrical Engineering Colloquium (0.5) ®
Weekly seminars or colloquia. Students are normally required to enroll for two semesters. (F,Sp)

ECE 6830  Microwaves II (3)*
Microwave amplifier design for noise, gain, and power match; microwave semiconductor and vacuum-tube devices; microwave oscillators; and microwave system performance characterization. Laboratory work required. Prerequisite: ECE 5810 or equivalent. (F)

ECE 6930  Special Topics in Electrical Engineering (1-6) ®
Independent or group study in electrical engineering topics, such as automated systems, optics and laser engineering, electro-acoustics, solid-state materials, devices, and intelligent systems engineering. (F,Sp,Su)

ECE 6950  Design Project (3) ®
(F,Sp,Su)

ECE 6970  Thesis Research, MS (1-6) ®
(F,Sp,Su)

ECE 6990  Continuing Graduate Advisement (1-6) ®
Prerequisite: Permission of Electrical and Computer Engineering Department. (F,Sp,Su)

ECE 7030  Detection and Estimation Theory (3)*
Foundation of detection theory, including Neyman-Pearson, Bayes, and Minimax Bayes detection. Maximum likelihood and Bayes estimation theory. Recursive estimation and Kalman filtering and smoothing. Expectation maximization and hidden Markov models. Prerequisites: ECE 6010, 6030. (Sp)

ECE 7210  Spacecraft Instrumentation (3)*
Theory, engineering, and data reduction techniques of spacecraft instrumentation for space science and spacecraft systems. Also taught as PHYX 7210. (Sp)

ECE 7350  Intelligent Control Systems (3)*
Intelligent control strategies, including neural network, fuzzy logic, associated memory networks, and rule-based control systems. Prerequisite: ECE/MAE 6320 or instructor approval. Also taught as MAE 7350. (Sp)

ECE 7360  Optimal and Robust Control (3)*
Advanced methods of control system analysis and design. Operator approaches to optimal control, including LQR, LQG, and L1 optimization techniques. Robust control theory, including QFT, H-infinity, and interval polynomial approaches. Prerequisite: ECE/MAE 6320 or instructor approval. Also taught as MAE 7360. (F)

ECE 7390  Topics in Controls (3)
Topics selected from advanced control theory. Taught on demand.

ECE 7610  Computer Networking II (4)
Advanced TCP/IP protocols, routing strategies, major applications. Details of Unix systems for advanced use of BSD sockets and TLI/Streams. Prerequisite: ECE 6600. (Sp)

ECE 7620  Advanced Digital Image Processing (3)*
Advanced digital processing theory and techniques. Topics include image restoration, image reconstruction from projections (computed tomography), and data compression. Prerequisite: ECE 6620. (F)

ECE 7630  Advanced Digital Signal Processing (3)*
Advanced digital signal processing theory and methods. Topics include optimal filter design (Wiener and Kalman filters), adaptive filtering, spectral estimation, and beamforming. Prerequisites: ECE 5630, 6010. (F)

ECE 7640  Topics in Signal Processing (3)
Topics in advanced signal or image processing. Taught on demand.

ECE 7670  Coding Theory and Practice in Communication (3)*
Examination of codes employed in digital communications, including discussion of error correction codes over finite fields. Reed-Solomon, convolutional, and trellis coding. Advanced coding techniques. Prerequisites: ECE 6010 or 6030; ECE 5660 or equivalent. (Sp)

ECE 7680  Information Theory (3)**
Topics related to information theory, including source coding theorem with examples of data compression, channel coding, and rate distortion theory. Prerequisite: ECE 6030. Corequisite: ECE 5660. (Sp)
ECE 7690  Topics in Communication Theory  
Topics selected from advanced communication theory. Taught on demand.

ECE 7710  Concurrent Systems Engineering II  
Advanced work on the development of reliable and correct concurrent systems, including those with time constraints. Substantial experience with CASE tools and application development. Prerequisite: ECE 6750. (F)

ECE 7750  Distributed Control Systems  
Design and implementation issues concerning distributed control systems. Real-time processing, distributed stability methods, network techniques and standards, system development and management, smart sensors, and control actuators. Survey of current literature. Prerequisites: ECE 5780 and ECE/MAE 6320. (Sp)

ECE 7760  Advanced Topics in Distributed Systems  
Advanced topics in parallel and distributed computing, emphasizing small-scale real-time and embedded systems. Prerequisite: ECE 6750. Taught on demand.

ECE 7770  Advanced Topics in Real-Time Systems  
Topics in real-time systems, such as scheduling analysis, adaptive scheduling, multiprocessor systems, fault tolerance, etc. Also design and implementation of real-time operating systems. Prerequisite: ECE 5780. Taught on demand.

ECE 7850  Antennas II  
Topics include: apertures, reflectors and lens, finite and infinite arrays, broadband antennas, Fresnel Fraunhofer regions, and Huygens' principle. Concepts for synthetic aperture radar and radar cross section. Prerequisites: ECE 5800 and 5850. (Sp)

ECE 7860  Computational Electromagnetics  
Topics selected from advanced numerical methods including: finite element, finite difference, and moment method for solving differential and integral equations of electromagnetic radiation and scattering problems. Programming in C/C++ or MATLAB required. Prerequisite: ECE 5800. (Sp)

ECE 7880  Topics in Electromagnetics  
Topics selected from advanced electromagnetics, microwave, and radar fields. Taught on demand.

ECE 7920  Special Topics in Electrical Engineering  
Independent or group study in electrical engineering topics, such as automated systems, laser engineering, electroacoustics, solid-state materials, devices, and intelligent systems engineering. (F,Sp,Su)

ECON 3900  Independent Reading and Research  
Prerequisite: Permission of Electrical and Computer Engineering Department. (F,Sp,Su)

ECON 4310  QI Mathematical Methods for Economics  
Prerequisites: ECON 2010, or ECON 3030 and 3050; ACCT 2010. (F)

ECON 4010  DSS Managerial Economics  
Microeconomic principles applied to economic decision-making and policy formulation, with emphasis on the level of business firm and the individual consumer. Designed for undergraduate business and accounting majors. Credit will not be given for both ECON 4010 and 5010. Prerequisites: ECON 1550 or 2010; MATH 1100; STAT 2300. (F,Sp)

ECON 4020  Macroeconomics for Managers  
Prerequisites: ECON 1500, or ECON 3030 and 3050; ACCT 2010. (F)
ECON 5010 Microeconomics (3) ©
Analysis of behavior of consumers and business firms. Application of theory to the solution of real world problems. Credit will not be given for both ECON 4010 and 5010. Prerequisites: ECON 2010, MATH 1100, and STAT 2300. (F)

ECON 5020 CI Economics and Public Policy (3)
A study of selected federal policies and their impacts on product and factor markets, with major focus on an economic analysis of public policy actions. Prerequisites: ECON 4020 or 5000, ECON 4010 or 5010. (Sp)

ECON 5030 Agricultural Marketing and Price Analysis (3)
Agribusiness market strategies and price analysis. Designed for upper-division students. Prerequisite: ECON 4010 or 5010. (F)

ECON 5050 Farm and Ranch Planning and Analysis (3)
Economic principles and tools in operation of farm and ranch enterprises. Designed for upper-division students. Prerequisites: ECON 4010 or 5010; and ECON 4030. (Sp)

ECON 5100 History of Economic Thought (3)
Origin and development of economic theories of leading thinkers in western civilization. Prerequisite: ECON 2010. (Sp)

ECON 5110 DSS Economic History of the United States (3)
Development of agriculture, industry, transportation, and finance from colonial times. Prerequisite: ECON 2010. (F)

ECON 5120 Economics of Russia and Eastern Europe, 9th Century to 21st Century (3)
Development of the economics of Russia and Eastern Europe from earliest times to the present, emphasizing the interaction between economic forces and policies of the state. Prerequisite: ECON 2010. Also taught as POLS 5120. (F)

ECON 5150 DSS Comparative Economic Systems (3)
History, economic theories, and comparative policies of communist, socialist, and capitalistic economies. Problems facing transition economies. Prerequisite: ECON 2010. (Sp)

ECON 5300 Industrial Organization—Game Theory (3)
Emphasizes market structure, firm conduct, and economic efficiency. Topics include competition, game theory, monopoly, oligopoly, monopolistic competition, firm strategies, and anti-trust policy in the United States. Prerequisites: ECON 4020 or 5000, ECON 4010 or 5010. (F)

ECON 5310 QI Mathematical Methods for Economics (3) (d4310)
Review of single-variable calculus (differentiation and integration); multivariate calculus (including the chain rule and implicit differentiation); optimization (unconstrained and constrained); linear algebra and applications (including linear programming). Economic applications. Prerequisites: ECON 2010; MATH 1100 or its equivalent. (F)

ECON 5330 QI Applied Econometrics (3)
Introduction to basic statistics, simple linear regression, multiple regression, and simultaneous equation models for economics. Prerequisites: STAT 2000 or 2300 or 3000. (Sp)

ECON 5350 CI Agribusiness, Cooperatives, and Management (3)
Applications of economic and management principles to farm marketing and supply firms. Includes independent work on a set of case studies designed to enhance understanding of current issues in agribusiness and provide practice in solving everyday management problems. Prerequisite: ECON 4010 or 5010. (Sp)

ECON 5400 International and Development Economics (4)
Intermediate-level issues in international trade, international finance, and economic development. Topics include competitive and noncompetitive trade models, trade policy, balance of payments accounting, exchange rates, international lending and investment, economic growth, and poverty alleviation. Prerequisites: ECON 4020 or 5000; ECON 4010 or 5010. (F)

ECON 5500 Public Finance (3)
Government fiscal institutions-expenditure programs, budget procedures, tax systems, debt issues, levels of government, and the credit issues surrounding their operations. Prerequisites: ECON 4020 or 5000, ECON 4010 or 5010. (F)

ECON 5560 Natural Resource and Environmental Economics (3)
Economics of developing, managing, and conserving natural resources and the environment. Topics include resource use and conservation, environmental quality, public and private resource management, and valuation of nonmarket goods. Prerequisite: ECON 1550 or 2010. (Sp)

ECON 5600 Financial Economics (3)
Introduction to development of our present system of money, banking, and financial institutions. Analysis of central bank policy, capital markets, speculative markets, and portfolio theory. Prerequisites: ECON 4020 or 5000, ECON 4010 or 5010. (Sp)

ECON 5660 Training and Organizational Development (2)
Theoretical basis for training and development in organizations. Practical experience in the design and development of training and other educational programs in an organizational setting. Prerequisite: ECON 2010. (Sp)

ECON 5670 Labor and Employee Relations (3)
A comprehensive study of the bargaining process and scope of labor-management contracts, the day-to-day administration of agreements, and the major substantive issues in negotiations. Prerequisite: ECON 2010. (F)

ECON 5680 Labor Market Policy (3)
Labor force development and behavior, occupational choice and mobility, human capital formation, labor market information and institutions, and manpower policies. Prerequisite: ECON 2010. (Sp)

ECON 5850 Regional and Community Economic Development (3)*
Building on microeconomic theory, models for regional and urban structure and change are explored. Policy decision models are also developed. Prerequisites: ECON 4020 or 5000, ECON 4010 or 5010. (F)

ECON 5950 CI Senior Project (3)
A current economic problem is identified and analyzed, bringing together other agricultural economics and economics course concepts and methods. (Sp)

ECON 6000 Macroeconomic Theory I (3) (d7230)
Lays a foundation of advanced macroeconomic analysis, integrating theory, data, and computational methods. Special attention given to real-world issues, with an emphasis on how economists use macro models and data to improve business and public policy decisions. Topics covered include neoclassical and endogenous growth theories, real business cycle and new Keynesian theories of economic fluctuations, monetary theory, macroeconomic policy, and open-economy macroeconomics. (F)

ECON 6030 Agricultural Marketing (3)
Covers a variety of topics relating to price analysis for agricultural commodities. Explores econometric and time series modeling and forecasting of agricultural prices. Includes a section on futures and options on futures contracts, focusing on fundamental and technical analysis. Prerequisite: ECON 6330. (F)

ECON 6040 Agricultural Production/Policy (3)
Includes analysis of marketing margins and a section on food demand and nutrition. Also explores food safety issues. Prerequisite: ECON 6030. (F)

ECON 6060 Research Methods (2) (d7060)
Provides introduction to application of scientific methods in economics, with an emphasis on proposal writing. (Sp)

ECON 6100 Microeconomic Theory I (3)
Provides a rigorous introduction to graduate-level microeconomic theory. While the specific focus is on the theoretical construct of graduate-level microeconomic models, the broad objective of the class is to lay the foundation for empirical applications.
in microeconomics. To meet this broad objective, the course covers theory of the firm, consumer theory, market structure, theory of public goods and externalities, and welfare economics. (F)

ECON 6250 Graduate Internship (1-3) ®
Prerequisites: ECON 6000, 6100, 6330. (F,Sp,Su)

ECON 6300 Quantitative Analysis for Business and Policy Decisions (3)
Provides an introduction to applied mathematical programming, operations research, simulation, risk analysis, adaptive management, and other decision theoretic tools used by government policy makers and managers of firms. (Sp)

ECON 6330 Applied Econometrics (3)
Provides graduate-level introduction to applied regression tools, including: simple and multivariate regression analysis; linear, nonlinear, and qualitative dependent variable models; distributed lags; seemingly unrelated regression; and model specification and validation tests. Prerequisite: Background in statistics and calculus. (F)

ECON 6500 Introduction to Natural Resource Economics (3)
Introduction to the legal and regulatory foundations of natural resource policy, with specific attention to water, minerals, rangelands, forests, fish, and off-site impacts of agricultural and industrial production. Topics include externalities, property rights, public goods, public choice, and public trust. Prerequisite: ECON 4010 or 5010 or 5560. (Sp)

ECON 6510 Introduction to Environmental Economics (3)
Introduction to the foundations of environmental economics. Adaptation of market mechanisms to ameliorate pollution problems and provide amenity services. Methods for determining the value of nonmarketed goods and services. Topics include economic principles regarding social choice and market exchange, as well as current and historical issues involving pollution, environmental regulation, and the effects of environmental regulation on the profitability of private and public entities. Prerequisite: ECON 4010 or 5010 or 5560 or 6500. (F)

ECON 6520 Practicum in Environmental and Natural Resource Economics (3)
Introduction to the application of regional economic models, cost-benefit analysis, and the valuation of amenity and other nonpecuniary resource services for Regulatory Impact Reviews, Environmental Impact Statements, etc. Prerequisite: ECON 5560 or 6500 or 6510. (F)

ECON 6700 Regional and Community Economic Development (3)
Extension of microeconomic foundations of regional and urban economics to recent advances in economic growth and development, economic structure, land-use, public finance, housing, social welfare, environmental quality, and transportation. Prerequisite: ECON 6100. (Sp)

ECON 6710 Community Planning and Impact Analysis (3)
Focuses on tools used by local and regional economic development specialists as they relate to planning and impact assessment. Specific topics will include I/O models, IMPLAN models, and computable CGE modeling approaches as they are used in a planning environment. Prerequisite: ECON 6700. (F)

ECON 6900 Readings and Conference (1-3) ®
Directed readings. Credits from this course toward any economics graduate degree require approval of the student’s advisory committee, the department graduate committee, and the department head. Prerequisites: ECON 5000 and 5010. (F,Sp,Su)

ECON 6910 Independent Research (1-3) ®
Directed readings. Credits from this course toward any economics graduate degree require approval of the student’s advisory committee, the department graduate committee, and the department head. Prerequisites: ECON 5000 and 5010. (F,Sp,Su)

ECON 6970 Thesis Research (1-9) ®
Master’s level research. (F,Sp,Su)

ECON 6990 Continuing Graduate Advisement (1-9) ®
Master’s level advisement. (F,Sp,Su)
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>ECON 7360</td>
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<td>ECON 7400</td>
<td>International Trade Theory and Policy</td>
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<td>ECON 7500</td>
<td>Resource Economics</td>
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<td>ECON 7510</td>
<td>Environmental Economics</td>
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<td>ECON 7700</td>
<td>International Finance</td>
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<td>ECON 7800</td>
<td>Development Economics</td>
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<td>ECON 7970</td>
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<td>ECON 7990</td>
<td>Continuing Graduate Advisement</td>
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<tr>
<td>EDUC 5560</td>
<td>Special Topics</td>
<td>(0.5-4)</td>
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<td>EDUC 6010</td>
<td>Introduction to Program Evaluation: Evaluation Models and Practical Guidelines</td>
<td>(3)</td>
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<tr>
<td>EDUC 6080</td>
<td>Leadership and the School Principal</td>
<td>(3)*</td>
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<td>EDUC 6240</td>
<td>Introduction to Student Development Theory</td>
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<td>EDUC 6250</td>
<td>History and Development of Higher Education and Student Services</td>
<td>(3)</td>
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<td>EDUC 6260</td>
<td>Law and Higher Education: A Guide for Student Services Personnel Administrators</td>
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<td>EDUC 6270</td>
<td>Organizational Administration/Strategies in Student Services</td>
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<td>EDUC 6410</td>
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<td>EDUC 6500</td>
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<td>(3)*</td>
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<td>EDUC 6550</td>
<td>Research for Classroom Teachers</td>
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<td>EDUC 6560</td>
<td>Special Topics</td>
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<td>EDUC 6570</td>
<td>Introduction to Educational and Psychological Research</td>
<td>(3)</td>
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<tr>
<td>EDUC 6600</td>
<td>Measurement, Design, and Analysis I</td>
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**Education (EDUC)**

See College of Education and Human Services, pages 104-105

**EDUC 5000H** Senior Honors Seminar | (2) | For students in the College of Education and Human Services to explore an honors interdisciplinary theme selected by the Honors Committee as a culmination of an honors experience. (Sp)

EDUC 5560 Special Topics | (0.5-4) | (F,Sp,Su)

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*Parenthetical numbers preceded by d indicate a dual listing.

© Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

*This course is also offered by online correspondence and/or CD through Continuing Education Time Enhanced Learning.

EDUC 6700  Single-Subject Research Methods and Designs (3)
Examines single-subject research methodology for applied research in schools, including measurement, design, and analysis issues. Also taught as SPED 6700/7700. (F)

EDUC 6710  Diversity in Education (3)
Provides educators with background and techniques for more effectively addressing the needs of students in culturally and linguistically diverse society. Diversity topics also include religion, socioeconomic class, ability differences, gender, and sexual orientation. (Sp,Su)

EDUC 6740  School Law (3)*
Acquaints students with legal issues relating to public education. Considers rights and responsibilities of students, teachers, and educational practitioners. Relates these rights to school programs and operations as determined by state and federal laws and court decisions. (F,Su)

EDUC 6770  Qualitative Methods I (3)
Introduction to qualitative research, including foundations; research designs and strategies of inquiry (case studies, ethnography, phenomenology, grounded theory, biographical, historical, participative inquiry); sampling; fieldwork and data collection; and analysis. Prerequisite: EDUC/PSY 6570. (F)

EDUC 6780  Qualitative Methods II (3)
Builds on and applies concepts covered in EDUC 6770, emphasizing analysis of data, critique of qualitative research, and design and implementation of qualitative research. Students registered for 7780 conduct a qualitative research project. Prerequisite: EDUC 6770. (Sp)

EDUC 6930  Supervision and Administrative Internship—Elementary (3)
Jointly (with EDUC 6940) provides experience in supervision and administration in elementary school settings as they relate to the performances of the six Interstate School Leaders Licensure Consortium (ISLLC) Standards for School Leaders. (F,Sp,Su)

EDUC 6940  Supervision and Administrative Internship—Secondary (3)
Jointly (with EDUC 6930) provides experience in supervision and administration in secondary school settings as they relate to the performances of the six Interstate School Leaders Licensure Consortium (ISLLC) Standards for School Leaders. (F,Sp,Su)

EDUC 6950  Leadership Portfolio Development (1)
Creation of leadership portfolio as culminating activity for completion of Administrative/Supervisory Endorsement. Portfolio includes leadership vision, educational philosophy, and professional resume. (F,Sp,Su)

EDUC 7050  Theories of Instructional Supervision (3)*
Principles and theoretical base of supervision as they relate to improving instructional practices. Emphasizes research findings and recommended practices. (F,Su)

EDUC 7080  Theories of Organizational Leadership in Education (3)
Introduces prospective school administrator to theories of organizational behavior and practices of managing and leading people within the context of the school organization. (F,Sp,Su)

EDUC 7100  Practices of Instructional Supervision (2)*
Application of instructional supervisory theories and practices of supervisory behaviors as they relate to improvement of instruction. Prerequisite: EDUC 6100. (Sp)

EDUC 7150  Curriculum Theory (2)
Examines the role interpretive/phenomenological, political, cultural, and theoretical perspectives play in the development of school curriculum. Prerequisite: ELED/SCED 6150. (Sp)

EDUC 7300  Historical, Social, and Cultural Foundations of Education (3)
Examines relationship of modern school in terms of historical, cultural, and social foundations of education. (F)

EDUC 7310  Teaching-Learning Foundations in Education (3)
Seminar in which learning theories and teaching models/skills are demonstrated, critically examined, and integrated. Prerequisite: Graduate course in educational psychology or equivalent. (Sp)

EDUC 7320  Instructional Leadership (3)*
Emphasizes application of theory, research, and effective practice to instructional and curricular improvement. Examines educational change.

EDUC 7610  Measurement, Design, and Analysis II (3)
Advanced treatment of measurement, research design, and statistical analysis concepts and issues in educational and psychological research. Prerequisite: EDUC/PSY 6600. Also taught as PSY 7610. (Sp,Su)

EDUC 7670  Literature Reviews in Education and Psychology (1)**
Advanced concepts in designing, writing, and critiquing literature reviews. Prerequisites: EDUC/PSY 6600 and consent of instructor. Taught alternate semesters. Also taught as PSY 7670.

EDUC 7700  Single-Subject Research Methods and Designs (3)
Examines single-subject research methodology for applied research in schools, including measurement, design, and analysis issues. Also taught as SPED 7700/6700. (F)

EDUC 7780  Qualitative Methods II (3)
Builds on and applies concepts covered in EDUC 6770, emphasizing analysis of data, critique of qualitative research, and design and implementation of qualitative research. Students registered for 7780 conduct a qualitative research project. Prerequisite: EDUC 6770. (Sp)

EDUC 7970  Dissertation Research (1-18)®
Dissertation research for students in the Research and Evaluation specialization. (F,Su)

EDUC 3000 CI  Foundation Studies and Practicum in Teaching and Classroom Management Level I (6-8)®
Introduction to historical, philosophical, and social factors shaping contemporary educational practice in kindergarten, elementary, and middle school. Through these factors, students investigate various aspects of teaching and classroom management. Extensive practicum included. (F,Sp)

EDUC 3010  Practicum Remediation Level II (2-4)
Students work to develop defensible teaching ideas and to translate these ideas into practical experiences in elementary classroom settings. Specific arrangements for scheduling, placement with a cooperating teacher, and course requirements are handled by professors from the program level recommending remediation and the Elementary Education Advising Office. (F,Sp)

Elementary Education (ELED) See Department of Elementary Education, pages 191-194
ELED 3100 Teaching Reading I (3) ©
Focuses on variety of approaches to reading instruction and issues in reading curriculum development. Includes reading theories, stages of reading growth, and assessment practices. Prerequisite: Admission to teacher education. (F,Sp,Su)

ELED 4000 Teaching Science and Practicum Level III (3)
Investigation and practical application of science programs, materials, and techniques of instruction to the teaching of science. Prerequisites: Admission to teacher education; completion of Level II and BIOL 1010 with a lab, or USU 1350; PHYX 1200 and GEOL 1100 or their equivalents. (F,Sp,Su)

ELED 4010 Practicum Remediation Level III (2-4)
Students work to develop defensible teaching ideas and to translate these ideas into practical experiences in elementary classroom settings. Specific arrangements for scheduling, placement with a cooperating teacher, and course requirements are handled by professors from the program level recommending remediation and the Elementary Education Advising Office. (F,Sp)

ELED 4030 CI Teaching Language Arts and Practicum Level III (3)
Study of language development in children and its implications and application in a practicum setting. Curriculum development, instructional methods, and evaluation in the areas of listening, speaking, writing, and reading. Prerequisite: Admission to teacher education. (F,Sp,Su)

ELED 4040 CI Teaching Reading II and Practicum Level III (3)
Examines developmental, content, and recreational components of classroom reading programs, including teacher read-aloud, SSR, decoding, shared reading, uses of children’s literature, content area reading, assessment, adaptive strategies, and parent involvement. Prerequisite: Admission to teacher education, ELED 3100. (F,Sp,Su)

ELED 4050 Teaching Social Studies and Practicum Level III (3)
Students develop necessary knowledge and skills to plan and implement an appropriate social studies program consistent with the nature of the child and our democratic society. Includes practicum work. Prerequisite: Admission to teacher education. (F,Sp,Su)

ELED 4060 Teaching Mathematics and Practicum Level III (3)
Relevant mathematics instruction in the elementary and middle-level curriculum; methods of instruction, evaluation, remediation, and enrichment. Prerequisite: Admission to teacher education. (F,Sp,Su)

ELED 4250 Advanced Cooperative Work Experience (1-8) ®
Advanced or middle level career-related experience designed to integrate classroom study with practical work experience. Students must work a minimum of 50 hours per credit hour. (F,Sp,Su)

ELED 4410 Gifted Education in the Regular Classroom (3)
Introduction to characteristics of gifted learners. Exploration of strategies for challenging gifted learners in regular classroom settings. (F)

ELED 4420 Multiple Talent Approach to Thinking (2)
Explores one model for the teaching of creative and critical thinking embedded in regular curricula. Includes practical application requirements. Also taught as SCED 4420. (Su)

ELED 4480 Early Childhood Education Kindergarten through Grade 3 (3)
Study of early childhood (K-3) curriculum, methodology, and learning environments. (Sp)

ELED 4600 Philosophy and Organization of the Middle Level School (3)
Focuses on characteristics of young adolescents and how middle level schools can be organized to meet those characteristics through interdisciplinary teaming, advisory programs, and exploratory mini-courses. Taught summer of odd-numbered years. Also taught as SCED 4600/6600. (F,Su)

ELED 4610 Curriculum, Methods, and Assessment for the Middle Grades (3)
Integrates current approaches to curriculum design with instructional models and assessment of learning appropriate for grades 5-9. Taught summer of even-numbered years. Also taught as SCED 4610/6610. (Sp,Su)

ELED 4620 Service Learning Applications for the Middle Grades (d6620) (3)
Examines literature related to service learning for the middle grades. Application of service learning in curriculum. Also taught as SCED 4620/6620. (Su)

ELED 4630 Methods for Teaching Middle-Level Mathematics (d6630) (3)**
Teaching methods course for elementary teachers seeking a middle-level (Level II) mathematics endorsement. Prerequisites: Satisfactory completion of MATH 1210 and ELED 4060 or an equivalent elementary mathematics methods course.

ELED 4710 Diversity in Education (3)
Provides educators with background and techniques for more effectively addressing the needs of students in a culturally and linguistically diverse society. Diversity topics also include religion, socioeconomic class, ability differences, gender, and sexual orientation. Also taught as SCED 4710. (F,Sp)

ELED 4760 ESOL Instructional Strategies (3)
(d6760) Includes principles and techniques for promoting oral language, reading, and writing development for K-12 English language learners. Explores language acquisition theory, classroom organization, teaching strategies, and parental involvement for effective English language instruction. Also taught as SCED 4760/6760. (F,Sp)

ELED 4770 ESOL Instructional Strategies in the Content Areas (3)
(d6770) Focuses on strategies which help language-minority students in content-area classrooms to increase academic learning. Includes methods for increased integration of language learners into the larger school community. Discussion of parental involvement. Also taught as SCED 4770/6770. (Su)

ELED 4780 Assessment for Language Learners (3)
(d6780) Explores principles and techniques for developing, analyzing, and interpreting assessment measures for language learners, including oral, written, reading, and content-area assessment. Examines assessment requirements for public schools, intensive language programs, and higher education. Also taught as SCED 4780/6780. (Su)

ELED 4900 Senior Project (1-5) ®
All honors students are required to submit a senior project for graduation from the Honors Program. Students work with a departmental advisor on a topic of their choice. (F,Sp)

ELED 4970 Senior Thesis (1-5) ®
An in-depth paper or project culminating in a formal presentation. Required of all students for graduation from the Honors Program in Elementary Education. (F,Sp)

ELED 5000 Practicum in Improvement of Instruction (1-6) ®
(d6000) Open topics course focusing upon effective teaching methods, teaching performance, curriculum decision-making, and characteristics of learners. Also taught as SCED 5000/6000. (F,Sp,Su)

ELED 5050 Student Teaching—Kindergarten (3-6)
Constitutes 6 semester credit hours of student teaching in a kindergarten classroom. Student teachers need to demonstrate competency and professionalism in teaching. An understanding of developmentally appropriate curriculum is necessary. (F,Sp)

ELED 5100 Student Teaching—Primary Grades (1-3) (6)
Constitutes 6 semester credit hours of student teaching in a primary grade (1-3). Student teachers will demonstrate competency in designing and implementing a developmentally appropriate learning environment. (F,Sp)

ELED 5150 Student Teaching—Elementary (Grades 4-6) (6)
Constitutes 6 semester credit hours of student teaching at the upper elementary grade level. Student teachers need to demonstrate competency and professionalism in teaching. Students begin their transition from university student to professional teacher. (F,Sp)

ELED 5200 Student Teaching—Middle Level (Grades 7-8) (6)
Constitutes 6 semester credits of student teaching at the middle school level. Student
students need to demonstrate competency and professionalism in teaching. Students begin their transition from university student to professional teacher. (F,Sp)

**ELED 5250**  
Student Teaching—Seminar  
Designed to provide student teachers/interns with teaching skills and strategies that will assist them in the classroom. Accompanies one of ELED 5050, 5100, 5150, or 5200. Course content is implemented into the student teaching experience. (F,Sp)

**ELED 5300**  
Associate Teaching—Level V  
(3-6)  
Designed to allow students who have completed student teaching to extend their teaching time in a classroom. In order to better prepare for their own classroom, students continue to develop individual teaching skills and competencies. (F,Sp)

**ELED 5900**  
Independent Study  
(0.5-2)®  
(F,Sp,Su)

**ELED 6000**  
PRACTICUM IN IMPROVEMENT OF INSTRUCTION  
Open topics course focusing upon effective teaching methods, teaching performance, curriculum decision-making, and characteristics of learners. Also taught as SCED 6000/5000. (F,Sp,Sa)

**ELED 6020**  
Foundations and Change in Early Childhood Education  
(3)  
Survey course designed to acquaint professionals with historical and philosophical foundations of early childhood education, leading to examination of contemporary trends and issues. (F)

**ELED 6040**  
Designing and Interpreting Measurements for Assessing Student Learning  
(3)  
Teachers and instructional supervisors develop their talents for (a) designing and interpreting measurements for monitoring students’ learning and (b) interpreting scores from standardized and government-mandated tests. Also taught as SCED 6040. (F,Sa)

**ELED 6100**  
Motivation and Management in Inclusive Settings  
(3)  
Leads in-service teachers to develop classroom management strategies for gaining and maintaining students’ cooperation. Also taught as SCED 6100. (Sp,Sa)

**ELED 6150**  
Foundations of Curriculum  
(3)  
Examination of theories, principles, and foundations of curriculum, emphasizing program planning and current curriculum trends. Also taught as SCED 6150. (F,Sa)

**ELED 6190**  
Theories of Teaching and Learning  
(3)  
Demonstration, analysis, and evaluation of various models of teaching, emphasizing research-based principles of learning. Also taught as SCED 6190. (Sp,Sa)

**ELED 6200**  
Curriculum and Issues in Early Childhood Education  
(2)  
Examination of current issues and research topics in early childhood education important to the improvement of K-3 programs. (F)

**ELED 6220**  
Workshop in Early Childhood Education  
(1-6)  
Exploration of current topics important in teaching young children. (Su)

**ELED 6230**  
Literacy Learning in Early Childhood  
(3)  
Investigation of early literacy development and effective classroom practices in kindergarten and the primary grades. Relevant research is examined. (F,Sa)

**ELED 6240**  
Workshop in Science Education  
(1-6)®  
Exploration of current topics in science education. (Su)

**ELED 6250**  
Graduate Cooperative Work Experience  
(1-10)®  
Cooperative education work experience at a professional level. Prior approval required. (F,Sp,Sa)

**ELED 6260**  
Supervised Practicum in Early Childhood Education  
(2)  
Encompasses approximately 125 hours of supervised practicum in a kindergarten classroom and observations in prekindergarten settings. Participants demonstrate their ability to integrate and apply early childhood theory and research in kindergarten.
ELED 6440  Creativity in Education (2)
Exploration of theories, research, and strategies concerning creativity, and their application to personal creativity and to improvement of classroom practice. Also taught as SCED 6440. (Su)

ELED 6460  Identification and Evaluation in Gifted Education (2)*
Provides educators with theory and models for identifying students as gifted, creative, and talented. Presents models for evaluation of programs for gifted learners. Explores instruments for use in identification and evaluation. Must be taken concurrently with ELED/SCED 6470. Also taught as SCED 6460. (Sp)

ELED 6470 Practicum: Team Consultation (1)*
Practicum experience in association with ELED/SCED 6460. Requires participation, as part of a consultative team, to improve practice in an approved setting for a specific child, classroom, school, school district, or other educational entity. Must be taken concurrently with ELED/SCED 6460. Also taught as SCED 6470. (Sp)

ELED 6480 Methods and Materials in Gifted Education (2)**
Explores programming and curriculum models in gifted education, with special attention to the development of instructional materials for use with students. Must be taken concurrently with ELED/SCED 6480. Also taught as SCED 6480. (2 cr) (F)

ELED 6490 Practicum: Classroom Applications (1)**
Practicum experience in association with ELED/SCED 6480. Requires application of at least three curriculum, cognitive, or affective models in the student’s current teaching assignment. Must be taken concurrently with ELED/SCED 6480. Also taught as SCED 6490. (F)

ELED 6500 Interdisciplinary Workshop (1-2) ©
(F,Sp,Su)

ELED 6550 Practicum in the Evaluation of Instruction (1-4) ®
Field-based research study contributing toward graduate degree. Supervisor’s licensure related to assessment of ongoing or newly proposed program of instruction. (F,Sp,Su)

ELED 6560 Practicum in Improvement of Instruction (1-4) ®
Field-based program focusing upon characteristics of effective teaching methodologies, teaching performance, curriculum decision making, value guidelines, and the characteristics of the learner. (F,Sp,Su)

ELED 6570 Advanced Comprehension (3)
Designed to enhance teachers’ understanding of research and practice related to teaching vocabulary and reading comprehension and fostering motivation for reading. Prerequisite: ELED/SCED 6310 or 6360. Also taught as SCED 6570. (All years)

ELED 6580 Character and Values Education (2)
Overview of research, theory, and practical approaches to values education, emphasizing processes of moral development and socialization. Also taught as SCED 6580. (Su)

ELED 6590 Supervising School Reading Program (2)
Examines strategies for improving school reading programs. Emphasizes simulations, guided practice, and small group discussions. Prerequisites: ELED/SCED 6350 and 6360. Also taught as SCED 6590. (Sp)

ELED 6600 Philosophy and Organization of the Middle Level School (d4600) (3)
Focuses on characteristics of young adolescents and how middle level schools can be organized to meet those characteristics through interdisciplinary teaming, advisory programs, and exploratory mini-courses. Graduate students have additional course requirements for design and implementation of a project. Taught summer of odd-numbered years. Also taught as SCED 6600/4600. (F,Sp)

ELED 6610 Curriculum, Methods, and Assessment for the Middle Grades (d4610) (3)
Integrates current approaches to curriculum design with instructional models and assessment of learning appropriate for grades 5-9. To receive credit for 6610, graduate students design and implement an action research project related to curricular or pedagogical interests, then share their findings in class. Project will include review of literature related to student’s interest. Prerequisite: ELED/SCED 6600. Taught summer of even-numbered years. Also taught as SCED 6610/4610. (Sp,Su)

ELED 6620 Service Learning Applications for the Middle Grades (d4620) (3)
Examines literature related to service learning for the middle grades. Application of service learning in curriculum. Also taught as SCED 6620/4620. (Su)

ELED 6630 Methods for Teaching Middle-Level Mathematics (d4630) (3)**
Teaching methods course for elementary teachers seeking a middle-level (Level II) mathematics endorsement. Prerequisites: Satisfactory completion of MATH 1210 and ELED 4060 or an equivalent elementary mathematics methods course.

ELED 6700 Improvement of Science Instruction (3)
For practicing elementary and middle-school teachers or those seeking alternative licensure in science education. Survey of current research in science education and strategies for implementing best practice in classroom settings. Considers a Science/Technology/Society approach to teaching science, as well as the use of action research to improve practice. (F)

ELED 6720 Practicum in Science Instruction (1)
Optional practicum to be taken semester following enrollment in ELED 6700. (Sp)

ELED 6750 Improvement of Mathematics Instruction (2)
Examines advanced concepts in curriculum theory and methods of teaching mathematics in the elementary and middle school. Prerequisite: ELED 6400 or teaching experience in elementary or middle school. (Sp)

ELED 6760 ESOL Instructional Strategies (3)
(d4760)
Includes principles and techniques for promoting oral language, reading, and writing development for K-12 English language learners. Explores language acquisition theory, classroom organization, teaching strategies, and parental involvement for effective English language instruction. Also taught as SCED 6760/4760. (F,Sp)

ELED 6770 ESOL Instructional Strategies in the Content Areas (3)
(d4770)
Focuses on strategies which help language-minority students in content-area classrooms to increase academic learning. Includes methods for increased integration of language learners into the larger school community. Discussion of parental involvement. Also taught as SCED 6770/4770. (Su)

ELED 6780 Assessment for Language Learners (3)
(d4780)
Examines principles and techniques for developing, analyzing, and interpreting assessment measures for language learners, including oral, written, reading, and content-area assessment. Examines assessment requirements for public schools, intensive language programs, and higher education. Also taught as SCED 6780/4780. (Su)

ELED 6800 Improvement of Social Studies Instruction (3)
Focuses on strategies which help language-minority students in content-area classrooms to increase academic learning. Includes methods for increased integration of language learners into the larger school community. Discussion of parental involvement. Also taught as SCED 6770/4770. (Su)

ELED 6840 Workshop: Intermountain Conference on Education of the Gifted and Talented (1-2) ®
Provides instruction by leading national authorities in gifted and talented education, as well as networking with educators of the gifted from throughout the Intermountain West. Also taught as SCED 6840. (Su)

ELED 6900 Independent Study (0.5-3) ©
(F,Sp,Su)

ELED 6910 Independent Research (0.5-3) ©
(F,Sp,Su)

ELED 6940 Supervision and Administration Internship (3)
Provides experience in supervision and administration in school systems. (F,Sp)

ELED 6960 Master’s Creative Project (3) ®
Provides students with opportunity to design and carry out a creative project closely related to area of teaching specialty. Requires written report. (F,Sp,Su)
ELED 6970 Thesis (1-9) Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

ELED 6990 Continuing Graduate Advisement (1-9) Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

ELED 7020 Foundations and Change in Early Childhood Education (d6020) (3) Survey course designed to acquaint professionals with historical and philosophical foundations of early childhood education, leading to examination of contemporary trends and issues. (F)

ELED 7050 Internship in Program Evaluation (1-4) Experience in practical aspects of program evaluation through planned, supervised evaluation project participation approved by student’s supervisory committee. (F,Sp,Su)

ELED 7060 Internship in Research (1-4) Experience in conducting research through planned, supervised research project participation approved by student’s supervisory committee. (F,Sp,Su)

ELED 7120 Student Teaching Supervision (1-3) Considers ways and means of providing desirable experiences for student teachers in the public schools. Analysis of roles of classroom teacher and college supervisor. (F,Sp,Su)

ELED 7130 Supervision Internship (2-9) Provides extensive supervisory experience for doctoral students. Internship is for period of time to be specified by department and cooperating agency. (F,Sp,Su)

ELED 7200 Internship in Curriculum Development (1-4) Internship with recognized leaders in the development, implementation, and evaluation of curricular programs and activities at early childhood, elementary, and/or middle education levels. (F,Sp,Su)

ELED 7220 Literacy and Cognition (3) Examination of cognitive and sociocultural research related to K-12 students’ acquisition and use of reading, writing, and learning strategies. Explores implications for school policies and classroom instruction. Also taught as SCED 7320/6320. (Sp)

ELED 7300 Evaluation of Supervisory Performance (1-4) Program for graduate students to become acquainted with and demonstrate competency in supervision. (F,Sp,Su)

ELED 7310 Research Seminar (1-3) Identification of research problems and critical issues, consideration of critical issues and research methods, and application of data analysis procedures under faculty direction. (F,Sp,Su)

ELED 7320 Continuing Graduate Advisement (1-9) Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

ELED 7330 Internship in Research (1-4) Experience in conducting research through planned, supervised research project participation approved by student’s supervisory committee. (F,Sp,Su)

ELED 7350 Internship in Program Evaluation (1-4) Experience in practical aspects of program evaluation through planned, supervised evaluation project participation approved by student’s supervisory committee. (F,Sp,Su)

ELED 7370 Internship in Curriculum Development (1-4) Internship with recognized leaders in the development, implementation, and evaluation of curricular programs and activities at early childhood, elementary, and/or middle education levels. (F,Sp,Su)

ELED 7500 Interdisciplinary Workshop (1-2) (F,Sp,Su)

ELED 7550 Evaluation of Supervisory Performance (1-4) Program for graduate students to become acquainted with and demonstrate competency in supervision. (F,Sp,Su)

ELED 7600 Internship in Research (1-4) Experience in conducting research through planned, supervised research project participation approved by student’s supervisory committee. (F,Sp,Su)

ENGL 0010 Writing Tutorial (3) Provides additional instruction for students whose score on the ACT is 16 or less, or who are advised into the course on the basis of writing diagnosis given the first day of class in ENGL 1010. (F,Sp,Su)

ENGL 1010 CL Introduction to Writing: Academic Prose (3) Students learn skills and strategies for becoming successful academic readers, writers, and speakers, such as how to read and write critically, generate and develop ideas, work through multiple drafts, collaborate with peers, present ideas orally, and use computers as writing tools. (F,Sp,Su)

ENGL 1020 Individualized Writing Instruction (1-3) For students in Distance Education international programs who need further practice in specific areas of writing. (F,Sp,Su)

ENGL 1030 BHU Understanding Literature (3) Introduction to fiction, drama, and poetry of different periods and cultures. (F,Sp,Su)

ENGL 1100 English Orientation (1) Introduction to English as a profession. Reviews career opportunities for English majors. (F,Sp)

ENGL 1110 English Composition (3) Introduction to the study of the English sentence. Discussion of punctuation and usage to facilitate editing, as well as clarity and precision in writing. (F,Sp)

ENGL 1120 Elements of Grammar (3) Introduction to the study of the English sentence. Discussion of punctuation and usage to facilitate editing, as well as clarity and precision in writing. (F,Sp)

ENGL 1600 American Cultures in Film (3) Introduction to major ethnic groups in America and their treatment in recent feature films. Also taught as HIST 1600. (F)

ENGL 1710 BHU Introduction to Folklore (3) Introduction to major genres of folklore (folk narrative, custom, folk music and song, vernacular architecture and arts), folk groups (regional, ethnic, occupational, familial), and basic folklore research method (collecting and archiving). Also taught as ANTH 1710 and HIST 1710. (F,Sp,Su)

ENGL 2010 CL Intermediate Writing: Research Writing in a Persuasive Mode (3) Writing of reasoned academic argument supported with appropriately documented sources. Focuses on library and Internet research, evaluating and citing sources, oral presentations based on research, and collaboration. Prerequisites: Completion of 30 credits, and one of: ENGL 1010 or AP score of 3 or ACT score of 29. (F,Sp,Su)

ENGL 2030 BHU Introduction to Shakespeare (3) Introduction to comedies, histories, tragedies, and nondramatic poetry for nonmajors. (F)

ENGL 2040 BHU British and Commonwealth Cultures (3) Introduction to the diverse cultures of the British Isles and the Commonwealth of the present day. Particular emphasis on regional identity in relation to multiculturalism and internationalization. Also taught as HIST 2040. (Sp)

ENGL 2100 Introduction to Literary Theory (3) Introduction to fundamental questions and arguments within the field of literary criticism. Explores a variety of major theoretical approaches to literary texts. This course, required for students in the Literary Studies and English Teaching emphases, should be taken before registering for 3000 or higher literature courses. (F,Sp)

ENGL 2140 British Literary History: Anglo-Saxon to 18th Century (3) Survey of British literature from the Anglo-Saxon period through the 18th century. (F,Sp,Su)
ENGL 2150  British Literary History: Romanticism to Present (3)  Survey of British literature from Romanticism to the present. (F,Sp,Su)

ENGL 2160  American Literary History: Colonialism to 1865 (3)  Survey of American literature from the colonial period to 1865. (F,Sp,Su)

ENGL 2170  American Literary History: 1865 to Present (3)  Survey of American literary history from 1865 to the present. (F,Sp,Su)

ENGL 2630  American Culture and the Environment (3)  Introduces a broad selection of American literary, artistic, and cultural works that investigate the relationship between human culture and the environment, relying upon contemporary eco-critical theory and exploring roots in Western and world civilizations. (F,Sp)

ENGL 2720  Survey of American Folklore (3)*  Principal ethnic, regional, and occupational folk groups in America. Relations between folklore and American history, literature, and society. Key genres in American folklore (narrative, art, song, etc.) and their role in American culture. Also taught as ANTH 2720 and HIST 2720. (F,Sp)

ENGL 3020 DHA  Perspectives in Linguistics (3)*  In-depth study of linguistics for nonmajors. Topics vary according to faculty expertise. (Sp)

ENGL 3030 DHA  Perspectives in Literature (3)  In-depth study of literature for nonmajors. Topics vary according to faculty expertise. (F,Sp,Su)

ENGL 3040 DHA  Perspectives in Writing and Rhetoric (3)**  In-depth study of rhetoric and writing for nonmajors. Topics vary according to faculty expertise. (Sp)

ENGL 3050 DHA  Masterpieces of World Literature (3)  In-depth study of masterpieces of world literature from the earliest times to the present. For nonmajors. (F,Sp)

ENGL 3070 DHA  Perspectives in Folklore (3)**  In-depth study of folklore for nonmajors. Topics vary according to faculty expertise. Also taught as HIST 3070. (F,Su)

ENGL 3300  Period Studies in American Literature (3)®  Exploration of single period or movement in literary history of the United States, or a comparative study of a topic during various periods. Periods and topics will vary. (F,Sp)

ENGL 3310  Period Studies in British Literature (3)® ©  Exploration of single period or movement in British literary history, or a comparative study of a topic during various periods. Periods and topics will vary. (F,Sp)

ENGL 3320  Period Studies in World Literature (3)®  Exploration of single period or movement in literary history outside the United States and Great Britain, or a comparative study of a topic during various periods. Periods and topics will vary. (F,Sp)

ENGL 3400 CI  Professional Writing (3)  Introduces students to workplace writing as a profession, emphasizing transition from writing for academic audiences to writing for readers of workplace documents. Students learn to design and write professional documents for science, industry, business, and/or government. Enrollment limited to English majors only. (F,Sp)

ENGL 3410  Professional Writing Technology (3)  Examines technologies of professional writing. Students examine digital environments (computers, LANs, WANs, and the Internet), as well as the software studied while progressing through the Professional and Technical Writing emphasis curriculum. Enrollment limited to English majors only. (F,Sp)

ENGL 3420  Fiction Writing (3)  Covers basic elements of writing fiction: form, structure, plot, theme, characterization, dialogue, point of view, and imagery. (F)

ENGL 3430  Poetry Writing (3)  Covers basic elements of writing poetry: language, detail, voice, tone, literal and figurative imagery, rhythm, open and closed form, structure, and theme. (F,Sp)

ENGL 3440  Creative Nonfiction Writing (3)  Focuses on the essay as creative nonfiction, emphasizing persona, audience, purpose, tone, and style. Students study difference between fiction and nonfiction. Goal is to write publishable nonfiction. (F,Sp)

ENGL 3450  Reading Theory for Writers (3)  Provides thorough understanding of reading from the perspective of writers. Students learn how readers process written texts, how reading assists writing, how readability is measured, and how online texts affect reading. (F,Sp)

ENGL 3460  Modern Rhetorical Theory (3)  Teaches students to analyze rhetoric (the art of using language to influence other people) as it operates in a variety of texts. Students learn to define and understand rhetorical situations and to evaluate rhetorical strategies chosen by other writers. (F,Sp)

ENGL 3500  Multicultural American Literature (3)  Introduction to study of ethnically diverse literatures of the United States, including Native American, Asian American, Hispanic/Latino, and African American. (F,Sp)

ENGL 3510  Young Adult Literature (3)  Study of literature written specifically for adolescent audience, including realistic, fantasy, adventure, and historical fiction. Intended for those interested in teaching secondary school English. (F,Sp)

ENGL 3520  Multicultural American Studies (3)*  Multidisciplinary introduction to study of Native Americans, emphasizing folklore, history, anthropology, literature, traditions, and contemporary issues such as the environment. (F)

ENGL 3700 CI  Regional Folklore (3)*  Study of folklore and folklife as a regionalizing process. Regions examined through their folk culture include Brittany in Northwest France, the pine Barrens of New Jersey, and the Mormon cultural region of the Intermountain West. Also taught as HIST 3700. (F,Sp)

ENGL 3710 CI  Folklore Colloquium (3)®  Issues, problems, and methodologies in folklore study. Focus and instructor variable. Also taught as HIST 3710. (Sp)

ENGL 4200 Linguistic Structures (3)  Introduction to linguistic science: phonetics, phonology, morphology, and syntax, especially as relating to English. Exposure to other aspects of linguistic analysis, including language origins and linguistic diversity. (F,Sp,Su)

ENGL 4210 History of the English Language (3)  Introduction to linguistic history of English, beginning with its Indo-European roots and continuing through Old English and Middle English to Modern English. Covers sociolinguistic aspects of English use, as well as strict grammatical history. (Sp)

ENGL 4220 Ethnic Literacy (3)  Examines the diversity of literacy skills in American ethnic groups. Topics include effects of socio-economic status, child-rearing practices, first and second language acquisition, American dialects, etc. (F,Sp)

ENGL 4230 Language and Society (3)**  Covers sciences of sociolinguistics and anthropological linguistics. Introduces concepts dealing with relationship of language to society and culture, and interaction of language with society and culture. (F)

ENGL 4250 Playwriting (3)  Study of dramatic theory and sample plays, combined with practice in writing short
plays. Students must write a minimum of three plays. Prerequisite: THEA 1210. Also taught as THEA 4250. (F)

**ENGL 4300** Shakespeare (3) ®
Selected works of William Shakespeare, with attention to biographical and cultural contexts. (F,Sp)

**ENGL 4310** American Writers (3)** ®
Selected works of either a single author or a closely related group of authors based in the United States, with attention to biographical and cultural contexts. (F,Sp)

**ENGL 4320** British Writers (3)* ®
Selected works of either a single author or a closely related group of authors based in Great Britain, with attention to biographical and cultural contexts. (F,Sp)

**ENGL 4330** World Writers (3) ®
Selected works of either a single author or a closely related group of authors based outside the United States, with attention to biographical and cultural contexts. (F)

**ENGL 4340** Studies in Prose Fiction (3)** ®
Analysis of the genre of prose fiction, emphasizing nature and evolution of specific forms. (Sp)

**ENGL 4350** Studies in Poetry (3)* ®
Analysis of the genre of poetry, emphasizing nature and evolution of specific forms. (F)

**ENGL 4360** Studies in Drama/Film (3) ®
Analysis of dramatic and cinematic genres, emphasizing nature and evolution of specific forms. (Sp)

**ENGL 4370** Studies in Nonfiction Prose (3)** ®
Analysis of the genre of nonfiction prose, emphasizing nature and evolution of specific forms. (F)

**ENGL 4400 CI** Professional Editing (3)
Editing of technical and scientific documents, working with deadlines, different levels of editing, editing marks, working with groups of editors and clients, and total document design, including graphics. Prerequisites: ENGL 3400 and 3410. Enrollment limited to English majors only. (F)

**ENGL 4410** Document Design and Graphics (3)
Explores elements of page layout, graphic design, type fonts, and design of documents to suit client’s needs. Prerequisites: ENGL 3400 and 3410. Enrollment limited to English majors only. (F,Sp)

**ENGL 4420** Advanced Fiction Writing (3)
Offers advanced study in art and skill of writing publishable fiction. Relies on workshop method. Prerequisite: ENGL 3420 or equivalent. (Sp)

**ENGL 4430** Advanced Poetry Writing (3)
Provides capstone course for undergraduate students desiring to write publishable poetry. Relies on workshop method. Prerequisite: ENGL 3430 or equivalent. (Sp)

**ENGL 4440** Advanced Nonfiction Writing (3)
Offers advanced study in the art and skill of writing publishable literary or creative nonfiction. (Sp)

**ENGL 4500 CI** Teaching Writing (3)
Prepares students to teach writing at secondary level. Teaches appropriate pedagogical techniques for teaching writing for a variety of purposes and contexts to diverse students. Techniques taught include designing effective writing assignments, responding constructively to student writing, assessing student writing, and incorporating technology into writing courses. (F,Sp)

**ENGL 4510 CI** Teaching Literature (3)
Prepares students to teach literature, including print literature, film, television, and print journalism. Explores variety of pedagogical strategies for teaching diverse literary traditions to students of various backgrounds and developmental levels. (F,Sp)

**ENGL 4610** Western American Literature (3)**
Examines major themes and important writers (both “popular” and “literary”) in western regional writing. Investigation of significance of environment, history, gender, and ethnicity in a variety of genres. Appropriate for American Studies majors and minors. (F)

**ENGL 4620 CI** Advanced Seminar in American Studies (3)
Builds upon foundation courses in American Studies and introduces students to theory and methods. Prepares students for the senior project. Required for American Studies majors and minors. Should be taken after completion of 12 credits in the major, but prior to completion of 21 credits. Enrollment limited to American Studies majors and minors only. Also taught as HIST 4620. (Sp)

**ENGL 4630** American Nature Writers (3)*
Interdisciplinary study of historical, social, literary, and environmental contexts of nature writing. Examines key authors, major theories, enduring concerns (e.g., conservation, preservation, and management), and current issues (including gender and ethnicity). Appropriate for American Studies majors and minors. (F,Sp)

**ENGL 4640 CI** Studies in the American West (3)
Interdisciplinary course in American Studies, exploring the region of the West through the analysis of literary texts, historical sources, and socio-cultural materials. Also taught as HIST 4640. (F)

**ENGL 4690 CI** American Studies Capstone Seminar (3)
Required for students majoring in American Studies. Enables students to synthesize American Studies theory and methods with interdisciplinary cognate courses. Supports senior thesis design and writing, allowing topics to reflect individual programs of study. Prerequisite: ENGL/HIST 4620. Also taught as HIST 4690. (Sp)

**ENGL 4700** Folk Material Culture (3)**
Introduction to folk life studies, emphasizing patterns of expressive culture (material, verbal, and customary) in selected folk groups. In-depth examination of vernacular primary sources, including documentary and feature films. Also taught as HIST 4700. (Sp)

**ENGL 4750** Advanced Folklore Workshop: Fife Conference (3) ®
Focuses on one theme or topic in folklore, and offers lectures from nationally prominent scholars in the area. Taught during one week, every day and all day. To receive grade, student must write critical paper. Also taught as HIST 4750. (Su)

**ENGL 4900** Internship/Cooperative Work Experience (1-15) ®
Offers credit for professional experience obtained outside the classroom, prior to graduation. Requires statement of professional goals and summary report following the experience. Prerequisite: Departmental approval. (F,Sp,Su)

**ENGL 4910** Tutoring Practicum (1) ®
Introduction to tutoring, and seminar for tutors working in the Writing Center. Repeatable for up to 2 credits. (F,Sp)

**ENGL 5210** Topics in Linguistics (3)* ®
Provides students with opportunity to study topics which are not regularly taught, but which are designed to enrich understanding of linguistics. Typical topics include Old English, roots of English in Germanic, discourse analysis, and English as a world language. (F)

**ENGL 5300 CI** Literature and Gender (3) ®
Exploration of cultural relations between literature and gender. Topics vary. (F,Sp)

**ENGL 5320 CI** Literature and Cultural Difference (3) ®
Exploration of relations between culture and cultural difference. Topics vary. (Sp)

**ENGL 5340 CI** Studies in Literary and Cultural Theory (3) ®
Applications in literary and cultural studies. Topics vary. (F)

**ENGL 5350 CI** Literary Studies Capstone (3)
Communicative intensive capstone course in which students synthesize and assess their knowledge of the discipline. Should be taken during the senior year. Enrollment limited to English majors only. (Sp)
ENGL 5400 Specialized Documents (3) ®
Students in the Professional and Technical Writing emphasis prepare documents frequently encountered in business and government, including proposals, environmental impact statements, brochures, and newsletters. Prerequisites: ENGL 3400 and 3410. Enrollment limited to English majors only. (F,Sp)

ENGL 5410 Interactive Media (3) ®
Students in the Professional and Technical Writing emphasis examine process of publishing online documents, studying multimedia, hypermedia, and hypertext environments. Topics vary and include building complex CD-ROM environments, help file authoring, and designing websites. Prerequisites: ENGL 3400 and 3410. Enrollment limited to English majors only. (F,Sp)

ENGL 5420 Publications Production (3)
Students in the Professional and Technical Writing emphasis examine process of publishing printed documents, beginning with idea and ending with hard copy, printed and bound. Prerequisites: ENGL 3400 and 3410. Enrollment limited to English majors only. (Sp)

ENGL 5430 CI Professional Writing Capstone (3)
Capstone course for students in Professional and Technical Writing emphasis in which students develop a professional portfolio of their own writing. Should be taken during the senior year. Enrollment limited to English majors only. (F,Sp)

ENGL 5490 Usability Studies: Theory and Practice (3) ®
Study of current approaches to improving user experiences with technologies and their related texts through research-based changes to product design and documentation. Prerequisite: ENGL 3450 or 3460. (Sp)

ENGL 5550 English Teaching Capstone (3)
Students synthesize and assess their knowledge of the field and their teaching, reading, and writing strengths; and evaluate the program through formal reflection on their own professional growth. Enrollment limited to English majors only. (Sp)

ENGL 5700 Folk Narrative (3)
Forms and functions of folk narrative genres: myth, legend, folktale, memoreate, and ballad. Also taught as ANTH 5700 and HIST 5700. (F)

ENGL 5900 Senior Honors Seminar (1-3) ®
Capstone course for students enrolled in English Honors Program. Prerequisite: Enrollment in English Honors Program. (F,Sp,Su)

ENGL 5910 CI Senior Honors Thesis (1-6) ®
Students work in conjunction with English faculty member to write a thesis. Prerequisite: Enrollment in English Honors Program. (F,Sp,Su)

ENGL 5920 Directed Study (1-3) ®
Provides students with opportunity to work individually with faculty member. Contract for work to be completed must be signed by faculty member and student, then filed with English Department. (F,Sp,Su)

ENGL 6320 Literary Theory (3) ®
Introduces students to advanced literary theories and provides training in sophisticated critical methods. (F,Sp)

ENGL 6330 Topics in Literary Studies (3) ®
Allows in-depth study of literary topics and theoretical questions that do not fit defined categories. (F,Sp)

ENGL 6340 British Literature and Culture (3) ®
Offers new approaches to British literature. Provides training in literary and cultural criticism. Promotes research and writing skills. (F,Sp)

ENGL 6350 American Literature and Culture (3) ®
Offers new approaches to American literature. Provides training in literary and cultural criticism. Promotes research and writing skills. (F,Sp)

ENGL 6360 World Literature and Culture (3) ®
Offers new approaches to world literature. Provides training in literary and cultural criticism. Promotes research and writing skills. (F,Sp)

ENGL 6400 Advanced Editing (3)
Examines complex roles editors assume in creating technical and non-technical documents. Principal components include working with substance of documents, mediating the writer-reader relationship, and exemplifying the application of rhetorical theory in editing. (Sp)

ENGL 6410 Theory and Research in Professional Communication (3)
Introduction to contemporary theories of written discourse. Emphasizes the implications of these theories for research in professional communication. (F)

ENGL 6420 Usability Studies and Human Factors in Professional Communication (3) ®
Examines concepts and practices of usability studies and human factors in the design and production of print and online documents. Emphasizes developing objectives, criteria, and measures for conducting tests in the lab and field. (Sp)

ENGL 6430 Publications Management (3)
Covers processes for developing and producing publications, including information development cycles, supervision, and budgets. (F,Sp)

ENGL 6440 Studies in Culture and Professional Communication (3) ®
Covers topics in rhetorical, critical, and cultural theory, emphasizing their application to contemporary practices in professional communication. (F,Sp)

ENGL 6450 Reading Theory and Document Design (3)
Examines how reading theory interacts with rhetoric of graphics, layout, and type to influence the way documents are designed for maximum information and readability. (F)

ENGL 6460 Studies in Digital Media (3) ®
Focuses on the production of advanced digital media documents. Examination of theories underlying such publications, plus the related hardware and software. Topics vary. (F,Sp)

ENGL 6470 Studies in Specialized Documents (3) ®
Focuses on writing and design of specific genres in professional communication. Genres include environmental impact statements, software documentation, proposals, manuals, annual reports, newsletters, and fact sheets. Topics vary. (F,Sp)

ENGL 6480 Studies in Technology and Writing (3) ®
Study of theoretical aspects of technologies affecting writing in professional contexts. Course topics may include an examination of the history of computing, rhetorics of hypertext, or theories of communication in virtual space. Topics vary. (F,Sp)

ENGL 6490 Portfolio (3)
Design and preparation of a portfolio containing at least five documents, each accompanied by a justification and discussion. (F,Sp)

ENGL 6600 American Studies Theory and Method (3) ®
Provides students with theory and method of graduate-level research in American Studies. Also taught as HIST 6600. (F)

ENGL 6610 Seminar on the American West (3-4)
Readings and research on topics in the American West. Interdisciplinary focus suitable for graduate students in History and American Studies. Also taught as HIST 6610. (F)

ENGL 6620 Seminar in Native American Studies (3-4)
Readings and research on topics in Native American history and culture. Interdisciplinary focus suitable for graduate students in History and American Studies. Also taught as HIST 6620. (F)

ENGL 6630 Studies in Film and Popular Culture (3) ®
Offered annually on a rotating basis by professors in folklore and English (Cultural Studies, Literature, British and Commonwealth). Topics and theoretical approaches vary, but the primary focus is on feature films. Also taught as HIST 6630. (Sp)

ENGL 6700 Folklore Theory and Method (3)
Serves as orientation for new graduate students in folklore. Introduces students to comparative annotation, folklore indices, oral-formulaic theory, performance theory, contextual analysis, and other approaches. Also taught as HIST 6700. (F)
ENGL 6710 Regional Folklore (3)  Study of folklore and folklife as a regionalizing process. Regions examined through their folk culture range. Also taught as HIST 6710. (Sp)

ENGL 6720 Folklore Fieldwork (3)  Basic methodology class for folklorists and oral historians. Students learn interviewing techniques and other methods for observing and recording the performance of tradition and traditional history. Also taught as HIST 6720. (Sp)

ENGL 6730 Public Folklore (3)  Provides history and analysis of governmental involvement in protecting, promoting, and otherwise manipulating and utilizing cultural heritage. Also taught as HIST 6730. (F)

ENGL 6740 Folk Narrative (3)  Covers principal narrative genres in folk tradition (myth, tale, legend, ballad) and the basic theories for their analysis and discussion. Also taught as HIST 6740. (Sp)

ENGL 6750 Advanced Folklore Workshop (the Fife Conference) (3)  Intensive workshop focusing on a topic in folklore. Brings in nationally known experts as lecturers and discussants. Students attend all sessions, then write a critical paper during the summer semester. Also taught as HIST 6750. (Su)

ENGL 6760 Cultural and Historical Museums (3)  Examines outdoor cultural and historical museums, examining their function in modern multi-cultural societies. Also taught as HIST 6760. (Sp)

ENGL 6770 Seminar in Folklore and Folklife (3)  Conducts close, professional-level study of major areas of folklore and folklife research. Also taught as HIST 6770. (F)

ENGL 6810 Introduction to Composition Studies (3)  Introduces students to scholarship in the field of composition studies. Students become acquainted with scholars, forums, themes, and methods of the field. (F,Sp)

ENGL 6820 Practicum in Teaching English (3)  Introduction to teaching writing, designed specifically for graduate instructors teaching in the English Department writing program. Focuses on theory and practice of teaching writing, specifically ENGL 1010, but also prepares graduate instructors for further teaching responsibilities. Not offered online. (F)

ENGL 6830 Rhetorical Theory (3)  Covers intellectual traditions of rhetoric from classical times to the present. As students study major theories, theoreticians, and controversies in the field, they come to understand rhetoric as the study of relations between discourse, knowledge, and power.

ENGL 6850 Studies in the Teaching of English (3)  Prepares students to teach English classes such as literature, technical, or creative writing. (F,Sp)

ENGL 6880 Topics in Creative Writing (3)  Course changes topics as follows: poetry, fiction, and nonfiction. In each topic, students learn to write at an advanced level and learn to evaluate creative writing using workshop and peer group methods. Enrollment limited to graduate students only.

ENGL 6890 Studies in Writing and Rhetoric (3)  Provides students and faculty with opportunity for in-depth study of timely topics.

ENGL 6900 Graduate Internship (1-15)  Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

ENGL 6910 Directed Study (1-6)  Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

ENGL 6920 Thesis (1-6)  Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

ENGL 6990 Continuing Graduate Registration (1-3)  Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

Engineering (ENGR)  See College of Engineering, pages 106-110

ENGR 1010 Introduction to Engineering Design (2)  Introduction to engineering design, problem solving, and computer application skills. Orient students to college programs, academic advising, student services, professional societies, ethics, and engineering careers. A background in trigonometry is strongly recommended. (F)

ENGR 2000 Engineering Mechanics Statics (2)  Force and position vectors; equilibrium of particles; rigid bodies; equivalent system of forces; equilibrium; free body diagrams; static analysis of trusses, frames, and machines; centroids and centers of gravity; friction; and moments of inertia. Prerequisites: MATH 1210, 1220. (F,Sp)

ENGR 2020 Engineering Mechanics Dynamics (3)  Equations of motion, kinetcs of particles, kinetics of rigid bodies, work and energy, impulse and momentum, three-dimensional kinematics, and vibrations. Prerequisites: ENGR 2000, MATH 1210, 1220. (F,Sp)

ENGR 2040 Strength of Materials (2)  Stress, strain, and deflection due to axial loads; moment and torsion; shear and moment diagrams; and equations of equilibrium and compatibility. Prerequisite: ENGR 2000. (F,Sp)

ENGR 2200 Engineering Numerical Methods I (3)  Introduction to use of digital computers and elementary numerical analysis, with emphasis on practical applications and software development using FORTRAN. Prerequisites: MATH 1220 and ENGR 1010; MATH 2250 (taken concurrently). (F)

ENGR 2210 Engineering Numerical Methods II (2)  Numerical solution techniques for solving ordinary and partial differential equations, emphasizing practical applications and software development using FORTRAN. Prerequisite: ENGR 2200. (Sp)

ENGR 2300 Special Problems (1-18)  Independent or group student study of engineering problems not covered in regular course offerings. (F,Sp,Su)

ENGR 5500 High Performance Computing for Engineers (3)  Introduction to high performance computing on Beowulf clusters with distributed memory paradigm. Hands-on design and profiling of algorithms and software to solve large scale problems in engineering. Topics in scientific visualization. Prerequisites: MAE 2210 or CS 1720. (F)
Environment and Society (ENVS)

See Department of Environment and Society, pages 201-204

ENVS 1990 Professional Orientation for Environment and Society (2) Introduces the student to university scholarship and citizenship, careers in environmental and natural resource science and management, development of leadership and team skills, and analysis of issues relating to the diverse relationships between society and the natural environment. (F)

ENVS 2250 Introductory Internship/Co-op (1-3) ® Introductory-level educational experience in internship/cooperative education position approved by department. Prerequisite: Permission of department. (F,Sp,Su)

ENVS 2340 BSS Natural Resources and Society (3) Examines human values, uses, and management of natural settings at the individual, community, and societal levels. Topics include: psychological responses to nature, history of U.S. park and natural resource management, environmental sociology and politics, and nature in non-Western cultures. (F,Sp)

ENVS 3000 Natural Resources Policy and Economics (4) Introduction to natural resource policy and economics. Policy components include models, processes, participants, laws, and tools for decision-making and policy implementation. Economics components include theory, interest calculations, financial analysis, nonmarket valuation, and regional impact analysis. (F)

ENVS 3300 Fundamentals of Recreation Resources Management (3) Principles of wildland recreation management including: characteristics of recreation use and users, introduction to planning concepts, management of wildland recreation facilities and infrastructure, and integration with other natural resource uses. (F)

ENVS 3330 Environment and Society (3) Emphasizes how human actions modify the physical environment and how physical systems affect human systems and the changes occurring in the meaning, use, and importance of resources at a global and regional scale. (Sp)

ENVS 3500 QI Quantitative Assessment of Environmental and Natural Resource Problems (3) Overview of analytical and sampling methods used for collecting, organizing, and interpreting numeric data to evaluate problems and monitor conditions relating to relationships between environment and society. Prerequisites: STAT 2000 or 3000; MATH 1050; and passing score on the Computer and Information Literacy (CIL) Exam. (F)

ENVS 3600 DSC Living With Wildlife (3) Reviews history and development of wildlife management programs in the United States. Explores diversity of attitudes toward wildlife, which affect development and evolution of wildlife management programs. Development and analysis of case histories of contemporary and controversial wildlife management decisions. (Sp)

ENVS 4000 DSS Human Dimensions of Natural Resource Management (3) Focuses on balancing science and social values in ecosystem management and decision-making. Topics include environmental justice, communication and behavior change strategies, landscape perception and attitudes, resource-dependent communities, public involvement, and conflict management. (F)

ENVS 4110 Fisheries and Wildlife Policy and Administration (3)* (d6110) Examination of policy issues and administrative approaches in fish and wildlife management, with particular emphasis on nonbiological issues facing wildlife managers and administrators. (F)

ENVS 4130 Recreation Policy and Planning (3) Examines the historical, legal, and political context of outdoor recreation policy on public lands; government agency culture, regulation, and partnering; relationship of outdoor recreation to tourism; and theory and application of principal planning tools for outdoor recreation settings. (Sp)

ENVS 4250 Advanced Internship/Co-op (1-9) ® Directed and evaluated cooperative education or work experience for undergraduates in public and private organizations. Prerequisite: Permission of department. (F,Sp,Su)

ENVS 4400 Economic Applications in Natural Resource Management (4) Applied economics course exposing students to tools used in natural resource decision-making. Includes principles and techniques of nonmarket valuation, linear programming, budgeting, benefit-cost analysis, and regional economic analysis as encountered by natural resource managers. Prerequisite: ENVS 3000. (Sp)

ENVS 4440 Stegner Center Annual Symposium (1) ® Offered through the University of Utah College of Law. Topics vary each year, but always focus on natural resource policy-related issues. (Sp)

ENVS 4500 CI Wildland Recreation Behavior (3) Social, psychological, and geographic influences on human behaviors in wildland recreation settings. Emphasis on critical problems affecting public land recreation management. (F)

ENVS 4600 Natural Resource Interpretation (3) Planning processes and techniques for providing interpretive programs developed for wildland recreation areas and visitor centers. Evaluation and planning of visitor information efforts. (F)

ENVS 4920 Special Projects in Recreation Management (1-3) ® Participation in special projects to assist public recreation agencies or nonprofit organizations, while gaining hands-on experience in recreation management, planning, and monitoring. Many experiences entail intensive, short-duration efforts away from campus. Prerequisite: Permission of department. (F,Sp,Su)

ENVS 4950 Special Topics (1-3) ® Individual study and research upon selected environmental and societal problems. Prerequisite: Permission of department. (F,Sp,Su)

ENVS 4960 Directed Readings (1-3) ® Individual reading research on selected environmental and societal readings. Prerequisite: Permission of department. (F,Sp,Su)

ENVS 4970 Undergraduate Research (1-3) ® Individual or team research. Prerequisite: Permission of department. (F,Sp,Su)

ENVS 4980 Undergraduate Seminar (1) Intended to bring upperclassmen up-to-date on environmental and societal topics. (Sp)

ENVS 4990 Environmental and Natural Resource Professionalism Seminar (2) Introduces concepts of professionalism in natural resources, including ethical issues in science and management, organizational culture, and workplace expectations. Analyzes current issues with practicing professionals. Reinforces leadership and team-building skills. Prerequisites: ENVS 1990, 3000. (F)

ENVS 5000 Collaborative Problem-Solving for Environment and Natural Resources (3) Project-based capstone course for environmental studies majors. Students work in teams to develop plans and alternative solutions relevant to actual issues or land areas, integrating knowledge from a range of environmental and natural resource disciplines. Prerequisites: Senior standing; ENVS 3000, 4000. (Sp)

ENVS 5110 Environmental Education (3) Covers teaching about the environment, and using the environment and the natural world to teach other subjects, with a strong emphasis on participation and on practicing teaching techniques. (Sp)

ENVS 5150 Conflict Management in Natural Resources (2) Introduction to conflict management techniques for those involved in natural resource management. (Sp)

ENVS 5300 Natural Resources Law and Policy (2)* Legal and administrative regulation of forests and associated resources (water, air, fish, wildlife, and scenery). Emphasis on agency organizational culture, federal legislation, court cases, administrative procedures, and federal natural resources agencies’ interactions with tribal, state, and local governments. (F)
ENVS 5230  Water Law and Policy in the United States (3)
Introduction to policies, laws, institutions, and practices guiding western water allocation, emphasizing how to efficiently and equitably allocate increasingly scarce supplies. Explores reserved water rights, water markets, stream adjudication, public trust doctrine, basinwide management, and riparian management. (F)

ENVS 5550  Environment, Resources, and Development Policy (3)*
Environment, natural resources, and development policy in Third World, emphasizing sustainable development, farming systems, agro-pastoralism, desertification, and land use. (Sp)

ENVS 5800  Field Studies in Collaborative Natural Resource Stewardship (3)
Two-week field course introduces students to methods and philosophical approaches incorporated in Tehabi, a summer-long internship program focusing on collaborative stewardship of natural resources. Enrollment limited to students accepted into the Tehabi program. (Su)

ENVS 5810  Internship in Collaborative Natural Resource Stewardship (3)
Mentored internship involving participation in the Tehabi program, which teaches collaborative stewardship of natural resources within a federal, state, or nonprofit agency. Enrollment limited to students accepted into the Tehabi program. (Su)

ENVS 6000  Theoretical Foundations of Human Dimensions of Ecosystem Science and Management (3)
Overview of interdisciplinary theories and frameworks concerning how human societies affect, and are affected by, ecosystem processes at local, regional, and global scales. Focuses on systems theory, social and environmental sustainability, and scientific integration for ecosystem planning, policy, and management. (F)

ENVS 6110  Fisheries and Wildlife Policy and Administration (3)*
Examination of policy issues and administrative approaches in fish and wildlife management, with particular emphasis on nonbiological issues facing wildlife managers and administrators. (F)

ENVS 6130  Policy Aspects of Wildland Recreation (3)
Political, legal, and economic bases for wildland recreation management. Relationship between outdoor recreation and tourism. Lectures concurrent with ENVS 4130. Also includes weekly discussion session focusing on relevant scientific research and policy analyses. (Sp)

ENVS 6200  Bioregional Analysis and Planning (5)
Compilation and analysis of data for assessing biophysical and socio-economic features of landscapes, and for evaluating impacts of land-use policies across both landscapes and time. Provides real-world learning experience in working with stakeholders and agency decision-makers. (F)

ENVS 6210  Bioregional Management and Policy (5)
Continuation of ENVS 6200. Assessment of land-use policies across landscapes and time, with an emphasis on evaluating consequences of community growth via the generation and analysis of future development and management alternatives. Prerequisite: ENVS 6200. (Sp)

ENVS 6240  Graduate Internship/Co-op (1-9) ®
Graduate-level educational experience in internship/cooperative education position approved by department. (F,Sp,Su)

ENVS 6400  Ecological Aspects of Wildland Recreation (3)*
Assessment of current knowledge and knowledge gaps concerning impacts of wildland recreation on wildlife, plants, soil and water resources, and processes. Strategies for coexistence of recreation visitors and nonhuman ecosystem elements. (Sp)

ENVS 6440  Stegner Center Annual Symposium (1) ®
Offered through the University of Utah College of Law. Topics vary each year, but always focus on natural resource policy-related issues. (Sp)

ENVS 6500  Behavioral Aspects of Wildland Recreation (3)
Social and psychological analysis of visitor behavior in outdoor recreation settings.

Sources of recreation management problems and practical and theoretical basis for management practices. Lectures concurrent with ENVS 4500. Separate discussion sessions focus on research concerning recreation behavior. (F)

ENVS 6550  Environment, Resources, and Development Policy (3)*
Environment, natural resources, and development policy in Third World, emphasizing sustainable development, farming systems, agro-pastoralism, desertification, and land use. (Sp)

ENVS 6600  Advanced Natural Resource Interpretation (3)
Planning processes, techniques, and evaluation procedures for using information and education to influence human behavior and increase benefits to visitors in natural settings. Leadership of teams involved in producing interpretive plans and materials. (F)

ENVS 6700  Research Approaches in Human Dimensions (d7700) of Ecosystem Science and Management (3)
Experience conceptualizing and prioritizing research problems involving human societies and ecosystems. Reviews approaches for creating and testing interdisciplinary hypotheses pertaining to human-ecosystem interactions. Explores methods for integrating social and biophysical data. (Sp)

ENVS 6800  Environment and Society Departmental Seminar (1) ®
(F,Sp)

ENVS 6840  Graduate Introductory Seminar for Environment and Society (d7840) (1)
Each faculty member meets with first-year graduate students in a seminar format to review and discuss in depth the faculty member’s area of academic specialization. (F)

ENVS 6870  Ecology Seminar (1) ®
The Ecology Center schedules regular seminars throughout the school year with ecological scientists from other institutions participating. Ecology majors are required to attend a minimum of 10 such lectures. Students should register for fall semester, but attend through spring semester. Also taught as AWER 6870, BIOL 6870, and FRWS 6870. (F)

ENVS 6900  Graduate Special Topics (1-6) ®
Offers credit for special assignments, reading, and seminars beyond regularly scheduled courses. (F,Sp,Su)

ENVS 6910  Directed Study (1-6) ®
(F,Sp,Su)

ENVS 6960  Graduate General Ecology (5)
General concepts, history, and issues in all major areas of the science of ecology including: environmental biophysics; and physiological, behavioral, evolutionary, community, ecosystem, and applied ecology in both terrestrial and aquatic environments. Also taught as AWER 6960, BIOL 6960, and FRWS 6960. (F)

ENVS 6970  Thesis Research (1-12) ®
(F,Sp,Su)

ENVS 6990  Continuing Graduate Advisement (1-9) ®
(F,Sp,Su)
Family, Consumer, and Human Development (FCHD)

See Department of Family, Consumer, and Human Development, pages 205-209

FCHD 1100  Critical Issues in Family, Consumer, and Human Development  (1) ©
Introduction to the majors, minors, emphases, and disciplines in family, consumer, and human development. Emphasizes career opportunities and how scholars in this field address critical social issues. Available online only. (F, Sp, Su)

FCHD 1500  BSS  Human Development Across the Lifespan  (3) © 1
Overview of human development across the lifespan, from conception to death. (F, Sp)

FCHD 2250  Seminar and Practicum in Early Childhood Education  (4)
Orientation to current philosophies, teaching techniques, and curricula found in programs for young children. Practicum experience as a student aide in an early childhood education program. Prerequisite: Admission to teacher education or instructor’s permission. (F, Sp)

FCHD 2400  BSS  Marriage and Family Relationships  (3) © 1
Overview of couple and family relationships, including marriage, child bearing and rearing, intergenerational relationships, and alternative family forms. (F, Sp)

FCHD 2450  BSS  The Consumer and the Market  (3)
explores how the marketplace operates, including factors influencing consumer purchases, current consumer problems, and assistance provided to consumers by federal and state agencies, businesses, and other organizations. (F, Sp)

FCHD 2500  Child Development Associate Training  (2) ©
Training provided by an approved instructor and following an approved curriculum that leads to the completion of requirements for the National Child Development Associate (CDA) credential. Elective credits granted for this course. (F, Sp)

FCHD 2550  CDA Practicum  (6)
During and after the coursework associated with FCHD 2500, students fulfill a practicum. At the conclusion of FCHD 2500, the CDA advisor/trainer conducts a comprehensive observation of the CDA candidate and the CDA observation instrument is completed and included as part of application materials submitted for the final assessment by the CDA granting organization (Council for Early Childhood Professional Recognition). When the CDA candidate receives the CDA credential, then he or she receives credit for FCHD 2550. Prerequisite: FCHD 2500. (F, Sp, Su)

FCHD 2610  Parenting and Child Guidance  (3) © 1
Review of parenting styles and child guidance philosophies with emphasis on principles and techniques. (F, Sp)

FCHD 3100  Abuse and Neglect in Family Context  (3) © 1
Causes, treatment, and laws regarding family violence, including child abuse and neglect, partner abuse, and elder abuse. Prerequisites: Sophomore standing, FCHD 1500, 2400. (F, Sp)

FCHD 3110  Human Sexuality  (3)
Overview of human sexuality, attitudes, and behaviors in family and cultural contexts. Prerequisites: FCHD 1500, 2400. (F, Su)

FCHD 3130  Q1  Research Methods  (3)
Common methodologies used in current family and human development research. Emphasis on becoming a knowledgeable and informed consumer of research. Enrollment limited to FCHD majors only. Prerequisite: STAT 1040. (F, Sp)

FCHD 3210  Families and Cultural Diversity  (3)
Similarities and differences in family patterns and functions in terms of race and ethnicity, gender, social class, and international development. Prerequisites: FCHD 1500, 2400. (F, Sp)

FCHD 3280  Economic Issues for Individuals and Families  (3)
Focuses on issues related to economic well-being of individuals and families, with special emphasis on income and wealth, poverty, consumption and saving, work and leisure, human capital investment, and aging. (Sp)

FCHD 3310  Consumer Policy  (3)
Examines different tools for policy analysis. Provides conceptual and analytical framework for understanding the role of consumer sciences professionals as political actors and the potential to influence the shaping of public policy, particularly consumer and government policies. (Sp)

FCHD 3340  Housing: Societal and Environmental Issues  (3)
Studies housing in the contemporary U.S., including affordability, access, expectations, aesthetic considerations, and effects of public and private policies on housing choices. (F)

FCHD 3350  DSS  Family Finance  (3) 1
Achieving personal and family financial goals, including financial planning and record keeping, different types of insurance, taxes, use of credit, investments, retirement, and estate planning. Prerequisite: Choose one of MATH 1030, 1050, or STAT 1040. (F, Sp)

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1 Parenthetical numbers preceded by * indicate a dual listing.
© Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.
**Taught 2005-2006.
FCHD 3450 Consumer Credit Problems  
Consumer credit problems, debt reduction strategies, credit collection policies and practices, bankruptcy, and government assistance programs. Prerequisite: FCHD 3350. (F)

FCHD 3500 Infancy/Middle Childhood Laboratory  
Practical experience in laboratory setting with children birth through two years of age or children in the middle years. Lab supplements/complements course content of either FCHD 3510 or 3520. Prerequisites: Junior standing and FCHD 1500, 2610. Corequisite: FCHD 3510 or 3520. (F,Sp)

FCHD 3510 Infancy and Early Childhood  
Development and growth of the child from conception to five years. Physical, social, and emotional growth; and parenting skills. Prerequisites: Junior standing and FCHD 1500, 2610. (F,Sp)

FCHD 3520 Children in the Middle Years  
Growth and development of normal children. Guidance principles related to behavior of children at these age levels. Prerequisites: Junior standing and FCHD 1500, 2610. (F,Sp)

FCHD 3530 Adolescence  
Social, psychological, and physical aspects of adolescence in modern societies. Social and cultural expectations and influences on adolescents stemming from the family, peers, school, and the community. Prerequisites: Junior standing and FCHD 1500. (F,Sp)

FCHD 3540 Adult Development and Aging  
Interdisciplinary perspective on developmental issues in adulthood and old age. Biosocial, cognitive, and psychosocial changes in older adults in family, community, cultural, and socio-political contexts. Prerequisites: Junior standing and FCHD 1500, or instructor’s permission. (F,Sp)

FCHD 4220 Family Crises and Interventions  
Normative and nonnormative stressors provoking individual and family crises. Principles and techniques for family interventions. Prerequisites: Junior standing, FCHD 2400. (F,Sp)

FCHD 4230 Families and Social Policy  
Local, state, and federal policies with implications for individuals and families across the lifespan. Prerequisites: Junior standing and FCHD 2400. (F,Sp)

FCHD 4240 Social and Family Gerontology  
Social, cultural, and family contexts of aging. Intergenerational family relations in later life. Social policies and services affecting older adults and their families. Prerequisites: Junior standing and FCHD 2400. (F,Sp)

FCHD 4330 Family Finance Career Seminar  
Exploration of career options through readings, guest lecturers, interviews of practitioners, and development of an internship and career plan. Prerequisite: FCHD 3350. (F)

FCHD 4350 Advanced Family Finance  
Managing personal and family financial resources to achieve goals relating to investments, retirement, and estate planning. Prerequisite: FCHD 3350. (Sp)

FCHD 4460 Financial Counseling  
Development and application of financial counseling and presentation skills. Analysis of various financial problems and development of appropriate solutions and resources. Prerequisites: FCHD 3350, 3450. Enrollment limited to FCHD majors with a Family Finance Emphasis. (F)

FCHD 4550 Preschool Methods and Curriculum  
Use of materials, equipment, and activities in planning and implementing curricula for preschool children. Prerequisites: Junior standing and FCHD 1500. (F,Sp)

FCHD 4800 Senior Honors Thesis/Project  
Thesis/project in area of student’s choice, selected and prepared in consultation with an advisor drawn from the FCHD faculty. Includes oral presentation and discussion of senior thesis/project. Prerequisite: Senior standing. (F,Sp,Su)

FCHD 4900 CI Pre-Practicum Skills  
Acquisition and integration of interpersonal skills, conflict resolution, and ethical decision-making for active participation in FCHD practica. Enrollment limited to FCHD majors only. Prerequisites: Junior standing, FCHD 2610, 3100. (F,Sp)

FCHD 4940 Gerontology Integration  
Integration of gerontology coursework and practicum. Written paper requires approval by FCHD Gerontology Coordinator. (F,Sp,Su)

FCHD 4950 Practicum: Consumer Science  
Placement experience in applying skills and knowledge in community agencies. Prerequisites: Junior standing, completion of 24 credits in major. Enrollment limited to Family and Consumer Sciences majors who have at least junior standing, or to FCHD majors with a Family Finance Emphasis, who have completed at least 30 credits in the major. (F,Sp,Su)

FCHD 4960 Practice Teaching in Child Development Laboratories  
Intensive teaching practicum in the Child Development Lab program. Arrangements need to be made at least one year in advance. Prerequisites: Junior standing, FCHD 4550, and departmental permission. (F,Sp,Su)

FCHD 4970 Gerontology Practicum  
Placement experience in gerontology settings. Practical opportunities to apply theory, knowledge, and skills. Prerequisites: Senior standing and FCHD 3540, 4240. Apply one semester in advance. (F,Sp,Su)

FCHD 4980 Practicum  
Placement experience in applying skills and knowledge in community agencies. Enrollment limited to FCHD majors only. Prerequisites: Junior standing and FCHD 4900; must have completed a total of 30 FCHD credits and the practicum application. (F,Sp,Su)

FCHD 4990 Readings and Conference  
Directed independent study of topics preselected by faculty and student. Instructor permission required before registration. (F,Sp,Su)

FCHD 5340 Housing Finance and Regulations  
Study of mortgage loan industry, with in-depth examination of various lending products and procedures. Study of regulations affecting housing, including Fair Housing, predatory lending, and mortgage default. Prerequisite: FCHD 3350. (Sp)

FCHD 5540 Family Life Education Methods  
Introductory course focused on theory, principles, and skills necessary to prepare, present, and evaluate family life education programs and workshops. Prerequisites: Junior standing, FCHD 1500 and 2400. Enrollment limited to Family, Consumer, and Human Development majors only. (F,Sp)

FCHD 5550 Interdisciplinary Workshop  
(F,Sp,Su)

FCHD 5950 Financial Counseling Practicum  
Students apply their knowledge by conducting one-on-one counseling sessions, observing other counselors, and teaching workshops. Students develop valuable management, communication, and counseling skills. Prerequisites: FCHD 4220, 4460, 5340 (may be taken concurrently). Enrollment limited to FCHD majors with a Family Finance Emphasis. (F,Sp,Su)

FCHD 6010 Survey of Family Relations Research  
Overview and critique of substantive areas of research in marriage and the family. Prerequisite: FCHD 2400 or equivalent. (F)

FCHD 6020 Survey of Human Development Research  
Examines contemporary research and developmental issues. Highlights social development from social-historical and social change framework. Prerequisite: FCHD 1500 or equivalent. (Sp)

FCHD 6030 Research Methods  
Overview of methods for studying family relations and human development, including sampling, measurement, research design, and data analyses/interpretations. Research proposal required. Prerequisite: FCHD 3130 or equivalent. (Sp)

FCHD 6040 Community Practicum  
Intensive teaching practicum in the Community Development program. Arrangements must be made at least one year in advance. Prerequisites: Junior standing, FCHD 2610, 3100. (F,Sp)

FCHD 6060 Data Analysis Practicum  
Prerequisites: Junior standing, completion of at least 24 credits in major. Enrollment limited to FCHD majors only. (F,Sp)

FCHD 6070 Survey of Family Development Research  
Overview and critique of substantive areas of research in family development. Prerequisite: FCHD 6020. (Sp)

FCHD 6080 Research Methods  
Overview of methods for studying family relations and human development, including sampling, measurement, research design, and data analyses/interpretations. Research proposal required. Prerequisite: FCHD 3130 or equivalent. (Sp)
**Course Descriptions**

**FCHD 6040 Survey of Consumer Science Research** (3)
Examination of contemporary research in consumer science. (Sp)

**FCHD 6050 Consumer Science Theories** (3)
Critical review and assessment of theories in consumer science. (F)

**FCHD 6060 Human Development Theories** (3)
Overview of major developmental theories, including contributions from philosophical, personality, and learning theories. Explores epistemology, ethology, and systems theories relating to human development. Prerequisite: FCHD 1500 or equivalent. (F)

**FCHD 6070 Family Theories** (3)
Critical review and assessment of theories in family research, along with construction and application of family theory. Prerequisite: FCHD 2400 or equivalent. (F)

**FCHD 6200 Topical Seminar in Family Relations** (3) *
Selected issues in family relations. Usually offered once per year. Semester taught will vary.

**FCHD 6310 Survey of Marriage and Family Therapy** (3)
Overview of marriage and family therapy models. Historical development of marriage and family therapy as a profession and a practice. Enrollment limited to FCHD Marriage and Family Therapy master’s students only. (F)

**FCHD 6320 Foundations of Marriage and Family Therapy** (3)
Epistemological and philosophical directions of marriage and family therapy, beginning with early applications of General Systems theories and cybernetics through constructivist and postmodern frameworks. (F)

**FCHD 6330 Marriage and Family Therapy Practice I: Traditional Approaches** (3)
Traditional approaches to marriage and family therapy, with a focus on individual and couple issues, including sexuality and personality issues within a systems framework. Prerequisite: FCHD 3110 or equivalent. (Sp)

**FCHD 6340 Marriage and Family Therapy Practice II: Contemporary Approaches** (3)
Contemporary approaches to marriage and family therapy. Focuses on couple and family interaction issues, including conflict, parenting, and other common family problems. (Sp)

**FCHD 6350 Clinical Practice in Marriage and Family Therapy** (3) *
Selected clinical issues in marriage and family therapy. (Sp)

**FCHD 6360 Ethical and Professional Development in Marriage and Family Therapy** (3)
Ethical, legal, and professional issues in marriage and family therapy. (F)

**FCHD 6370 Assessment in Marriage and Family Therapy** (3)
Development, application, and interpretation of major individual and family assessment techniques used in marriage and family therapy practice and research. (Sp)

**FCHD 6380 Topical Seminar in Marriage and Family Therapy** (1-3) *
Selected issues in marriage and family therapy. (F,Sp,Su)

**FCHD 6390 Practicum in Marriage and Family Therapy** (1-6) *
Supervised clinical experience in marriage and family therapy. Prerequisites: Admission to Marriage and Family Therapy specialization and instructor’s permission. (F,Sp,Su)

**FCHD 6400 Topical Seminar in Consumer Science** (3) *
Selected issues in consumer science. Usually offered once per year. Semester taught will vary.

**FCHD 6500 Topical Seminar in Human Development** (3) *
Selected issues in human development. Usually offered once per year. Semester taught will vary.

**FCHD 6900 Topical Seminar in Family and Human Development** (3) *
Selected issues in family and human development. Usually offered once per year. Semester taught will vary.

**FCHD 6960 Readings and Conference** (1-6) *
Directed independent study of topics preselected by faculty and student. Prerequisite: Instructor’s permission. (F,Sp,Su)

**FCHD 6970 Thesis Research** (1-6) *
Research for master’s thesis, arranged with advisor. Prerequisite: Advisor’s permission. (F,Sp,Su)

**FCHD 6980 Graduate Practicum** (1-9) *
Application of family and human development skills and knowledge in a supervised setting, as arranged by advisor. Prerequisite: Advisor’s permission. (F,Sp,Su)

**FCHD 6990 Continuing Graduate Advisement** (1-3) *
Continuing registration to complete thesis requirements. Prerequisite: Six credits of FCHD 6970. (F,Sp,Su)

**FCHD 7050 Advanced Research and Theory in Consumer Science** (3)
Critical review of research and theories in consumer science. Prerequisite: FCHD 6050. (Sp)

**FCHD 7060 Advanced Research and Theory in Human Development** (3) *
Critical review of research and theories in human development. Prerequisite: FCHD 6060 or equivalent. (F)

**FCHD 7070 Advanced Research and Theory in Family Relations** (3)**
Critical review of research and theories in marriage and family relationships. Prerequisite: FCHD 6070 or equivalent. (Sp)

**FCHD 7080 Professional Development** (3)
Capstone course for doctoral students, emphasizing issues related to professional development (e.g., grant writing, publishing, vitae development, interview skills, developing a research agenda, networking, ethics, professional conduct, teaching, etc.). (F)

**FCHD 7200 Topical Seminar in Family Relations** (3) *
Selected issues for advanced professionals in family relations. Usually offered once per year. Semester taught will vary.

**FCHD 7400 Topical Seminar in Consumer Science** (3)
(D6400)
Selected issues for advanced professionals in consumer science. Usually offered once per year. Semester taught will vary.

**FCHD 7500 Topical Seminar in Human Development** (3) *
Selected issues for advanced professionals in human development. Usually offered once per year. Semester taught will vary.

**FCHD 7900 Topical Seminar in Family and Human Development** (3) *
Selected issues for advanced professionals in family and human development. Usually offered once per year. Semester taught will vary.

**FCHD 7960 Readings and Conference** (1-6) *
Directed independent study of topics preselected by faculty and student. Prerequisite: Instructor’s permission. (F,Sp,Su)

**FCHD 7970 Dissertation Research** (1-9) *
Research for dissertation, as arranged with advisor. Prerequisite: Advisor’s permission. (F,Sp,Su)

**FCHD 7980 Advanced Graduate Practicum** (1-9) *
Professional supervision of doctoral students, applying general principles from the study of research in family and human development. Prerequisite: Advisor’s permission. (F,Sp,Su)
FCSE 2040  Clothing Production Principles (3)
Intermediate-level clothing construction techniques, pattern alteration and fitting, and use of sewing machine and serger. Previous sewing experience recommended. (F,Sp)

FCSE 2510  Orientation to Family and Consumer Sciences Education (3)
Overview of the integrated Family and Consumer Sciences Education system. Students learn how family and human development, nutrition, finance, clothing production, and consumerism is planned, implemented, and evaluated through FCSE programs in the public schools. Enrollment limited to FCSE majors only. (F)

FCSE 3030  DSC  Textile Science (4)
Study of fibers, yarns, fabric constructions, and finishes as related to appreciation, selection, use, and care of current textiles. Evaluation of physical, economic, and aesthetic properties of textile products to determine suitability for desired end use. (Sp)

FCSE 3040  Advanced Clothing Production Principles (3)
Develops skills in flat pattern design and tailoring techniques. Prerequisite: FCSE 2040. (F,Sp)

FCSE 3060  DSS  Human Behavior Related to Dress (3)
CI
Analyzes economic, historic, psychological, social, and cultural contexts shaping individual and group dress and appearance. Prerequisite: Completion of a course having University Studies Breadth Social Sciences (BSS) designation. (F)

FCSE 3300  Family and Consumer Sciences Education Clinical Experience I (1)
Provides on-site experience for students to model a secondary family and consumer sciences education teacher. Students are expected to learn teaching and classroom management principles. Must be taken concurrently with FCSE 3400. Prerequisite: Admission to Secondary Education Professional Education Component. (F)

FCSE 3400  Family and Consumer Sciences Education Methods I (3)
Methods of successfully planning and maintaining family and consumer sciences work education programs in secondary schools. History and philosophy of applied technology education. Prerequisite: Admission to Secondary Education. FCSE 3400 and 3300 must be taken concurrently. (F)

FCSE 4250  Internship in Family and Consumer Sciences Education (1-12)
Midmanagement-level experience in a position approved by the department. One credit earned for each 60 hours of experience. Prerequisite: Junior standing. (F,Sp, Su)

FCSE 4300  Family and Consumer Sciences Education Clinical Experience II (1)
Provides on-site experience for students to model a secondary family and consumer sciences education teacher. Students expected to learn teaching and classroom management principles. Prerequisites: FCSE 3300, 3400. (Sp)

FCSE 4400  Family and Consumer Sciences Education Methods II (3)
Development of competency in curriculum planning, and skill and sensitivity in the use of various teaching-learning strategies and resources. Includes assessment for vocational education. Prerequisites: FCSE 3300, 3400. (Sp)

FCSE 4900  Independent Study in Family and Consumer Sciences Education (1-5)
Prior to registration, students must identify a project of interest and discuss the project with instructor. Prerequisite: Junior standing and approval of faculty. (F,Sp, Su)

FCSE 5500  Student Teaching Seminar (2)
Taken during student teaching in secondary schools to complement school experience. Focuses upon problems arising during student teaching. Includes teaching plans, procedures, adaptive classroom practices, and evaluation. Prerequisites: FCSE 4300, 4400. Must be taken concurrently with FCSE 5600. (F)

FCSE 5550  Workshop Topics in Family and Consumer Sciences Education (0.5-3)
Concentrated offerings to increase knowledge, skills, or creative expression in current Family and Consumer Sciences Education topics or curriculum areas. Taught alternate years. (Sp, Su)

FCSE 5630  Student Teaching in Secondary Schools (10)
After assignment to a cooperating family and consumer sciences educator, students are given professional responsibilities associated with teaching. Prerequisites: FCSE 4300, 4400. Must be taken concurrently with FCSE 5500. (F)

FCSE 6120  Using and Interpreting SPSS to Analyze Social Research Data (2)
Explores use of SPSS for descriptive statistics, contingency tables, ANOVA models, and multiple regression. Discussion of syntax, procedure options, and interpretation of output. (Sp)

FCSE 6240  Graduate Topics in Family and Consumer Sciences Education (1-3)
Surveys selected topics in family and consumer sciences education. Topics will be unique each time course is offered. (F,Sp, Su)

FCSE 6250  Graduate Internship in Family and Consumer Sciences Education (1-4)
Designed for graduate students who wish to acquire or upgrade their experience in an occupational field related to their area of study. One credit earned for each 60 hours of experience. Repeatable for up to 6 credits. Prerequisite: Instructor approval prior to enrollment. (F,Sp, Su)

FCSE 6280  Research Methods in Family and Consumer Sciences Education (2)
Explores techniques and tactics for designing and analyzing social science human behavior research. Emphasizes designs and instrumentation. Prospectus required. (F)

FCSE 6290  Current Issues in Family and Consumer Sciences Education (3)
Investigation and reporting of current issues related to family and consumer sciences education research. (F)

FCSE 6520  Administration and Supervision in Family and Consumer Sciences Education (3)
Application of research and theory of administration and supervision to define and clarify the role of leadership in Family and Consumer Sciences Education. (F)

FCSE 6530  Classroom Management, Student Motivation, and Guidance (3)
Multiple strategy approach for increasing teachers' effectiveness and satisfaction in family and consumer sciences classroom management and discipline. (Sp)

FCSE 6540  Curriculum Development, Testing, and Evaluation (3)
Examines current trends in curriculum development and special programs related to specific educational programs. Includes development of curriculum. (F)
French (FREN)

Course Descriptions

FCSE 6550 Family and Consumer Sciences Education Topics (3)**®
Explores advanced application of teaching strategies and theory, as well as the creation of innovative classroom materials. (Sp)

FCSE 6560 Mentoring New Professionals in Family and Consumer Sciences Education (3)
Explores the role of mentoring in the success of new professionals. Reviews four components of professional practice. Examines techniques for observation and conferencing. Students reflect upon their own teaching/mentoring experiences and the impact on their professional practice. (Sp)

FCSE 6570 Adult Education and Volunteer Programs (3)
Explores current program formats and instructional materials developed for adult education. Emphasizes program and course development and teaching strategies suitable for adults. (F)

FCSE 6900 Graduate Independent Study in Family and Consumer Sciences Education (1-4) ®
Independent study in the areas of family and consumer sciences education, including clothing and merchandising, consumer sciences, and interior design. For approval of project and allowable credits, students should check with committee. (F,Sp,Su)

FCSE 6970 Master’s Thesis Research in Family and Consumer Sciences Education (1-6) ®
Repeatable for up to 6 credits. (F,Sp,Su)

FCSE 6990 Continuing Advanced Graduate Advisement in Family and Consumer Sciences Education (1-3) ®
(F,Sp,Su)

**Taught 2005-2006.
® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

French (FREN)

See Department of Languages, Philosophy, and Speech Communication, pages 244-248

Lower Division

FREN 1010 French First Year I (4)
Communicative competencies in the four language skills: speaking, listening, reading, and writing, with exposure to cultures and customs. Not open to those with more than one year high school French or equivalent. (F,Sp)

FREN 1020 French First Year II (4)
Communicative competencies in the four language skills: speaking, listening, reading, and writing, with exposure to cultures and customs. Prerequisite: FREN 1010 or equivalent. (F,Sp)

FREN 1030 Beginning French for Everyday Communication (3)
Development of basic conversational skills, communication strategies, and cultural knowledge through immersion in a French-speaking environment. Offered only through USU’s study abroad program in France. Cannot be substituted for FREN 1010 or 1020. (Su)

FREN 1050 French First Year I Study Abroad (4)
Intensive first-year language course designed to increase proficiency in the four language skills and in intercultural knowledge. Offered only through USU’s summer study abroad program in France. Not open to those with more than one year high school French or equivalent. (Su)

FREN 1150 French First Year II Study Abroad (4)
Intensive first-year language course designed to increase proficiency in the four language skills and in intercultural knowledge. Offered only through USU’s summer study abroad program in France. Prerequisite: FREN 1010 or 1050. (Su)

FREN 1820 Beginning Independent Study: Experiencing Paris (2)
Beginning-level independent study project focusing on the city of Paris, its history, culture, and patterns of life. Offered only through USU’s summer study abroad program in France. (Su)

FREN 2010 French Second Year I (4)
Continued development of communicative competencies in the four language skills, with more emphasis on communication through reading and writing and continued exposure to cultures and customs. Prerequisite: FREN 1020 or equivalent. (F,Sp)

FREN 2020 French Second Year II (4)
Continued development of communicative competencies in the four language skills, with more emphasis on communication through reading and writing and continued exposure to cultures and customs. Prerequisite: FREN 2010 or equivalent. (F,Sp)

FREN 2030 Intermediate French for Everyday Communication (3)
Development of intermediate-level conversational skills, communication strategies, and cultural knowledge through immersion in a French-speaking environment. Offered only through USU’s study abroad program in France. Cannot be substituted for FREN 2010 or 2020. (Su)

FREN 2050 French Second Year I Study Abroad (4)
Intensive second-year language course designed to increase proficiency in the four language skills and in intercultural knowledge, with more emphasis on communication through reading and writing. Offered only through USU’s summer study abroad program in France. Prerequisite: FREN 1020 or equivalent. (Su)

FREN 2150 French Second Year II Study Abroad (4)
Intensive second-year language course designed to increase proficiency in the four language skills and in intercultural knowledge, with more emphasis on communication through reading and writing. Offered only through USU’s summer study abroad program in France. Prerequisite: FREN 2010 or 2050 or equivalent. (Su)

FREN 2820 Intermediate Independent Study: Experiencing Paris (2)
Intermediate-level independent study project focusing on the city of Paris, its history, culture and patterns of life. Offered only through USU’s summer study abroad program in France. (Su)

FREN 2880 Individual Readings (3) ®
Individual study of selected readings in French. Cannot be substituted for FREN 2010 or 2020. Prerequisite: Instructor’s permission. (Su)

Upper Division

Upper-division French courses (3000 level and above) are available only to students who have completed FREN 2010 or who can demonstrate equivalent proficiency through testing.

FREN 3030 Advanced French for Everyday Communication (3)
Development of advanced conversational skills, communication strategies, and cultural knowledge through immersion in a French-speaking environment. Offered only through USU’s study abroad program in France. Cannot be applied to requirements for the major or minor in French. (Su)

FREN 3060 C1 French Conversation (3)
Designed to develop effective communication skills, to increase vocabulary, and to teach students to express and justify facts, opinions, ideas, and emotions in French. Not open to students with foreign experience. Designed for students who have not had extended residence in a francophone country or extended exposure to a francophone environment. (F)

FREN 3070 Advanced French Language Study Abroad I (4)
Intensive upper-division language course combining grammar review, phonetics, advanced conversation and composition, and the study of culture, with an emphasis on current affairs. Offered only through USU’s summer study abroad program in France. (Su)

FREN 3080 Advanced French Language Study Abroad II (4)
Intensive upper-division language course combining grammar review, phonetics, advanced conversation and composition, and the study of culture, with an emphasis on current affairs. Offered only through USU’s summer study abroad program in France. (Su)

FREN 3090 C1 French Intermediate Written Communication (3)
Provides students with intensive practice in various types of writing (e.g., summary, description, narration, letter-writing, etc.) based on a process approach. Involves discussion, writing, and revising. Stresses grammar review. (F)
FREN 3510 CI Business French (3)*
Study of vocabulary, idioms, and expressions used in French business communication and an introduction to French business practices. (F)

FREN 3550 French Civilization (3)**
Study of historical, social, political, economic, and cultural conditions and institutions of France from early to modern times. (F)

FREN 3570 France Today (3)
Study of contemporary life in France, the French people, their daily habits, and their surroundings. What makes the French French. Extensive use of videos, films, and slides. Prerequisite: FREN 2020 or equivalent. (Sp)

FREN 3600 Textual Analysis (3) ®
Introduction to the methods, terminology, and practice of textual analysis. Development of critical thinking and writing skills through the analysis of selected literary and nonliterary texts from different periods and genres, ranging from poetry, novels, and plays to film, painting, music, and art. Course may be repeated once for credit with different content. (F)

FREN 3620 Advanced Independent Study: Experiencing Paris (2)
Advanced-level independent study project focusing on the city of Paris, its history, culture, and patterns of life. Offered only through USU’s summer study abroad program in France. (Su)

FREN 3880 Individual Readings (1-4) ®
Individual study of selected readings in French. Instructor’s permission required. (F,Sp,Su)

FREN 3900 Topics in French and Francophone Studies (3)**
Studies through literature, media, and film on specific topics or themes. Discussion, analysis, and interpretation of selected literary and/or nonliterary works. Occasionally taught in English. (F)

FREN 4060 CI Advanced French Conversation (3)
Designed for students who have already reached advanced proficiency in speaking through foreign experience, but need to continue the development of their conversational skills. Prerequisite: FREN 3060 or permission of instructor. (Sp)

FREN 4090 CI Advanced Written Communication (3)
Continued development of French written communication skills based on a process approach. Includes the more advanced concepts of French grammar and extensive writing practice in variety of genres. Prerequisite: FREN 3090 or permission of instructor. (F)

FREN 4200 Applied French Linguistics and Phonetics (3)*
First part analyzes phonological and phonetic patterns of French. Second part deals with selected morphological and syntactic features of French. (Sp)

FREN 4520 Information Technologies in French (3)
Practices, theoretical issues, and policy concerns of information technologies resulting from microcomputers, networking, and videodisk. Use of microcomputer with French programs. Taught in French. (F)

FREN 4610 DHA Period Studies in French Literature (3)*
Examination of a particular period or century. Involves close reading, discussion, analysis, and interpretation of selected literary and nonliterary texts. Sample topics include: The Medieval Period, The Renaissance, Classicism, Baroque, Romanticism, Naturalism, and Contemporary French Literature. Prerequisite: FREN 3600 or instructor’s permission. (Sp)

FREN 4620 DHA Genre Studies in French Literature (3)**
Examination of a particular genre or body of works from a variety of periods and authors (e.g., novel, play, poetry, short story, film). Involves close reading, discussion, analysis, and interpretation of selected literary and nonliterary texts. Sample topics include: Romance Novels from the Middle Ages to the Present, From Classical to Contemporary French Theatre, French poetry from Baudelaire to Ponge, The Nouveau Roman, New Wave French Cinema, and The Negritude Movement. Prerequisite: FREN 3600 or instructor’s permission. (F)

FREN 4880 Individual Readings (1-4) ®
Readings in scientific, technical, or literary French. Prerequisite: Permission of instructor. (F,Sp)

FREN 4900 Seminar in French and Francophone Studies (3)**®
In-depth exploration of issues central to understanding language, literature, and culture. Critical reading and viewing of written and nonwritten texts with emphasis on student presentations, independent research, and the completion of extended projects. Seminar topics may focus on authors, literary periods, important historical events and social movements, and aspects of francophone cultures. Used periodically for literature in translation. (Sp)

FREN 4920 French Language Tutoring (1) ®
Allows students to develop tutoring skills by assisting professors in lower-division courses or fulfilling instructional duties for a comparable amount of time in the language laboratory, public schools, or similar activities with departmental approval. May be repeated to a maximum of 3 credits. (F,Sp,Su)

FREN 6200 French Linguistics and Phonetics (3)
Analysis of selected phonological, morphological, syntactic, and semantic features of contemporary French, including a study of colloquial French, comparing pronunciation, vocabulary, and grammar with standard forms. (Sp)

® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.
**Taught 2005-2006.

Forest, Range, and Wildlife Sciences (FRWS)

See Department of Forest, Range, and Wildlife Sciences, pages 210-213

FRWS 2000 Introduction to Forest, Range, and Wildlife Sciences I (1)
With a combination of field trips, computer lab exercises, and classroom discussions, students gain an overview of forest, range, and wildlife sciences, including a review of career opportunities for students completing a BS degree in forest, range, or wildlife. (F)

FRWS 2010 Introduction to Forest, Range, and Wildlife Sciences II (1)
With a combination of field trips, computer lab exercises, and classroom discussions, students develop strategies and obtain skills for academic success and professional development, including summer employment opportunities. (Sp)

FRWS 2200 BLS Ecology of Our Changing World (3) ©
Foundations of ecological and evolutionary relationships of organisms with other organisms and with the physical environment, emphasizing populations, communities, and ecosystems. Integration of basic science with applications of science to understanding human interactions with the environment. (F,Sp)

FRWS 2250 Introductory Internship/Co-op (1-3) ®
Introductory-level educational experience in internship/cooperative education position approved by department. Prerequisite: Departmental signature. (F,Sp,Su)

FRWS 2300 Mushroom Identification (1)
Lecture course covering taxonomy, ecology, and importance of macro and micro fungi. Also taught as BIOL 2300. (F)

FRWS 2310 Mushroom Identification Lab (1-2) ®
Lab course acquainting students with basic fungal taxonomic groups. Students collect, preserve, and identify fungi they collect. Edible fungi prepared and eaten. Also taught as BIOL 2310. (F)

FRWS 2500 Computer Applications in Natural Resources (3)
Advanced spreadsheet, graphics, aerial photography, and Geographic Information Systems for natural resource management. (F)

FRWS 3050 DSC Ecology of Logan Canyon and Vicinity (3)
Examines natural and human-caused changes in biological and physical features in
the local landscape through time. Emphasizes how ecological knowledge and a sense of place can help people to better understand local environmental issues. (F)

FRWS 3300 Management Aspects of Wildlife Behavior (3)
Principles, concepts, and mechanisms of animal behavior, emphasizing behavioral ecology, development, and comparative aspects of special relevance to management of fish and wildlife. (Sp)

FRWS 3600 Wildland Plant Ecology and Identification (4)
Autecology and identification of dominant grass, forb, and woody plants of the Intermountain West. Emphasizes native species; however, introduced or noxious weeds are included. Explores plant structure and function, as related to the environment. (F)

FRWS 3610 Wildland Animal Ecology and Identification (4)
Autecology and identification of important mammals, birds, reptiles, and amphibians of the Intermountain West. Emphasizes native species distribution and habitat requirements in relation to the environment. Prerequisite: FRWS 2220. (F)

FRWS 3700 Inventory and Assessment in Natural Resource and Environmental Management (3)
Lectures, laboratory exercises, and field-based projects introduce students to the concepts, strategies, and analytical methods of natural resource and environmental inventory and assessment. Prerequisites: BIOL/NR 2220; MATH 1100; STAT 2000 or 3000; and passing score on the University Studies Computer and Information Literacy (CIL) exam. (F)

FRWS 3710 Monitoring and Assessment in Natural Resource and Environmental Management (3)
Lectures, case studies, laboratory exercises, and field-based projects introduce students to the concepts, strategies, and analytical methods of science-based assessment of natural resources. Prerequisite: FRWS 3700 or permission of instructor. (Sp)

FRWS 3800 Wildland Ecosystems (3)
Structure, function, and dynamics of terrestrial ecosystems in response to natural and anthropogenic impacts, with emphasis on the Intermountain West and Great Plains. Prerequisites: NR/Biol 2220; and SOIL 3000 (or concurrent enrollment). (Sp)

FRWS 3810 Plant and Animal Populations (3)
Basics of plant and animal population ecology, including population regulation, life histories, single and multi-species interactions, and metapopulations. Case studies will cover topics of both management and conservation concern. Prerequisites: NR/Biol 2220, MATH 1100 or higher. (Sp)

FRWS 3850 Vegetation and Habitat Management (3)
Applying ecological principles and concepts to manipulate the composition, structure, and productivity of wildland vegetation for a range of objectives, including the creation and maintenance of wildlife habitat, using biological, chemical, and mechanical methods, as well as fire. Prerequisites: SOIL 3000; FRWS 3600 (may be taken concurrently). (F)

FRWS 3900 Managing Dynamic Ecological Systems (4)
Emphasizes how people from diverse natural resource disciplines benefit from integrating Eastern and Western philosophical and cultural beliefs with behavioral principles and processes to manage dynamic systems with due consideration for the ecological, cultural, and economic values of societies. Prerequisites: FRWS 3600, 3610. (Sp)

FRWS 4000 Fundamentals of Grazing Land Management (3)
Explores ecological basis for sustainable land use under grazing by domestic and native herbivores. Explains how to translate knowledge of grazing impacts into range-land management guidelines. (Sp)

FRWS 4050 Urban Fish and Wildlife Management (3) ©
Concentrates on: understanding impacts of urbanization on wildlife and habitat; developing basic understanding of wildlife needs; completing urban wildlife habitat inventory; and preparing urban wildlife conservation and management plan. (F,Sp,Su)

FRWS 4250 Advanced Internship/Co-op (1-9) ©
Advanced-level educational experience in internship/cooperative education position approved by department. Prerequisite: Departmental signature. (F,Sp,Su)

FRWS 4500 Principles of Wildlife Management (3)
Provides students with a working knowledge of the application of basic concepts in ecology and animal behavior to the management of wildlife resources to achieve diverse objectives of conservation, control, or cropping. Prerequisites: FRWS 3610 and 3810. (Sp)

FRWS 4540 Forest Harvest and Utilization (2)
Elements of timber harvest systems, including policies and practices for minimizing biophysical impacts. Utilization of wood resources. (F)

FRWS 4600 Conservation Biology (3)
Patterns and processes creating biological diversity. Causes and consequences of diversity losses from genes to ecosystems, including habitat fragmentation and exotic invasion. Conservation laws and organizations. Approaches to conserving diversity loss, including reserve design, corridors, and species reintroductions. Prerequisite: NR/Biol 2220. (Sp)

FRWS 4700 Ecological Foundations of Restoration (3)
Explores meanings of ‘restoration,’ use of reference communities, restoration of processes versus structure, species reintroductions, managing natural processes to meet restoration goals, and fundamentals of physiological, population, community, and ecosystem ecology from a restoration perspective. Prerequisites: NR/Biol 2220, FRWS 3850. (Sp)

FRWS 4810 Directed Reading in Wildlife Damage Management (2) ©
Focuses on wildlife damage management, especially as it reflects on both positive and negative human-wildlife interactions. For this reading course, students work with instructor to develop appropriate and rigorous reading program. (F,Sp,Su)

FRWS 4880 Genetics in Conservation and Management (3)
Introduces principles of modern genetics, with applications, examples, and assignments related to ecology and management issues. Emphasizes genetic marker systems, gene flow, genetic drift, and adaptation. Prerequisites: CHEM 1110 or 1220; BIOL 1210. (F)

FRWS 4950 Special Topics (1-3) ©
Individual study and research upon selected problems. Prerequisite: Departmental permission. (F,Sp,Su)

FRWS 4960 Directed Readings (1-3) ©
Individual reading research on forest, range, and wildlife science readings. Prerequisite: Departmental approval. (F,Sp,Su)

FRWS 4970 Undergraduate Research (1-3) ©
Individual or team research. Prerequisite: Departmental permission. (F,Sp,Su)

FRWS 4980 Undergraduate Seminar (1) ©
Intended to bring upperclassmen up-to-date on topics in forest, range, and wildlife sciences. (F,Sp)

FRWS 5000 Predator Ecology and Management (3)*
Reviews biology, ecology, theory, management, and policy issues involving large vertebrate predators. Uses case histories to explore predation theory, population ecology, natural history, and management strategies. (Sp)

FRWS 5070 Range Wildlife Relations (3)
Reviews biology, ecology, theory, management, and policy issues involving large vertebrate predators. Uses case histories to explore predation theory, population ecology, natural history, and management strategies. (Sp)

FRWS 5100 Wildlife Management Laboratory (3)
Familiarizes students with variety of wildlife management and research techniques and strategies, including techniques to catch, mark, and restrain wild animals; monitoring wildlife populations; measuring physiological parameters; measuring habitat variables; assessing and preventing wildlife damage; and interpreting and analyzing biological data. (F)

FRWS 5220 Community-based Conservation Partnerships (3)
Seeks to infuse ecology with applied conservation and management approaches.
Conservation and management of natural resources requires an understanding of ecological relationships and strategies for working with diverse stakeholders. PhD-level students present their research. (Sp)

FRWS 5300 Wildlife Damage Management Principles (3)
Explains current legal, ethical, and biological principles for the control and/or management of problem vertebrate species. (Sp)

FRWS 5350 Wildland Soils (d6350) (3)
Application of basic principles of soil science to wildland ecosystems. Effects of disturbance and land use on wildland soil properties. Role of soils in natural resource management. Prerequisites: CHEM 1110; SOIL 3000, and one additional upper-division Soils course, or permission of instructor. Also taught as SOIL 5350/6350. (Sp)

FRWS 5420 Forest Pathology (2)
Nature, cause, and management of forest diseases. Also taught as BIOL 5420. (Sp)

FRWS 5430 Advanced Forest Pathology (2)
In-depth exploration of forest pathology issues, focusing on ecosystem-level processes. (Sp)

FRWS 5460 Avalanche and Snow Dynamics (2)
Fundamentals of snow and avalanche dynamics. Avalanche safety, forecasting, hazard evaluation, and control. (Sp—first half)

FRWS 5650 Urban/Community Forestry (3)
Social, biological, and administrative aspects of managing urban/community forests, including field and classroom exercises and a management planning project. (Sp)

FRWS 5700 Forest Assessment and Management (3)
Detailed analysis of forest stand structure and growth. Development of silvicultural prescriptions to meet specific objectives. Analysis of costs and benefits of alternative forest management strategies. Emphasizes forest management to achieve a broad range of objectives. (Sp)

FRWS 5710 Disturbance Ecology in Forested Systems (3)
Examines effects of disturbance on forest ecosystems. (Sp)

FRWS 5750 Applied Remote Sensing (3) (d6750)
Covers the application of remote sensing to landcover mapping and resource monitoring at a quantitative level. Students instructed on the effects of atmosphere and surface interaction on the reflectance collected by electro-optical sensors, as well as on the proper use and interpretation of various calibration and classification algorithms. (F)

FRWS 5860 Poisonous Range Plants Affecting Livestock (2)**
Poisonous plants of rangelands and their effects on grazing animals, especially livestock. Management practices to reduce or prevent poisoning. Also taught as ADVS 5860. (Sp)

FRWS 6000 Grazing Systems (2)**
Overview and analysis of various strategies for managing grazing on rangelands. Special attention given to ecological mechanisms by which a particular grazing system may benefit livestock production or the sustainability of rangeland resources. (Sp)

FRWS 6070 Range Wildlife Relations (3) (d5070)
Explores interactions on rangelands between wild and domestic ungulates, as well as other wildlife forms around the world, but with emphasis on western North America. Prerequisite: FRWS 3610 or permission of instructor. (F)

FRWS 6180 Molecular Population Genetics Laboratory (5)
Application of molecular techniques to population genetics, ecology, and systematics. Includes experimental and sampling design, and data analysis. Prerequisite: BIOL 5170/6170 or permission of instructor. Also taught as BIOL 6180. (F)

FRWS 6200 Biogeochemistry of Terrestrial Ecosystems (3)**
Inputs, outputs, and cycling patterns of major nutrients. Emphasis on mechanisms for transformations, factors influencing process rates, and the impacts of management and global change on nutrient cycles and air and water quality. Prerequisites: BIOL 1220, SOIL 3000, CHEM 2300 or 2310, or permission of instructor. Also taught as BIOL 6200 and SOIL 6200. (F)

FRWS 6240 Graduate Internship/Co-op (1-9)®
Graduate-level educational experience in internship/cooperative education position approved by department. (F,Sp,Su)

FRWS 6270 Advanced Silviculture (3)
In forestry, there is a trend toward more complex silviculture to implement increasingly complex stand-level objectives. This course covers important techniques used in the development and implementation of silvicultural prescriptions for this sort of stand management. Prerequisite: Permission of instructor. (Sp)

FRWS 6350 Wildland Soils (d5350) (3)
Application of basic principles of soil science to wildland ecosystems. Effects of disturbance and land use on wildland soil properties. Role of soils in natural resource management. Prerequisites: CHEM 1110; SOIL 3000, and one additional upper-division Soils course, or permission of instructor. Also taught as SOIL 6350/5350. (Sp)

FRWS 6400 Ecology of Animal Populations (4)*
Growth, fluctuation, balance, and control of animal populations. Prerequisite: NR/Biol 2220 or equivalent. (Sp)

FRWS 6420 Vegetation Sampling Design (4)**
Advanced intrastand vegetation sampling design and elementary (nonmultivariate) between stand comparisons, primarily for research purposes. Prerequisites: STAT 5200; FRWS 6770. (Su)

FRWS 6500 Biometry: Design and Analysis of Ecology Research (4)
Examines research design from statistical perspective, showing how data analysis is largely determined by research design and its implementation. Reviews statistical tools for analysis of ecological data in the context of design. Prerequisite: Graduate standing. (F)

FRWS 6510 Topics in Spatial Ecology (1-3)** ®
Seminars on analysis and interpretation of spatially explicit ecological data. Topics vary yearly, and range from spatial statistics to assessing uncertainty in environmental information systems to spatial analyses of plant and animal populations. Prerequisites: Graduate-level course in statistics and permission of instructor. (Sp)

FRWS 6610 Regional Terrestrial Ecosystems (4)
Synthesis of structural functional and regulatory processes and their interactions in humans in terrestrial ecosystems found in the Intermountain West and Great Plains. Prerequisites: NR/BIOl 2220, SOIL 3000; or equivalent courses. (Sp)

FRWS 6710 Landscape Ecology (3) (d7710)
Focuses on landscape-scale patterns and processes, and ways of understanding ecological complexity. Explores conceptual underpinnings of larger-scale ecology. Emphasizes understanding of current peer-reviewed literature. (Sp)

FRWS 6720 Advanced Conservation Biology (3)*
(d7720)
Examines cases and consequences of population and species declines, including activities such as habitat fragmentation and introduction of exotic species, as well as natural causes due to genetics and demography. (Sp)

FRWS 6740 Physical Processes in Remote Sensing (3)
Assures that students are well-versed in the science and technology of remote sensing. Covers various algorithms and their ability to extract biophysical information from remotely sensed images. Helps students gain firm knowledge of the capabilities and limitations of these algorithms and their use in understanding landscape level biophysical interactions. (Sp)

FRWS 6750 Applied Remote Sensing (3) (d5750)
Covers the application of remote sensing to landcover mapping and resource monitoring at a quantitative level. Students instructed on the effects of atmosphere and surface interaction on the reflectance collected by electro-optical sensors, as well as on the proper use and interpretation of various calibration and classification algorithms. (F)

FRWS 6770 Plant Community Ecology (3)*
Theory and concepts of plant community ecology. Plant community composition, distribution in space, and dynamics in time. Species environmental response models, competition theory, statistical predictive models, and concepts of multivariate analysis in plant ecology. Prerequisites: NR/BIOL 2220 or equivalent; and ecology core courses (may be taken concurrently). (Sp)

FRWS 6800 Forest, Range, and Wildlife (d7800) Sciences Departmental Seminar (1) ®
Review of current research by graduate students and faculty. (F,Sp)

FRWS 6870 Ecology Seminar (1) ®
The Ecology Center schedules regular seminars throughout the school year with ecologists from other institutions participating. Ecology majors are required to attend a minimum of 10 such lectures. Students should register for fall semester, but attend through spring semester. Also taught as AWER 6870, ENVS 6870, and BIOL 6870. (F)

FRWS 6880 Current Issues in Conservation (d7880) Genetics and Management (2)*
Reviews variety of topics in fast-moving field of conservation genetics. Explores management applications and implications, with particular emphasis on current primary literature. Recommended prerequisite: Prior course in genetics. (Sp)

FRWS 6900 Graduate Special Topics (1-6) ®
Offers credit for special assignments, reading, and seminars beyond regularly scheduled courses. (F,Sp,Su)

FRWS 6910 Directed Study (1-6) ®
Offers credit for special assignments, reading, and seminars beyond regularly scheduled courses. (F,Sp,Su)

FRWS 6960 Graduate General Ecology (5)
General concepts, history, and issues in all major areas of the science of ecology including: environmental biophysics; and physiological, behavioral, evolutionary, community, ecosystem, and applied ecology in both terrestrial and aquatic environments. Also taught as AWER 6960, BIOL 6960, and ENVS 6960. (F)

FRWS 6970 Thesis Research (1-12) ®
Original research for MS degree on a problem in rangeland resources. (F,Sp,Su)

FRWS 6990 Continuing Graduate Advisement (1-9) ®
Continuing research for MS degree on a problem in rangeland resources. (May be repeated for credit.) (F,Sp,Su)

FRWS 7000 Theory and Applications of Rangeland Ecosystem Management (3)
Application of range management principles, new theory, and public policy to on-the-ground decision-making in public and private lands. Field trips required. (F)

FRWS 7030 Plant-Herbivore Interactions (3)*
Emphasizes principles of self-organization as applied to plant (tolerance and avoidance of herbivory) and herbivore (food and habitat selection) behavior. Stressors importance of history and ongoing interactions with the environment in understanding the dynamics of plant-herbivore interactions. (Sp,Su)

FRWS 7200 Plant Physiological Ecology (3)**
Plant response to environmental factors, includes environmental biophysics, physical and physiological factors influencing productivity, water use, resistance to stress, reproduction, establishment of plants, and competition with neighboring plants. (F)

FRWS 7220 Community-based Conservation Partnerships (d5220)
Seeks to infuse ecology with applied conservation and management approaches. Conservation and management of natural resources requires an understanding of ecological relationships and strategies for working with diverse stakeholders. PhD-level students present their research. (Sp)

FRWS 7300 Wildlife Damage Management Principles (d5300)
Explains current legal, ethical, and biological principles for the control and/or management of problem vertebrate species. (Sp)

FRWS 7400 Plant Population Ecology (3)*
Dynamics of plant populations as influenced by interactions with their abiotic and, especially, biotic environments. Topics include dormancy and germination strategies, intra- and interspecific competition, facilitation, disturbance, herbivory, pathogenic and mutualistic fungi, pollination, seed dispersal, and vegetative reproduction. (F)

FRWS 7420 Analysis of Ecological Communities (5)**
Advanced treatment of classification and ordination of ecological communities, emphasizing ecological data structures and methods of common use in ecological research. Prerequisite: STAT 3000 or FRWS 6500 or consent of instructor. (Sp)

FRWS 7710 Landscape Ecology (3)
(F,Sp)

FRWS 7720 Advanced Conservation Biology (3)*
Examines cases and consequences of population and species declines, including activities such as habitat fragmentation and introduction of exotic species, as well as natural causes due to genetics and demography. (Sp)

FRWS 7800 Forest, Range, and Wildlife Sciences Departmental Seminar (1) ®
Review of current research by graduate students and faculty. (F,Sp)

FRWS 7880 Current Issues in Conservation Genetics and Management (2)*
Reviews variety of topics in fast-moving field of conservation genetics. Explores management applications and implications, with particular emphasis on current primary literature. Recommended prerequisite: Prior course in genetics. (Sp)

FRWS 7900 Graduate Special Topics (1-6) ®
Offers credit for special assignments, reading, and seminars beyond regularly scheduled courses. (F,Sp,Su)

FRWS 7910 Directed Study (1-6) ®
Offers credit for special assignments, reading, and seminars beyond regularly scheduled courses. (F,Sp,Su)

FRWS 7970 Dissertation Research (1-12) ®
Original research and study for PhD degree. (F,Sp,Su)

FRWS 7990 Continuing Graduate Advisement (1-9) ®
Continuing research for PhD degree on a problem in rangeland resources. (May be repeated for credit.) (F,Sp,Su)

® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.
© This course is also offered by online correspondence and/or CD through Continuing Education Time Enhanced Learning.
**Taught 2005-2006.

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Geography (GEOG)

See Department of Environment and Society, pages 201-204

GEOG 1030 BSS World Regional Geography (3) ©
Survey of world cultural regions, with an analysis of political, economic, and resource patterns in their physical setting. (F,Sp)

GEOG 1130 BPS Physical Geography (3) ©
Geographic analysis of physical processes and spacial distribution of natural elements (i.e., the atmosphere, hydrosphere, lithosphere, and biosphere). (F,Sp,Su)

GEOG 1140 Physical Geography Lab (1)
Laboratory exercises in natural physical geography. Provides initial field and laboratory experiences in the earth system. Required for all geography majors. Prerequisite: GEOG 1130 (may be taken concurrently). (F,Sp)

GEOG 2030 BSS Human Geography (3)
Spatial study within selected socio-cultural settings, including cultural landscapes, rural-urban linkages, languages, religions, politics, and economic activities. (F)

GEOG 2130 Population Geography (3)
Spatial analysis of demographic data emphasizing global distribution, population growth, measures of density, migration, settlement, and economic development. (Sp)

GEOG 3430 Political Geography (3)
Study of relationship between Earth, people, and the state. Global political phenomena studied from a geographic perspective. Explores impact of natural resources, territorial states and the nature of the state. Also taught as POLS 3430. (Sp)

GEOG 3610 Geography of Rural/Urban Planning (3)*
Analysis of the organization and interrelationships of urban-city and rural space. Emphasizes spatial planning of rural-urban environments to improve quality of life, internal structure of cities, and applied principles and practices of community planning. Field trips and applied class projects integrated into lectures and demonstrations. (Sp)

GEOG 3850 Map, Air Photo, and GIS Interpretation (4)
Introduces students to theoretical and practical nature of maps, basic mapping processes, issues of scale, basic photogrammetry, interpretation of remotely sensed imagery, geographic referencing strategies, and geographic information systems. Includes weekly laboratory sessions. (F)

GEOG 4200 CI Regional Geography (3) ℡
Analysis of physical and cultural geography for a variety of regions. Can be repeated for each different region as offered (e.g., Pacific Rim, Africa, Middle East, Europe, Asia, Latin America, and North America). (F,Sp,Su)

GEOG 4300 Geography Education Classroom Practicum (1-3) ©
(d6300)‡
Allows geography education students to participate in actual geography classroom teaching with experienced geography teachers. Students observe, work with individuals and groups of students, team-teach lesson(s) with the teacher, and self-teach individual lesson(s). (F,Sp,Su)

GEOG 4800 Teaching Geography (3)
(d6800)
Designed specifically for geography education/social studies education students preparing to teach grades K-12. Exploration of national and state standards and core curriculum, as well as state-of-the-art geography education technology and teaching resources. Students develop teaching lessons, and gain classroom teaching experience with local geography teachers. (Sp)

GEOG 4850 Cartographic Design (3)*
Techniques used in design and construction of maps, charts, and map projections. (Sp)

GEOG 5130 Geography Education Field Practicum (1-6)
(d6130)
Specifically designed for undergraduate students and graduate students (teachers) who need specific classroom teaching experience in order to improve their quality of teaching and/or to carry out special classroom curriculum research as part of their geography education degrees. (F,Sp,Su)

GEOG 5650 DSS Developing Societies (3)
(d6650)
Reviews how sociology, cultural geography, and economic anthropology analyze processes of globalization in postcolonial societies. Examines changing livelihoods, patterns of spatial incorporation and societal evolution, and emergent policy problems associated with rapid socioeconomic change. Also taught as ANTH 5650/6650 and SOC 5650/6650. (F)

GEOG 5810 Geography Education Inservice Workshop (3)
(d6810)
Assists classroom teachers in broadening their perspective of Geography Education through increased knowledge, improving their geographic techniques, methods, and teaching resources for their classrooms. (F,Sp,Su)

GEOG 5900 Graduate Special Topics (1-4) ©
(d6900)
Designed for geography students involved in field research and/or internships. Provides opportunity for students to gain practical applied experience in their specialized academic emphasis in geography. (F,Sp,Su)

GEOG 5970 Classroom Technology in Geography Education (3)
Design, development, and application of contemporary technologies and multimedia classroom teaching resources for preservice and inservice geography education teachers. (F,Sp)

GEOG 6130 Geography Education Field Practicum (1-6)
(d6130)
Specifically designed for undergraduate students and graduate students (teachers) who need specific classroom teaching experience in order to improve their quality of teaching and/or to carry out special classroom curriculum research as part of their geography education degrees. (F,Sp,Su)

GEOG 6200 Advanced Regional Geography (3) ©
Critical analysis of world’s regions, focusing on analysis and synthesis of a region’s economic, political, population, and cultural themes in the context of physical environment and global processes. Repeatable for different regions. (F,Sp,Su)

GEOG 6300 Geography Education Classroom Practicum (1-3) ©
(d6300)
Allows geography education students to participate in actual geography classroom teaching with experienced geography teachers. Students observe, work with individuals and groups of students, team-teach lesson(s) with the teacher, and self-teach individual lesson(s). (F,Sp,Su)

GEOG 6650 Developing Societies (3)
(d6500)
Reviews how sociology, cultural geography, and economic anthropology analyze processes of globalization in postcolonial societies. Examines changing livelihoods, patterns of spatial incorporation and societal evolution, and emergent policy problems associated with rapid socioeconomic change. Also taught as ANTH 6650/5650 and SOC 6650/5650. (F)

GEOG 6800 Teaching Geography (3)
(d4800)
Designed specifically for geography education/social studies education students preparing to teach grades K-12. Exploration of national and state standards and core curriculum, as well as state-of-the-art geography education technology and teaching resources. Students develop teaching lessons, and gain classroom teaching experience with local geography teachers. (Sp)

GEOG 6810 Geography Education Inservice Workshop (3)
(d5810)
Assists classroom teachers in broadening their perspective of Geography Education through increased knowledge, improving their geographic techniques, methods, and teaching resources for their classrooms. (F,Sp,Su)

GEOG 6900 Graduate Special Topics (1-4) ©
(d5900)
Designed for geography students involved in field research and/or internships. Pro-
vides opportunity for students to gain practical applied experience in their specialized academic emphasis in geography. (F,Sp,Su)

GEOL 1100 BPS Geology of National Parks: Introduction to Geology (3) ©
Plate tectonics and internal and external earth processes, using national parks for examples. Emphasizes mineral and rock identification, as well as recognition of basic geologic features. Two lectures per week and seven weeks of lab. (F,Su)

GEOL 1150 BPS The Dynamic Earth: Physical Geology (4)
Physical processes, both internal and external, shaping the Earth. Igneous, metamorphic, and sedimentary environments and products. Emphasizes geology as an applied science, relying on other basic sciences as tools for interpretation and understanding. Three lectures and one two-hour lab per week. (F,Sp)

GEOL 1200 BPS Introduction to Environmental Geoscience (3)
Explores the earth’s internal and external processes. Interprets the roles these processes play in human habitation of the planet. Evaluates the interplay occurring between humans and the earth, as in the distribution of resources and the development of civilization. (Sp)

GEOL 2250 Introductory Internship/Co-op (1-4) ®
Introductory educational work experience. (F,Sp,Su)

GEOL 2500 Geology Field Excursions (1) ®
Geologic features and processes observed in the field. Prerequisite: GEOL 1100 or 1150. (F,Sp)

GEOL 3100 DSC Natural Disasters (3)
Hazardous geologic processes affecting humans. Cause, prediction, avoidance, and frequency of natural disasters, including earthquakes, volcanic eruptions, tsunamis, landslides, floods, subsidence, meteorite impacts, and global changes. Topics discussed in the context of earth systems and cycles. Three lectures per week. Prerequisite: One Breadth Physical Sciences (BPS) course. (Sp)

GEOL 3200 DSC The Earth Through Time (4) ©
Investigates dynamic nature of Earth’s physical and biological processes, and how these processes have shaped Earth’s 4.5 billion-year history. Emphasis on interpretation of the story of the geologic record (rocks and landforms) and Earth’s sequential physical and biological changes. Three lectures and one two-hour lab per week. Prerequisite: GEOL 1100 or 1150. (Sp)

GEOL 3300 DSC Geology of the World’s Oceans (3)
Geologic evidence for the development of ocean basins and continental margins through plate tectonic processes. Also, the interaction of the geo- and biospheres and their effect on the evolution of the oceans and atmosphere. Discussion of shoreline and marine environments, the organisms inhabiting them, and the physical and chemical processes in operation therein. Three lectures per week. Prerequisite: One University Studies Breadth Physical Sciences (BPS) course. (Sp)

GEOL 3500 Mineralogy and Crystallography (4)
Introduction to crystallography, crystal chemistry, and descriptive mineralogy. Three lectures and one three-hour lab per week. Prerequisites: CHEM 1210 and GEOL 1150. (Sp)

GEOL 3520 Optical Mineralogy and Petrography (2)
Introduction to the theory of optical crystallography. Determination of minerals using the petrographic microscope. One lecture and one lab per week. Prerequisite: GEOL 3500. (F)

GEOL 3550 C1 Sedimentation and Stratigraphy (4)
Classification and analysis of sedimentary rocks and structures, with an emphasis on the interpretation of ancient sedimentary environments. Controls on sedimentary processes over time. Principles of stratigraphic correlation. Three lectures and one lab per week. Prerequisite: GEOL 3200. (F)

GEOL 3600 Geomorphology (4)
Geomorphic processes, origin of landforms and surficial deposits. Emphasizes fluvial and hillslope landscape elements, and surficial geologic mapping. Three one-hour lectures and one three-hour lab per week. Prerequisite: GEOL 1100 or 1150 or GEOG 1130. Also taught as AWER 3600. (F)

GEOL 3700 Structural Geology (4)
Examines the mechanisms, mechanics, and geometrics of deformed rocks. Basic principles of rock deformation, stress and strain, fault and fold classifications, and the mechanisms by which rocks deform. Lab presents applications and techniques important for accurately describing and representing deformed rocks in maps and cross-sections, and how to interpret and present data on rock structures. Three lectures and one three-hour lab per week. Prerequisites: GEOL 3550 and PHYSX 2210. (Sp)

GEOL 4250 Advanced Internship/Co-op (1-4) ®
Advanced educational work experience. (F,Sp,Su)

GEOL 4500 Igneous and Metamorphic Petrology (4) *
Origin, processes of formation, classification, and identification of igneous and metamorphic rocks. Study of igneous and metamorphic rocks in hand specimens and thin sections. Three lectures and one three-hour lab per week. Prerequisite: GEOL 3500; corequisite: GEOL 3520. (F)

GEOL 4700 C1 Geologic Field Methods (2) *
Collection, recording, and interpretation of geologic data requiring written reports, graphical formats, and oral presentations. Variety of field techniques used to examine variety of geologic deposits, features, and processes. Two extended labs per week. Half semester, early fall; may be paired with GEOL 5630. Prerequisite: GEOL 3700. (F)

GEOL 4900 Special Problems (1-4) ®
Directed study of selected topics. Written report required. Prerequisite: Permission of instructor. (F,Sp)

GEOL 5150 Fluvial Geomorphology (3)
(d6150) Focuses on physical processes in streams that control their shape, plan form, slope, bed material, and distribution of channel bars. Emphasizes field analysis of these topics, and application of geomorphology to aquatic ecology and environmental restoration. Prerequisite: GEOL/AWER 5170/6170. Also taught as AWER 5150/6150. (F)

GEOL 5170 Fluvial Geomorphology Lab (2)
(d6170) Field analysis focuses on physical processes in streams which control their shape, plan form, slope, bed material, and distribution of channel bars. Application of geomorphology to aquatic ecology and environmental restoration. Prerequisite: GEOL/AWER 5170/6170. (F)

GEOL 5200 Geology Field Camp (5) *
Integrative approach to examining geologic relationships in the field, deciphering geologic evolution of map regions, and interpreting the structure and distribution of rocks. Results presented in reports, maps, cross-sections, and graphical formats. Requires 40-45 hours of lab per week for 3.5-4.0 weeks. Prerequisites: GEOL 3500, 3550, 3600, 3700, 4700. (Su)

GEOL 5410 Introduction to Clay Mineralogy (2) *
Introduction to and application of techniques, such as x-ray diffraction, differential thermal analysis, and chemical analysis, to study of clay minerals. Examination of the effects of clay mineral structures on physical and chemical properties. Three lectures and one lab per week; half semester. Prerequisite: GEOL 3500. (Sp)

GEOL 5420 Metallic Mineral Deposits (4) *
Origin and occurrence of metallic mineral deposits, study of representative ore suites,
and field trips to active mines. Three lectures and one lab per week. Prerequisite: GEOL 4500. (Sp)

GEOL 5430 Paleontology (2)*
Survey of prominent microfossil and invertebrate taxa, including their diagnostic morphologic features, stratigraphic ranges, and environmental tolerances. Equips students with the necessary information and techniques to enable them to recognize and utilize fossils in stratigraphic and paleoenvironmental interpretation. Three lectures and one lab per week. Half semester; may be paired with GEOL 5440. Prerequisite: GEOL 3200. (F)

GEOL 5440 CI Paleocology (2)*
(d6440)
Interrelationships between various organisms and between organisms and their environment. Provides field, laboratory, and quantitative techniques for the interpretation of ancient environments and the analysis of past biotic interrelationships. Three lectures and one lab per week. Half semester; may be paired with GEOL 5430. Prerequisite: GEOL 5430. (F)

GEOL 5460 Advanced Physical Sedimentology (3)*
(d6460)
Detailed interpretation of sedimentary rocks, based on petrography and sedimentary characteristics. Source terranes, tectonic settings, depositional environments, and diagenetic changes during burial. Three lectures and two labs per week. Half semester; may be paired with GEOL 5470. Prerequisites: GEOL 3500 and 3550. (F)

GEOL 5470 Chemical Sedimentary Rocks (2)*
(d6470)
Application of field observations, hand-sample, thin-section, and x-ray diffraction analyses to the interpretation of chemical sedimentary rocks. Emphasizes determination of depositional environment and evaluation of diagenetic changes. Three lectures and one lab per week. Half semester; may be paired with GEOL 5460. Prerequisites: GEOL 3500 and 3550. (Sp)

GEOL 5480 Sedimentary Basin Analysis (3)
(d6480)
Detailed coverage of techniques of sedimentary basin analysis, including depositional systems, provenance, basin modeling, and fluid and heat flow history. Survey of types of sedimentary basins worldwide. Prerequisites: GEOL 3500 and 3550. (F)

GEOL 5500 Advanced Igneous Petrology (4)*
(d6500)
Advanced concepts in the origin and evolution of magmatic systems, effects of different tectono thermal regimes on magma genesis, magma dynamics, and phase equilibria in magmatic systems. Concepts illustrated by rock suites from classic locations. Three lectures and three laboratory hours each week. Prerequisite: GEOL 4500 or equivalent. (F)

GEOL 5510 QI Groundwater Geology (3)
Provides graduate students and senior undergraduates with understanding of fundamental principles of groundwater geology and hydrology, and helps prepare them for careers in hydrogeology or environmental geology. Three lectures per week. Prerequisites: GEOL 1150 and Math 1210 or permission of instructor; GEOL/AWER 3600 recommended. (F)

GEOL 5520 CI Techniques of Groundwater Investigations (3)
(d6520)
Survey of techniques used in groundwater investigations for collecting physical and chemical data. Includes well drilling and construction; water level, flow rate, and discharge measurements; hydraulic and tracer tests; and groundwater sampling. Prerequisite: GEOL 5510 or permission of instructor. (Sp)

GEOL 5530 QI Petroleum Geology and Exploration (4)*
(d6530)
Description and analysis of the petroleum system from source to trap. Covers techniques of petroleum exploration, including reflection seismic analysis and well-log interpretation. Prerequisites: GEOL 3550 and 3700; or permission of instructor. (Sp)

GEOL 5540 QI Quantitative Methods in Geology (3)*
(d6540)
Application of various quantitative methodologies to geologic problems. Two lectures and one lab per week. (F)

GEOL 5550 Geochemical Application of Electron Microprobe and X-Ray Fluorescence Analysis (4)*
Theory and application of X-ray fluorescence spectrometry and the electron microprobe to problems in geochemistry and materials analysis. Two hours lecture and six hours laboratory per week. Prerequisite: CHEM 1210 or equivalent, or permission of instructor. (Sp)

GEOL 5600 Geochemistry (3)
Application of thermodynamics, solution chemistry, phase diagrams, and both radioactive and stable isotopes to the understanding of earth processes. Three lectures per week. Prerequisite: GEOL 3500. (F)

GEOL 5610 Tectonic Evolution of North America (3)*
(d6610)
Survey of tectonic styles and processes along plate margins, using the tectonic evolution of western North America as the prime example. Two lectures and one lab per week. Prerequisite: GEOL 3700.

GEOL 5620 QI Global Geophysics (3)*
(d6620)
Application of physics to understanding geologic processes, the earth’s interior, and the theory of plate tectonics. Two lectures and one two-hour lab per week. Prerequisites: GEOL 3700 and PHYX 2220.

GEOL 5630 Photogeology (2)*
Interpretation of geologic features on aerial photographs. Three two-hour labs per week. Half semester; may be paired with GEOL 4700. Prerequisites: GEOL 3600, 3700.

GEOL 5650 Senior Thesis (1-4) ®
Prerequisite: Permission of instructor. (F,Sp)

GEOL 5680 Paleoclimatology (3)*
(d6680)
Covers climate through the past four billion years of geologic time. Explores driving forces behind climate changes. Examines data and methods used in paleoclimatic research. Includes discussion of literature and stresses local paleoclimate records. Three lectures per week, along with field trips. Prerequisite: GEOL/AWER 3600 or permission of instructor. Also taught as AWER 5680/6680. (Sp)

GEOL 5900 Topics for Teachers (1-4) ®
Special topics in geology for elementary and secondary science teachers to provide an understanding of the geology of Utah and the Western United States. Emphasis on field and lab activities. Prerequisite: Introductory geology course or permission of instructor.

GEOL 6150 Fluvial Geomorphology (3)
(d6510)
Focuses on physical processes in streams that control their shape, plan form, slope, bed material, and distribution of channel bars. Emphasizes field analysis of these topics, and application of geomorphology to aquatic ecology and environmental restoration. Prerequisite: GEOL/AWER 3600. Also taught as AWER 6150/5150. (F)

GEOL 6160 Hillslope and Landscape Geomorphology (3)*
Includes basics of hillslope weathering, transport, and hydrologic processes. Surveys classic and recent literature on hillslope-scale and landscape-scale geomorphic research. Three lectures and several Saturday field trips. Prerequisite: GEOL/AWER 3600. Also taught as AWER 6160. (Sp)

GEOL 6170 Fluvial Geomorphology Lab (2)
(d6517)
Field analysis focuses on physical processes in streams which control their shape, plan form, slope, bed material, and distribution of channel bars. Application of geomorphology to aquatic ecology and environmental restoration. Prerequisite: GEOL/AWER 3600. Also taught as AWER 6170/5170. (F)

GEOL 6240 Structural Analysis of Deformed Geological Materials (3)*
Explores how rocks, sediments, ice, and soils deform. By examining the geometry, kinematics, mechanics, and mechanisms of deformation, students learn how to interpret deformed materials in the field and laboratory.
GEOL 6250 Mechanics and Processes in Earth Sciences (3)*
Fundamentals of solid and fluid mechanics with applications to the earth sciences. Applications to rock deformation, fluid flow, glacier movement, and slope stability. Designed for graduate students in earth sciences and engineering. Two lectures, one lab per week. Prerequisites: GEOL 3700, MATH 1210; or permission of instructor. (F)

GEOL 6410 Introduction to Clay Mineralogy (2)*
Introduction to and application of techniques, such as x-ray diffraction, differential thermal analysis, and chemical analysis, to study of clay minerals. Examination of the effects of clay mineral structures on physical and chemical properties. Three lectures and one lab per week; half semester. Prerequisite: GEOL 3500. (Sp)

GEOL 6440 Paleocoeology (2)*
Interrelationships between various organisms and between organisms and their environment. Provides field, laboratory, and quantitative techniques for the interpretation of ancient environments and the analysis of past biotic interrelationships. Three lectures and one lab per week. Half semester; may be paired with GEOL 5430. Prerequisite: GEOL 5430. (F)

GEOL 6460 Advanced Physical Sedimentology (3)*
Detailed interpretation of sedimentary rocks, based on petrography and sedimentary characteristics. Source terranes, tectonic settings, depositional environments, and diagenetic changes during burial. Three lectures and two labs per week. Half semester; may be paired with GEOL 6470. Prerequisites: GEOL 3500 and 3550. (F)

GEOL 6470 Chemical Sedimentary Rocks (2)*
Application of field observations, hand-sample, thin-section, and x-ray diffraction analyses to the interpretation of chemical sedimentary rocks. Emphasizes determination of depositional environment and evaluation of diagenetic changes. Three lectures and one lab per week. Half semester; may be paired with GEOL 6460. Prerequisites: GEOL 3500 and 3550. (Sp)

GEOL 6480 Sedimentary Basin Analysis (3)
Detailed coverage of techniques of sedimentary basin analysis, including depositional systems, provenance, basin modeling, fluid and heat flow history. Survey of types of sedimentary basins worldwide. Prerequisites: GEOL 3500 and 3550. (F)

GEOL 6500 Advanced Igneous Petrology (4)*
Advanced concepts in the origin and evolution of magmatic systems, effects of different tectono thermal regimes on magma genesis, magma dynamics, and phase equilibria in magmatic systems. Concepts illustrated by rock suites from classic locations. Three lectures and three laboratory hours each week. Prerequisite: GEOL 4500 or equivalent. (F)

GEOL 6520 Techniques of Groundwater Investigations (3)
Survey of techniques used in groundwater investigations for collecting physical and chemical data. Includes well drilling and construction; water level, flow rate, and discharge measurements; hydraulic and tracer tests; and groundwater sampling. Prerequisite: GEOL 5510 or permission of instructor. (Sp)

GEOL 6540 Quantitative Methods in Geology (3)*
Application of various quantitative methodologies to geologic problems. Two lectures and one lab per week.

GEOL 6550 Geochemical Application of Electron Microscope and X-Ray Fluorescence Analysis (4)*
Theory and application of X-ray fluorescence spectrometry and the electron microscope to problems in geochemistry and materials analysis. Two hours lecture and six hours laboratory per week. Prerequisite: CHEM 1210 or equivalent, or permission of instructor. (Sp)

GEOL 6610 Tectonic Evolution of North America (3)*
Survey of tectonic styles and processes along plate margins, using the tectonic evolution of western North America as the prime example. Two lectures and one lab per week. Prerequisite: GEOL 3700.

GEOL 6620 Global Geophysics (3)*
Application of physics to understanding geologic processes, the earth’s interior, and the theory of plate tectonics. Two lectures and one two-hour lab per week. Prerequisites: GEOL 3700 and PHYX 2220.

GEOL 6680 Paleoclimatology (3)*
Covers climate through the past four billion years of geologic time. Explores driving forces behind climate changes. Examines data and methods used in paleoclimatic research. Includes discussion of literature and stresses local paleoclimate records. Three lectures per week, along with field trips. Prerequisite: GEOL/AWER 3600 or permission of instructor. Also taught as AWER 6680/5680. (Sp)

GEOL 6800 Seminar (1-4) ®

GEOL 6900 Graduate Internship/Co-op Experience (1-6)
Graduate educational work experience. Prerequisite: Approval of contract between student and department prior to enrollment. (F,Sp,Su)

GEOL 6970 Thesis (1-9) ®
(F,Sp,Su)

GEOL 6990 Continuing Graduate Advisement (1-3) ®
(F,Sp,Su)

*This course is taught alternating years. Check with department for information about when course will be taught.
Parenthetical numbers preceded by ® indicate a dual listing.
® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.
© This course is also offered by online correspondence and/or CD through Continuing Education Time Enhanced Learning.

German (GERM)
See Department of Languages, Philosophy, and Speech Communication, pages 244-248

Lower Division
GERM 1010 German First Year I (4)
Communicative competencies in the four language skills: speaking, listening, reading, and writing, with exposure to cultures and customs. Not open to those with more than one year high school German or equivalent. (F,Sp)

GERM 1020 German First Year II (4)
Communicative competencies in the four language skills: speaking, listening, reading, and writing, with exposure to cultures and customs. Prerequisite: GERM 1010 or at least one (but not more than two) years of German in high school or equivalent. (F,Sp)

GERM 1800 German I Study Abroad (1-4) ®
Intensive study in a German-speaking country, advancing proficiency in the four language skills and multicultural knowledge at the beginning level. No prerequisites. (Su)

GERM 2010 German Second Year I (4)
Further development of first-year competencies with emphasis on language structure, vocabulary expansion, reading, writing, and conversation in the context of cross-cultural analysis. Prerequisite: GERM 1020 or equivalent. (F,Sp)

GERM 2020 German Second Year II (4)
Further development of first-year competencies with emphasis on language structure,
vocabulary expansion, reading, writing, and conversation in the context of cross-cultural analysis. Prerequisite: GERM 2010 or equivalent. (F,Sp)

GERM 2550 German Civilization (3)*
Covers the most important developments in German-speaking countries from the High Middle Ages to the present. Deals with political, social, literary, historical, and artistic expressions of an emerging culture. Taught in English. (F)

GERM 2570 Contemporary Germany (3)**
Covers the most important elements of contemporary German culture in its literary, social, and artistic manifestations, and the political and historical dimensions of agents of change. Taught in English. (Sp)

GERM 2800 German II Study Abroad (1-4) ®
Intensive study in a German-speaking country, advancing proficiency in the four language skills and multicultural knowledge at the second-year level. (Su)

GERM 2880 Individual Readings (1-4) ®
Individual study of selected readings in German. Prerequisite: Instructor’s permission. (F,Sp)

Upper Division

Upper-division German courses (3000 level and above) are available only to students who have completed GERM 2020 or who can demonstrate equivalent proficiency through testing. All upper-division courses are taught in German, unless otherwise indicated.

GERM 3000 DHA Introduction to German Studies (3)
Introduction to the discipline of German Studies (history, literature, the arts, philosophy, science, economics, politics, etc.), addressing information resources, research methods, student career goals, and practice. Advances oral and written language proficiency. (F)

GERM 3040 CI Advanced German Grammar and Composition (3)
GERM 3050 CI Advanced German Grammar and Composition (3)
Thorough review of German grammar and style. Application of rules of writing to compositions. Oral presentations of contemporary topics with graded difficulty. (F) (Sp)

GERM 3300 DHA Contemporary German Speaking Cultures (3)
Multidisciplinary examination of current trends in contemporary cultures. Written, oral, visual, and electronic texts from the post-World War II period will be analyzed and placed in sociopolitical, economic, historical, and literary contexts. Emphasis on Germany as a multicultural society, and on related popular and minority cultural discourse. Interactive format. (Sp)

GERM 3510 CI Business German (3)*
Study of current German business and commercial practices, terminology, and business-related communications skills in a multi-disciplinary and global world context. Advances the four language skills. (Sp)

GERM 3540 CI Techniques in Translating German Texts (3)*
Approaches to translation. Specialized vocabulary, reference materials, and aids. Translation theory. Practical exercises. (F)

GERM 3550 DHA Cultural History of German Speaking Peoples (3)**
Overview and critical analysis of cultural, historical, and intellectual developments that have shaped the civilizations of German-speaking peoples from 800 A.D. until the end of World War II. Examination of written, oral, visual, and electronic texts integrated in the context of Western philosophy and humanist thought. Interactive format. (F)

GERM 3600 DHA Survey of German Literature I (3)**
Overview, with selected readings, of the major literary trends in German-speaking cultures from the medieval period to the early nineteenth century, including the study of genres, epochs, styles, and theories in the context of evolving cultures. (F)

GERM 3610 DHA Survey of German Literature II (3)**
Overview, with selected readings, of the major literary trends in German-speaking cultures from the early nineteenth century to the present, including the study of genres, epochs, styles, and theories in the context of evolving cultures. (Sp)

GERM 3800 German III Study Abroad (1-4) ®
Intensive study in a German-speaking country, advancing proficiency in the four language skills and multicultural knowledge at the third-year level. (Su)

GERM 3880 Individual Readings (1-4) ®
Individual study of selected readings in German. Prerequisite: Instructor’s permission. (F,Sp)

GERM 4200 Applied German Linguistics and Phonetics (3)**
Discussion of syntactical and morphological problems of German, principles of language learning, and analysis of phonological and phonetic patterns. (Sp)

GERM 4600 Faust’s Legacy (3)**
Examination of the legendary figure of Faust through historical and contemporary perspectives. Analysis of the Faust theme and character as presented in literature, films, stage productions, and musicals. Taught in English. (F)

GERM 4610 German Narratives (3)**
Readings from a wide range of narrative texts representing various historical periods. Focus on literary traditions within historical contexts. Examination of styles, motifs, and the theory of the novel. (Sp)

GERM 4650 Trends in Modern German Literature (3)*
Study of literary movements, topics, and styles of modern (twentieth century) German literature. Concentration on texts representing a variety of aesthetic expressions, central to experiences of twentieth-century life. (F)

GERM 4800 German IV Study Abroad (1-4) ®
Intensive study in a German-speaking country, advancing proficiency in the four language skills and multicultural knowledge at the fourth-year level. (Su)

GERM 4880 Individual Readings (1-4) ®
Readings in technical, scientific, and literary German. Prerequisite: Instructor’s permission. (F,Sp)

GERM 4900 Special Topics (3)* ®
Selected critical topics and themes relating to German literature, culture, film, pedagogy, linguistics, and associated theories. Includes readings in English and German. Content determined by student need and interest. (Sp)

GERM 4910 German for Special Purposes (3)**
Advances German communicative proficiency in the fields of business, science, and pedagogy. Promotes professional applications of German terminologies and procedures for science and commerce, as well as teaching methodology. Discipline-interactive projects advance the four language skills. (Sp)

GERM 4920 German Language Tutoring (1) ®
Allows students to develop tutoring skills by assisting professors in lower-division courses or fulfilling instructional duties for a comparable amount of time in the language laboratory, public schools, or similar activities with departmental approval. May be repeated to a maximum of 3 credits. (F,Sp,Su)

GERM 6200 German Linguistics and Phonetics (3)
Discussion of syntactical and morphological problems of German and principles of language learning. Phonological and phonetic patterns of the German language also discussed. (Sp)

* Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.
Greek (GRK)

See Department of History, pages 221-225

GRK 1010 Characterization of A Greek (5)
Basics of Greek grammar and vocabulary. Beginning readings. Prerequisite: At least one year of Latin. (F)

GRK 1020 Greek II
Intermediate concepts of Greek grammar and vocabulary. Intermediate readings. Prerequisite: GRK 1010. (Sp)

GRK 3300 Intermediate Greek Prose (3)
Readings in ancient Greek prose. Prerequisite: Minimum grade of C+ or higher in GRK 1020. (F)

GRK 3330 Intermediate Greek Poetry (3)
Readings in Greek poetry. Prerequisite: Minimum grade of C+ or higher in GRK 1020. (Sp)

GRK 4300 Advanced Greek Readings (3)®
Readings in Ancient Greek poetry and/or prose. Prerequisite: Minimum grades of C or higher in GRK 3300 and 3330. (F,Sp)

GRK 4930 Directed Readings in Greek Poetry and Prose Authors (1-3)
Directed readings in advanced Greek poetry and prose authors. Prerequisite: Successful completion of at least three semesters of Greek. (F,Sp, Su)

® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

Health Education Professional (HEP)

See Department of Health, Physical Education and Recreation, pages 217-220

HEP 2000 First Aid and Emergency Care (2)
Provides instruction and practical experience for the development of first aid knowledge, skills, and personal judgment. Focuses on recognizing emergencies, activating EMS, and providing direct care. (F,Sp)

HEP 2300 Cardiopulmonary Resuscitation (1)
Techniques and skills of adult, child, and infant airway management and cardiopulmonary resuscitation for the lay person (one rescuer). Taught according to current standards. (Arr)

HEP 2500 Health and Wellness (2)
Designed to enable students to enhance personal wellness by gaining understanding about the social, physical, spiritual, and emotional dimensions of health, and by applying different strategies for improving personal health behaviors. (F,Sp, Su)

HEP 3000 Drugs and Human Behavior (3)
Students evaluate the historical and modern use, misuse, and abuse of drugs in relation to current concepts of physical, social, and emotional wellness. Special emphasis on educational and community strategies for prevention of drug-related problems. (F, Su)

HEP 3100 School Health Programs (3)
Essentials of the existing paradigm of Comprehensive School Health Programs and their development in relation to current child health status. Assessment, planning, implementation, and evaluation. Prerequisite: Formal acceptance into the School Health Education Emphasis or School Health Minor or consent of instructor. (F)

HEP 3200 Consumer Health (3)
Focuses on helping students become discriminating consumers of health information, health products, and health services. (F, Su)

HEP 3300 Clinical Experience I (1)
Clinical experience in school health education. Prerequisite: Acceptance into School Health major or minor. (F, Sp)

HEP 3400 Stress Management (3)
Concepts and principles of personal stress management, with special emphasis on effective stress management coping strategies, maximizing positive stress outcomes, and minimizing negative stress effects, to aid in obtaining and maintaining a balanced health homeostatic condition. (F, Sp)

HEP 3500 Elementary School Health Education (2)
Explores child health status and the vital roles that the school/elementary teacher plays in enabling children to acquire healthful lifestyle behaviors while increasing their potential for academic success. (F, Sp)

HEP 3600 CI Introduction to Community Health (3)
Introduction to agencies, facilities, and programs playing a role in protection and promotion of health in the community. Special emphasis on competencies necessary for the health educator to function in a variety of community settings. Prerequisite: HEP 2500. (F)

HEP 3800 Grant Proposal Writing (3)
Teaches practical skills needed to plan and write proposals for federal, state, local, and private funding. Students develop proposals in area in which they have developed expertise, and coordinate with a local agency for funding. Prerequisites: HEP 2500, ENGL 2010, and passing score on Computer and Information Literacy Exam. (Sp)

HEP 3900 Social Marketing in Health Education (3)
Explores social marketing techniques in health education for enhancing healthy behavioral change. Examines aids in health programming, including their implementation and evaluation. Prerequisites: HEP 2500 and passing score on Computer Information Literacy Exam. (Sp)

HEP 4100 Foundations of Community Health (3)
Professional preparation course for health education majors. Primary emphasis on

Humanities, Arts and Social Sciences (HASS)

See College of Humanities, Arts and Social Sciences, pages 111-114

HASS 1250 Interdisciplinary Workshop (1-5)®
(F, Sp, Su)

HASS 2250 Introductory Internship/Co-op (1-5)®
Introductory-level educational work experience in an internship or cooperative education position approved by the department and/or the College of Humanities, Arts and Social Sciences. (F, Sp, Su)

HASS 4250 Advanced Internship/Co-op (1-15)®
Internship or cooperative education position approved of a more professional level, with increased complexity, approved by the department and/or the College of Humanities, Arts and Social Sciences. (F, Sp, Su)

HASS 4910 Study Abroad (1-20)
A semester study abroad experience through a student exchange program. Prerequisite: Approval from the Study Abroad Office. (F, Sp, Su)

HASS 6250 Graduate Internship/Co-op (1-15)®
Internship or cooperative education position approved by the department and/or the College of Humanities, Arts and Social Sciences. (F, Sp, Su)

HASS 6910 Study Abroad (1-12)
A semester study abroad experience through a student exchange program. Prerequisite: Approval from the Study Abroad Office. (F, Sp, Su)

® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.
ethics, behavioral and sociological theories used in the profession, philosophical issues, technology, and health education methodologies. Prerequisite: HEP 2500. (Sp)

HEP 4200 QI Planning and Evaluation for Health Education (3) Provides indepth study of planning, implementation, and evaluation of school and community health education programs. Students obtain hands-on experience planning a health education program. Prerequisites: HEP 3600; MATH 1030 or STAT 1040. (F)

HEP 4250 Advanced Cooperative Work Experience (1-15) ® Professional level cooperative education work experience as student advances toward completion of the program. Prerequisite: Consent of instructor. (F,Sp,Su)

HEP 4300 Clinical Experience II (1) Clinical experience in school health education. Prerequisite: Acceptance into School Health major or minor. (F,Sp)

HEP 4400 Creative Methods in Teaching Health Education (3) Planning, designing, and evaluating comprehensive school health education curricula and instruction for secondary school students, utilizing various creative instructional strategies and materials. Participation in peer teaching experiences. Prerequisite: Junior standing and acceptance into School Health Education. (F,Sp)

HEP 4500 Sexuality Education Within the Schools (3) Emphasizes broad understanding of human sexuality, with specific focus on adolescent sexuality/behavior, age and topic appropriate instruction, state law, and effective curriculum/strategies for human sexuality education within the secondary schools. Prerequisite: Formal acceptance into the School Health Education emphasis or School Health minor, or consent of instructor. (Sp)

HEP 4600 Field Work in Health Education (1-9) ® Supervised student participation in school or community health programs or directed projects. Prerequisites: HEP 3600, 4100, and consent of instructor. (F,Sp,Su)

HEP 4700H Honors Senior Thesis (1-6) Culminating experience within the department for honors students. Student works closely with faculty mentor in an extensive project in the student’s area of interest. (F,Sp,Su)

HEP 5000 CI Race, Class, and Gender Issues in Health (3) Focuses on how multicultural issues affect health status and health choices. Special emphasis on how race, ethnicity, socioeconomic status, and gender impact health status and access to health care. Prerequisite: Junior standing. (Arr)

HEP 5100 CI Cultural and Complementary Medicine (3) Provides in-depth view into health beliefs, traditions, and practices of various cultures and of the major minority groups in the U.S. Emphasizes ancient, eastern, and native health practices collectively known as complementary medicine and healing modalities. (Sp)

HEP 5200 International Health (3) Explores meaning of “health” through the lens of different cultures. Provides an international comparison of health status, including morbidity and mortality data. Evaluates different programs, policies, and strategies for addressing international health problems. Prerequisite: Junior standing. (Arr)

HEP 5500 CI Student Teaching Seminar (2) Weekly seminar dealing with the professional practice of school health education. Prerequisite: HEP 4400. (F,Sp)

HEP 5630 Student Teaching (10) Practical experience teaching health in the public school system. Prerequisite: HEP 4400. (F,Sp)

HEP 5700 Special Topics in Health (1-6) ® In-depth review and discussion of special topics in health. (F,Sp,Su)

HEP 5900 Independent Study (1-3) ® Prerequisite: Consent of instructor. (F,Sp,Su)

HEP 5950 Independent Research (1-3) ® Prerequisite: Consent of instructor. (F,Sp,Su)

HEP 6100 Current Trends in Health Promotion (3) Focuses on trends and issues in the promotion of health behaviors in a variety of settings. Analyzes and challenges prevailing assumptions and philosophies in relation to health promotion. (F)

HEP 6250 Graduate Cooperative Work Experience (1-15) Professional level of education work experience in a cooperative education position for graduate students. Prerequisite: Consent of instructor. (F,Sp,Su)

HEP 6300 Stress Management (3) Explores concepts and principles of personal stress management, with special emphasis on effective stress management coping strategies, maximizing positive stress outcomes, and minimizing negative stress effects, thus aiding in obtaining and maintaining a balanced, healthy homeostatic condition.

HEP 6600 Field Work in Health Education (3) ® Supervised student participation in school or community health projects or directed projects. Prerequisite: Consent of instructor. (F,Sp,Su)

HEP 6700 Special Topics in Health (1-6) In-depth review and discussion of special topics in health. (F,Sp,Su)

HEP 6800 Seminar in Health Behavior (3) Explores current theoretical perspectives in relation to behaviors. Students critically examine theories commonly used in health education. Focuses on practical application of theory in health promotion programs. (F)

HEP 6900 Independent Study (1-3) ® Prerequisite: Consent of instructor. (F,Sp,Su)

HEP 6950 Independent Research (1-3) ® Prerequisite: Consent of instructor. (F,Sp,Su)

HEP 6970 Thesis (F,Sp,Su) (1-9) ®

HEP 6990 Continuing Graduate Advisement (1-12) ®

1This class is not taught on a regular basis. See department for further information.
® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

History (HIST)
See Department of History, pages 221-225

HIST 1020 BHU Cultural and Economic Exchange in the Pre-Nineteenth Century World (3) © Surveys pre-Nineteenth Century cultural and economic interactions in important zones of exchange. Regional focus determined by instructor. Themes may include: trade, religious conversion, migration, slavery, warfare, and other types of cross-cultural exchange. (F,Sp)

HIST 1030 BHU The Modern World (3) © Survey of world history from the beginning of the nineteenth century to the present. (F,Sp,Su)

HIST 1040 BHU Foundations of Western Civilization: Ancient and Medieval (3) Survey of institutions and developments of early and medieval Western civilization from its Mediterranean origins to the beginning of the early modern period. (F,Sp,Su)
HIST 1050 BHU Foundations of Western Civilization: Modern (3)
Survey of the institutions and developments in Western civilization from 1500 to the present. (F,Sp,Su)

HIST 1060 BHU Introduction to Islamic Civilization (3)
Survey of Islamic civilization from the Prophet Muhammed to the present.

HIST 1600 American Cultures in Film (3)
Introduction to major ethnic groups in America and their treatment in recent feature films. Also taught as ENGL 1600. (F,Sp)

HIST 1700 BAI American Civilization (3) ©

HIST 1710 BHU Introduction to Folklore (3)
Introduction to major genres of folklore (folk narrative, custom, folk music and song, vernacular architecture and arts), folk groups (regional, ethnic, occupational, familial), and basic folklore research method (collecting and archiving). (F,Sp)

HIST 2010 Special Topics Seminar (3)
Study of special cross-cultural topics, including Imperial Paris, British India, Slavery in America, and Ute History.

HIST 2040 BHU British and Commonwealth Cultures (3)
Introduction to the diverse cultures of the British Isles and the Commonwealth of the present day. Particular emphasis on regional identity in relation to multiculturalism and internationalization. Also taught as ENGL 2040. (F)

HIST 2700 BAI United States to 1877 (3)
Survey of the development of American society, economy, culture, and politics to 1877. (F,Sp,Su)

HIST 2710 BHU United States 1877-Present (3)
Survey of the development of American society, economy, culture, and politics since 1877. (F,Sp,Su)

HIST 2720 Survey of American Folklore (3)
Principal ethnic, regional, and occupational folk groups in America. Relations between folklore and American history, literature, and society. Key genres in American folklore (narrative, art, song, etc.) and their role in American culture. Also taught as ENGL 2720 and ANTH 2720. (Sp)

HIST 3070 DHA Perspectives in Folklore (3)
In-depth study of folklore for nonmajors. Topics vary according to faculty expertise. Also taught as ENGL 3070. (F,Sp)

HIST 3110 DHA Ancient Near East (3)
Survey of history and civilization of ancient Mesopotamia, Egypt, and Israel, from prehistory to 500 B.C. Writing intensive. Prerequisite: ENGL 2010 or equivalent.

HIST 3130 DHA Greek History (3)
History of Greece from Neolithic period to modern times. Special emphasis on politics, art, literature, and civilization. Writing intensive. Prerequisite: ENGL 2010 or equivalent.

HIST 3150 DHA Roman History (3)
History of Rome from Neolithic era to “fall” of the Western Empire. Special emphasis on politics, art, literature, and civilization. Writing intensive. Prerequisite: ENGL 2010.

HIST 3200 DHA Medieval European Civilization, 500-1500 (3)
Provides students with overview of major themes in medieval European history from 500 to 1500 A.D. Also introduces major historiographical problems related to this period. Writing intensive and document based. Prerequisite: ENGL 2010 or equivalent.

HIST 3230 Early Modern Europe (3)
Explores major themes of early modern European history, such as secularization, the rise of the nation state, the Reformation, and the birth of capitalism. Introduces major historiographical issues of the period. Reading and writing intensive. Prerequisite: ENGL 2010 or equivalent.

HIST 3240 Modern Europe from 1789 to the Present (3)
Historical survey of Europe from the French Revolution to the present, with special emphasis on political and cultural implications of imperialism. Prerequisite: HIST 1050.

HIST 3250 Renaissance Europe 1300 to 1520 (3)
Emphasizing writing and primary sources, covers significant changes in Europe in government, society, and intellectual life caused by the Black Death, the humanist revolution in arts and literature, and the centralizing efforts of popes and monarchs.

HIST 3260 History of Spain and Portugal (3)
History of Iberian peninsula from fifteenth century to the present. Age of Exploration, conquest and colonization in the Americas and Africa, eighteenth century reforms, constitutional monarchies, civil wars, and twentieth century dictatorships. Writing intensive. Prerequisite: ENGL 2010 or equivalent.

HIST 3280 East Central Europe Since 1520 (3)
Examines history of East Central Europe, with special emphasis on growth of nationalism and establishment of the states of Czechoslovakia, Hungary, and Poland. Emphasizes research and writing.

HIST 3310 Balkans Since 1389 (3)
Examines history of Balkan peninsula, with special emphasis on growth of nationalism and establishment of Bulgaria, Albania, Greece, Romania, and Yugoslavia. Emphasizes research and writing.

HIST 3320 Tsarist Russia (3)
Political, economic, and cultural development of Russian people to 1917. Writing and computer intensive.

HIST 3330 The Soviet Union and its Heirs (3)
Beginning with the Russian Revolution, surveys political, cultural, and economic history of the Soviet Union and the regional states emerging in its wake. Writing and computer intensive.

HIST 3410 The Modern Middle East (3)
Examines history of the Middle East (Arabian peninsula, Fertile Crescent, Egypt, Iran, and Turkey), with special emphasis on social and political currents which have shaped the area’s history.

HIST 3460 Comparative Asian History (3)
Surveys history of Asian continent, analyzing common patterns in the cultures of West, South, Southeast, and East Asia.

HIST 3480 History of China (3)
Development of traditional Chinese culture and effect on that culture of the growth of Western influence. Writing and computer intensive.

HIST 3510 Africa and the World (3)
Explores foundation of Africa’s contemporary problems. Surveys Africa’s history of interactions with Asia and Europe. In addition to writing several short essays covering readings and films, students investigate an aspect of cultural, political, or economic interaction and prepare a short research paper.

HIST 3550 African Environmental History (3)
Surveys changing historical relationship between Africans and their physical environment. Readings cover ecological change in arid, savanna, rain forest, and montane environments. Students also survey and evaluate the methods and sources used by environmental historians to explain environmental stress, degradation, and rehabilitation.

HIST 3620 History of Colonial Latin America (3)
Surveys art, culture, religion, and social organization of the Aztecs, Incas, and Mayas, and of the European dominated post-conquest. Introduces students to major historiographical problems in the field. Prerequisite: ENGL 2010 or equivalent.
HIST 3630 History of Modern Latin America (3)
Introduces history and historiography of Latin America from the wars of independ-ence to the contemporary era. Writing intensive.

HIST 3700 CI Regional Folklore (3)*
Study of folklore and folk life as a regionalizing process, rather than memorization of cultural contexts of a particular region. Regions examined through their folk culture include Brittany in Northwest France, the pine Barrens of New Jersey, and the Mor-mon cultural region of the Intermountain West. Also taught as ENGL 3700. (F,Sp)

HIST 3710 CI Folklore Colloquium (3) ®
Issues, problems, and methodologies in folklore study. Focus and instructor variable. Also taught as ENGL 3710. (Sp)

HIST 3720 Colonial America (3)
Advanced survey of North American Colonies, emphasizing British experience, from their founding to 1763. Addresses major issues of interpreting America’s beginnings. (F)

HIST 3730 The New American Nation (3)
Advanced survey of American history from 1763 to 1800, with special emphasis on historiography of the Revolution, creation of a Republic, and efforts to define the New Nation. (Sp)

HIST 3740 United States in the Age of Jefferson and Jackson (3)
Examines history of United States from 1800 to 1846, from election of Jefferson to outbreak of war with Mexico. Prerequisite: ENGL 2010. (F)

HIST 3750 Civil War and Reconstruction (3) ©
Analysis of most trying period in U.S. history, with special emphasis on the course and results of the war. Prerequisite: ENGL 2010. (Sp)

HIST 3760 DHA The United States, 1900-1945 (3)
CI
Analyzes scholars’ approaches to U.S. history in the early twentieth century, with at-tention to socio-economic change, political reform, and transforming impact of American involvement in two world wars. Writing intensive. Prerequisite: ENGL 2010 or equivalent. (Sp)

HIST 3770 Contemporary America, 1945-Present (3) ©
CI
Domestic and foreign policy since World War II. Emphasizes Cold War, Civil Rights, and the political and social developments of contemporary United States. Contains intensive writing component. (F)

HIST 3840 Twentieth Century American West (3)
Considers emerging scholarly literature about the American West in the twentieth century, with attention to economic, environmental, and demographic questions. (Sp)

HIST 3850 DHA History of Utah (3) ©
CI
Prehistory to the present. Examines environment and peoples of Utah, emphasizing use of primary documents to view and interpret Utah’s past. Reading and writing in-tensive. Requires use of USU Special Collections and Archives. Prerequisite: ENGL 2010. (Sp)

HIST 3950 DHA Environmental History (3)
CI
Surveys writings from a relatively new genre of historical scholarship that attempts to explain the relationship between human society and the natural world. Readings focus on North America, but students also have opportunity to survey materials from the non-Western world. Course is reading and writing intensive, and requires stu-dents to conduct a research project in which they construct the history of a particular landscape.

HIST 410 Celtic Europe (3)
History of Celtic peoples in British Isles, Scandinavia, and continental Europe, from Neolithic times to the Norman Conquest in 1066. Computer intensive. (F,Sp)

HIST 4230 DHA The History of Christianity in the West (3)
Introduces students to history of Christian spirituality, asking how Christianity has been lived and how it has shaped lives over two thousand years. Uses original sources to introduce both the history and the historiographical problems surrounding the Christian religion. Writing intensive.

HIST 4250 The Reformation in Britain: 1450-1688 (3)
Focuses on major research questions in the field of early modern studies. Explores causes and consequences of English Reformation and British Civil War. Writing and research intensive.

HIST 4290 Europe and the French Revolution, 1700-1815 (3)
Examines causes and consequences of the French Revolution, introducing students to major themes in its interpretation.

HIST 4310 History of Nationalism (3)
Examines development of nationalism. Addresses different theories of nationalism, and then tests these theories with various case studies. Emphasizes research and writ-ing.

HIST 4320 DHA History of Scientific Thought (3)
Examination of key episodes in the history of science and associated ideas about the nature of scientific knowledge and how it may be acquired. Also taught as PHIL 4320. (Sp)

HIST 4330 Modern Germany with Special Emphasis on the Twentieth Century (3)
Historical survey of Germany beginning with Frederick the Great of Prussia, and consider-ing the parallel history of the Habsburg empire and the Germany of the Kleinstaaterei. Considers wars and economic and political developments beginning in 1871, which produced the Nazi period. Prerequisite: HIST 1050.

HIST 4390 British Imperialism from 1688 to the Present (3)
Topical survey of British Imperialism from 1688 to the present. Topics include the interaction of British imperialism with foreign policy; social, economic, and political institutions; the life of the mind and senses; and non-European cultures. Prerequisite: HIST 1050.

HIST 4550 DHA The History of Women and Family in America (3)
CI
Writing intensive course drawing on film, primary documents, and readings to trace the history of women, emphasizing race, class, and gender influences of each era.

HIST 4600 DHA The History of the American West (3)
CI
Traces major themes in nineteenth century history of the land between the Missis-sippi River and the Pacific Coast. In a writing intensive course, students use primary documents and secondary materials to discover the race, class, and gender issues that shaped the American West.

HIST 4610 QI Themes and Methods in Economic History (3)
Themes and methods in economic history, drawing on various societies and time periodes. Designed to prepare future historians to work in their field. Prerequisite: MATH 1030 or STAT 1040.

HIST 4620 CI Advanced Seminar in American Studies (3)
Builds upon foundation courses in American Studies and introduces students to the-ory and methods. Prepares students for the senior project. Required for American Studies majors and minors. Should be taken after completion of 12 credits in the ma-jor, but prior to completion of 21 credits. Enrollment limited to American Studies majors and minors only. Also taught as ENGL 4620. (Sp)

HIST 4640 CI Studies in the American West (3)
Interdisciplinary course in American Studies, exploring the region of the West through the analysis of literary texts, historical sources, and socio-cultural materials. Also taught as ENGL 4640. (F)

HIST 4690 CI American Studies Capstone Seminar (3)
Required for students majoring in American Studies. Enables students to synthesize American Studies theory and methods with interdisciplinary cognate courses. Sup-ports senior thesis design and writing, allowing topics to reflect individual programs of study. Prerequisite: ENGL/HIST 4620. Also taught as ENGL 4690. (Sp)
HIST 4700 Folk Material Culture (3)
Introduction to folklife studies, emphasizing patterns of expressive culture (material, verbal, and customary) in selected folk groups. In-depth examination of vernacular primary sources, including documentary and feature films. Also taught as ENGL 4700. (F,Sp)

HIST 4710 American Indian History (3)
Prehistory to the present. Emphasizes ethnohistory and the Western U.S., focusing on intercultural contacts, subsistence and environmental change, and contemporary political and economic issues, while analyzing primary documents and secondary readings. (F)

HIST 4730 CI History of Black America (3)
Study of African-American experience from slavery to freedom, as well as the difficult quest for democracy and equality in contemporary America. Includes both creative and research writing components. (Sp)

HIST 4740 American Immigration History (3)
Examines history of immigration to the United States from Europe, Africa, Latin America, and Asia. Requires library research, especially in government documents, and use of oral history techniques. (F)

HIST 4750 Advanced Folklore Workshop: Fife Conference (3) ®
Focuses on one theme or topic in folklore, and offers lectures from nationally prominent scholars in the area. Taught during one week, every day and all day. To receive grade, student must write critical paper. Also taught as ENGL 4750. (Su)

HIST 4790 American Religious History (3)**
Varieties of American religious experience from settlement to the present.

HIST 4810 American Military History (3)
Covers evolution of the military in American history and society from 1775 to the present.

HIST 4850 Interpreting the Past for Teachers (3)
Focuses on nonformal educational experiences open to secondary school students outside of the classroom. Interpretive modes examined include historical film, documentaries, living history programs, history fairs and festivals, and historical novels and magazines. (F,Sp)

HIST 4860 Teaching History (3)
Designed to introduce history teaching majors to ethical and methodological issues arising in history classroom. (F)

HIST 4870 Teaching World History: Themes, Approaches, and Materials (3)
For history teaching majors and minors only. Introduces students to a number of approaches to the study and teaching of world history. Students survey theoretical and pedagogical literature, then assemble a course package, which is presented to their peers. (Sp)

HIST 4880 History Workshop: Special Topics (1-3) ®
Focuses on a theme or topic in history. (F,Sp,Su)

HIST 4910 Special Studies in History (3) ®
Examination of special areas and themes in history. (F,Sp,Su)

HIST 4930 Directed Readings (1-3) ®
Directed readings in any special historical field. For each credit granted, minimum of three books must be read. Prerequisite: Instructor’s approval.

HIST 4940 Historical Internship (1-3) ®
Directed internship involving participation in a historical research or cultural management project. (F,Sp,Su)

HIST 4990 CI Special Topics in History (3) ®
Senior history seminar emphasizing historiographical literacy, research, and writing skills in relation to a specific historical topic. Prerequisites: Lower- and upper-division courses in areas relating to topic in question. (F,Sp,Su)

HIST 5700 Folk Narrative (3)
Forms and functions of folk narrative genres: myth, legend, folktale, memorial, and ballad. Also taught as ENGL 5700.

HIST 6000 Historical Methods and Research (3)
Introduction to the historical profession, emphasizing research and writing skills, as well as the critical assessment of scholarly works. Should be taken at beginning of student’s graduate program. Required for history master’s students. (F)

HIST 6010 History and Theory (3) ®
Examination of major works that have influenced the theory and practice of historical writing. History master’s students are required to complete HIST 6010, 6020, or another theory-enriched course.

HIST 6020 Approaches to History (3) ®
Uses readings in particular instructor’s field to underscore theories and methods different historians bring to their subject. History master’s students are required to complete HIST 6010, 6020, or another theory-enriched course.

HIST 6030 Research Seminar (3) ®
Research in primary sources for graduate students.

HIST 6100 Special Topics: Ancient History (3) ®
Intensive readings and group discussions of selected topics in ancient history.

HIST 6130 Special Topics: Early Modern European History (3) ®
Intensive readings and group discussions of selected topics in early modern European history.

HIST 6160 Special Topics: Modern European History (3) ®
Intensive readings and group discussions of selected topics in modern European history.

HIST 6200 Special Topics: Comparative World History (3) ®
Intensive readings and group discussions of selected topics in comparative world history.

HIST 6230 Special Topics: Middle Eastern History (3) ®
Intensive readings and group discussions of selected topics in middle eastern history.

HIST 6260 Special Topics: Asian History (3) ®
Intensive readings and group discussions of selected topics in Asian history.

HIST 6300 Special Topics: African History (3) ®
Intensive readings and group discussions of selected topics in African history.

HIST 6330 Special Topics: Latin American History (3) ®
Intensive readings and group discussions of selected topics in Latin American history.

HIST 6400 Special Topics: American History (3) ®
Intensive readings and group discussions of selected topics in American history.

HIST 6430 Special Topics: Western American History (3) ®
Intensive readings and group discussions of selected topics in Western American history.

HIST 6460 Seminar in Environmental History (3)
Focuses on historical writings seeking to explain relationship between human society and nature. Many of assigned readings are set in the non-Western world.

HIST 6500 Archiving Internship (2-4) ®
Directed internship at a regional archive. Internship should reflect eight to sixteen hours of work per week during the semester. (F,Sp,Su)

HIST 6520 Editing Internship (2) ®
Training in requirements of editorial work in scholarly journals and books. Emphasis placed on editing techniques and mechanics of editorial work. Can be repeated once for credit. (F,Sp,Su)
HIST 6540 Museum Internship (2-4) ®
Directed internship at a regional museum. Internship should reflect eight to sixteen hours of work per week during the semester. (F,Sp,Su)

HIST 6560 Professional Internship (2-4) ®
Directed internship involving participation in a historical research project for a government agency, corporation, municipality, or some other entity. (F,Sp,Su)

HIST 6580 Teaching Internship (2) ®
Involves working with the teacher of an upper-division undergraduate course. Intern prepares, explains, and grades one of the written assignments in the course, as well as completing work required of the undergraduates. Can be repeated once for credit. (F,Sp,Su)

HIST 6600 American Studies Theory and Method (3)
Provides students with theory and method of graduate-level research in American Studies. Also taught as ENGL 6600. (F)

HIST 6610 Seminar on the American West (3-4)
Readings and research on topics in the American West. Interdisciplinary focus suitable for graduate students in History and American Studies. Also taught as ENGL 6610. (F)

HIST 6620 Seminar in Native American Studies (3-4)
Readings and research on topics in Native American history and culture. Interdisciplinary focus suitable for graduate students in History and American Studies. Also taught as ENGL 6620. (F)

HIST 6630 Studies in Film and Popular Culture (3) ®
Offered annually on a rotating basis by professors in folklore and English (Cultural Studies, Literature, British and Commonwealth). Topics and theoretical approaches vary, but the primary focus is on feature films. Also taught as ENGL 6630. (F)

HIST 6700 Folklore Theory and Method (3)
Serves as orientation for new graduate students in folklore. Introduces students to comparative annotation, folklore indices, oral-formulaic theory, performance theory, contextual analysis, and other approaches. Also taught as ENGL 6700. (F)

HIST 6710 Regional Folklore (3)
Study of folklore and folklife as a regionalizing process. Regions examined through their folk culture range. Also taught as ENGL 6710. (Sp)

HIST 6720 Folklore Fieldwork (3)
Basic methodology class for folklorists and oral historians. Students learn interviewing techniques and other methods for observing and recording the performance of tradition and traditional history. Also taught as ENGL 6720. (F,Sp)

HIST 6730 Public Folklore (3)
Provides history and analysis of governmental involvement in protecting, promoting, and otherwise manipulating and utilizing cultural heritage. Also taught as ENGL 6730. (F,Sp)

HIST 6740 Folk Narrative (3)
Covers principal narrative genres in folk tradition (myth, tale, legend, ballad) and the basic theories for their analysis and discussion. Also taught as ENGL 6740. (Sp)

HIST 6750 Advanced Folklore Workshop (the Fife Conference) (3)
Intensive workshop focusing on a topic in folklore. Brings in nationally known experts as lecturers and discussants. Students attend all sessions, then write a critical paper during the summer semester. Also taught as ENGL 6750. (Su)

HIST 6760 Cultural and Historical Museums (3)
Examines outdoor cultural and historical museums, examining their function in modern multi-cultural societies. Also taught as ENGL 6760. (Sp)

HIST 6770 Seminar in Folklore and Folklife (3) ®
Conducts close, professional-level study of major areas of folklore and folklife research. Also taught as ENGL 6770. (F,Sp,Su)

HIST 6800 Paleography (3)
Skills course covering subjects such as technology of writing, interpretation of hands, and mastery of abbreviations. Useful to any student working with old manuscripts, it is essential for those writing theses in medieval or early modern European history.

HIST 6820 Writing Scholarly Reviews (3)
Prepares students for writing, editing, and publishing reviews in their chosen discipline. Taught by book review editors at Western American Literature and Western Historical Quarterly.

HIST 6840 Archives Management (3)
Study of management of archival collections. Emphasis on processing and conservation of manuscript and photographic materials. Case studies in identification, processing, and preservation.

HIST 6860 Historical Criticism: Practicum (1-3)
Preparation of critiques for student-presented projects entered into Utah History Fair state-wide competition. Operation of one-day workshop for History Fair finalists.

HIST 6880 Special Topics: Advanced History Workshop (1-3) ®
From teaching values of democracy in public school setting to writing publishable biographies, Department of History sponsors advanced credit workshops on a range of subjects.

HIST 6900 Directed Studies (1-3) ®
Directed readings in any special historical field. For each credit granted, a minimum of four books must be read. Instructor signature required. (F,Sp,Su)

HIST 6970 Thesis Research (1-6) ®
(F,Sp,Su)

HIST 6990 Continuing Graduate Advisement (1-3) ®
(F,Sp,Su)

Honors (HONR)

See Honors Program, page 226

HONR 1300H BAI U.S. Institutions (3)
Interdisciplinary course providing basic understanding of history, principles, form of government, and economic system of the United States. Open only to students enrolled in USU Honors Program. (F)

HONR 1320H BHU Civilization: Humanities (3)
Interdisciplinary course providing basic understanding of broad range of themes cutting across human history and continuing to be important in contemporary society. Covers both Western and non-Western civilization. Open only to students enrolled in USU Honors Program. (F,Sp)

HONR 1330H BCA Civilization: Creative Arts (3)
Interdisciplinary course exploring questions such as: “What is art, and how do you judge it?” and “How does artistic expression vary across cultures?” Covers several forms of art. Students attend concerts, visit galleries, and attend theatrical performances. Open only to students enrolled in USU Honors Program. (F,Sp)

HONR 1340H BSS Social Systems and Issues (3)
Interdisciplinary course that considers how a society of self-interested individuals can live together in peace and harmony. Topic explored from perspectives of different disciplines. Open only to students enrolled in USU Honors Program. (F)

HONR 1350H BLS Integrated Life Science (3)
Interdisciplinary course focusing on basic concepts of life science. Demonstrates role...
of modeling, prediction, and observation in the process of scientific discovery, which occurs within an historical and social context. (F)

HONR 1360H BPS Integrated Physical Science (3)
Interdisciplinary course focusing on basic concepts of physical science, including structure of matter and magnitude and character of the forces of nature. Demonstrates role of modeling, prediction, and observation in the process of scientific discovery, which occurs within an historical and social context. (F)

HONR 2000H Scholars Forum (1)
Includes orientation to the Honors Program and to undergraduate research. Taught online. (F)

HONR 2100H Honors Inquiry Seminar (1)
Introduces students to the nature of inquiry. Assists students in planning their undergraduate education to enable them to graduate with honors. Prerequisite: Admission to Honors Program. (Sp)

HONR 2200H Honors Enrichment (0.5) Repeatable
Provides opportunity for Honors students to enhance their academic experience by attending and reflecting on a series of colloquia, as well as cultural and arts events. During the semester, students attend activities chosen from a menu prepared by the Honors Program. Each event affords an opportunity to react in writing, as well as orally during the bimonthly seminars. Grading based on attendance, participation, and written work. Prerequisite: Admission to Honors Program. (F,Sp)

HONR 3010H DSC Special Topics: Life and Physical Sciences (3) Repeatable
Focuses on basic scientific concepts and methods of inquiry used by scientists. Considers science from a broad perspective, showing how various disciplines are related. Open only to students enrolled in USU Honors Program. (Sp)

HONR 3020H DHA Special Topics: Humanities/Creative Arts (3) Repeatable
Humanities section focuses on important historical and contemporary cultural themes, both Western and non-Western. Creative Arts section examines one or more art forms across cultures. Covers several forms of art. Students attend concerts, visit galleries, and attend theatrical performances. Open only to students enrolled in USU Honors Program. (F)

HONR 3030H DSS Special Topics: Social Sciences (3) Repeatable
Examines one or more social institutions and asks how we live within these structures from the perspectives of different disciplines. Open only to students enrolled in USU Honors Program. (Sp)

HONR 3900H Independent Study (1-3)
Independent research, library and/or laboratory work, or creative effort working in a one-to-one relationship with a faculty member. Limited to students actively pursuing an Honors degree. (F,Sp)

HONR 4000H Reading Seminar (1) Repeatable
Opportunity to read, discuss, and write about classic books. (F,Sp)

HONR 4700H Honors Fellows (0.5)
Junior or senior Honors students assist in leading Honors seminars and tutorials. (F,Sp)

HONR 4800H Thesis/Project Seminar (1)
Oral presentation and discussion of senior theses/projects. Guest presentations focus on essential contrasts and similarities in “ways of knowing” among various academic specialties. (F,Sp)

HONR 4900H Senior Thesis/Project (1-3) Repeatable
All Honors students are required to submit a senior thesis/project for graduation with an Honors degree. Thesis/project may be in any area of student’s choice, prepared in cooperation with an advisor drawn from the faculty at large. (F,Sp,Su)

Interior Design (ID)

See Interior Design Program, pages 234-235

ID 1700 Interior Design Professional Seminar (0.5) Repeatable
Weekly seminars to provide an orientation to the professional aspects of interior design. Exploration of related careers and professional societies. Invited participation by outside speakers. Repeatable for up to four credits. (F,Sp)

ID 1750 BCA Design in Everyday Living (3)
Investigation of the basic elements and principles of design related to everyday living experiences and the practical application of relevant theory. (F,Sp,Su)

ID 1790 BCA Interior Design Theory (3)
Explores basic philosophy of interior design. Analyzes design elements and principles when applied to interior spaces. Evaluation of contemporary design theories as factors influencing design trends. (Sp)

ID 2710 Architectural Graphics I (4)
Competency development in use of drafting tools, symbols, and techniques used in interior design presentation. Includes communication skills related to techniques and approaches to graphic presentations of interior design solutions: floor plans, elevations, sections, axonometrics, details, and dimensioning. (F)

ID 2720 Architectural Graphics II (4)
Introduction to three-dimensional drawing: isometric and perspective. Development of methods of rapid graphic communication techniques and approaches to complete professional presentations. Exploration of various types of media and presentation methods. Prerequisite: ID 2710. (Sp)

ID 2730 Interior Space Planning and Human Dimensions (4)
Focuses on physical, psychological, and human factors influencing design of interior space. Includes research, programming, analysis, and design of residential and nonresidential spaces. Prerequisite: ID 2710. (Sp)

ID 2750 Computer Aided Drafting and Design I (3)
Introduction to computer aided drafting and design for design students. Prerequisite: BIS 1400 or passing grade on Computer and Information Literacy exam. (F)

ID 2760 Computer Aided Drafting and Design II (3)
Advanced exploration and study of computer aided design, creative applications, and proficiencies. Prerequisite: ID 2750. (Sp)

ID 3730 Interior Materials and Construction (3)
Identification of current interior materials; their characteristics, use, and care. Experience in specification estimation, workroom procedures, and development of a working resource file. Prerequisite: ID 2730. (F)

ID 3740 DHA History of Interior Furnishings and Architecture I (3)
Identification of historical architectural styles and elements in interior furnishings and materials, dating from ancients, middle ages, Italian renaissance, the Hispanic periods, and the French periods. (F)

ID 3750 DHA History of Interior Furnishings and Architecture II (3)
Identification of historical architectural styles and elements in interior furnishings and materials, including the English period and the American period, Victorian through the present. (Sp)

ID 3760 Commercial Design Studio (4)
Studio projects of various complexity and type, having commercial focus. May include hospitality, retail, medical, office, and other commercial and institutional design opportunities. Prerequisite: ID 2730. (F)

ID 3770 Residential Design Studio (4)
Studio projects of various complexity and type, having residential focus. Analysis of various approaches to problem solving. Graphic and verbal presentation, emphasizing high-end design evaluation. Prerequisite: ID 3760. (Sp)

ID 3780 Design Detailing (3)
Detailing of interior components. Preparation of detail drawings for use by the trades
for interior components. Student develops construction documents and prepares scale model for senior exhibit. (Sp)

**ID 3790 Architectural Systems** (3)
Study of architectural systems in contemporary buildings. Investigation of construction drawings and their interpretation. Includes related codes and professional terminology. (F)

**ID 4700 Topics in Interior Design** (3) ©
Current topics associated with interior design. Prerequisites: Approval of instructor and junior class standing. (F,Sp,Su)

**ID 4710 Interior Design Advanced Internship I** (1-12) ©
Placement experience in applying skills and knowledge in businesses and community agencies. One credit for each 50 hours of experience. Prerequisites: Approval of instructor and junior class standing. (F,Sp,Su)

**ID 4720 Interior Design Advanced Internship II** (1-12) ©
Placement experience in applying skills and knowledge in businesses and community agencies. One credit for each 50 hours of experience. Prerequisite: ID 4710. (F,Sp,Su)

**ID 4740 CI Business and Professional Practices in Interior Design** (2)
Overview of business practices and principles for interior design, including: salesmanship, marketing, client and trade relationships, establishing an interior design practice, and fee structure. (Sp)

**ID 4750 Senior Design Studio I** (3)
Interior design projects focusing on research, programming, schematics, space planning, project specifications, and presentation. Prerequisites: Senior ranking in Interior Design and ID 3780. (F)

**ID 4760 Senior Design Studio II** (3)
Interior design projects include finish selections, specifications, construction document development, and project presentation. Prerequisite: ID 4750. (Sp)

**ID 4770 Senior Exhibit** (1)
Analysis and review of student work in preparation for formal exhibition. (Sp)

**ID 4900 Independent Study in Interior Design** (1-5) ©
Focused independent activities. Students must identify a project or topic of interest and discuss with proposed instructor. Prerequisite: Junior class standing and approval of faculty. (F,Sp,Su)

**ID 4910 Creative Projects** (1-4) ©
Creative project or practicum conducted under direction of faculty member. Topic may be initiated by student or faculty. Prerequisites: Junior class standing and approval of faculty. (F,Sp,Su)

**ID 6700 Graduate Topics in Interior Design** (1-3) ©
(F,Sp,Su)

**ID 6710 Graduate Internship in Interior Design** (1-3) ©
(F,Sp,Su)

**ID 6720 Research Methods in Interior Design** (2)
(F)

**ID 6750 Readings in Interior Design** (1-3) ©
Readings about the creative process, post-occupancy evaluation, culture and environment, and design forecasting. Repeatable for up to 3 credits. (F,Sp)

**ID 6760 Computer Applications of Modeling in Interior Design** (3)
Application of software to produce a model of interior spaces, using contemporary modeling software. Prerequisite: ID 2760. (Sp)

**ID 6770 Facilities Planning and Management** (3)
Facilities management process in large-scale organizations. Formation of facilities policies, procedures, and standards. The facilities data base, space allocations, and management process. (Sp)

### Intensive English Language Institute (IELI)

See Intensive English Language Institute, page 232

**IELI 1120 Writing I** (4)
Develops writing skills. Focuses on description, narration, and canonical word order at sentence and paragraph levels. (F,Sp)

**IELI 1160 Reading I** (4)
Builds reading skills. Students read texts individually and collaboratively. Focuses on active reading (e.g., making use of background knowledge, predicting, and critically assessing reading passages). (F,Sp)

**IELI 1220 Writing from Sources** (4)
Focuses on sentence and paragraph writing. Students gather information from various sources, transform and organize it, and present it in both verbal and written form. (F,Sp,Su)

**IELI 1230 Cross-Cultural Talk** (3) ©
Multilevel course designed to improve oral communication through small group work and one-on-one conversation with American undergraduate teaching fellows. Emphasizes interactive language fluency. Repeatable for credit for students who place at the basic level on the IELI placement exam. (F,Sp,Su)

**IELI 1240 Integrated Skills** (3) ©
Multilevel speaking and listening course designed to develop basic to intermediate language skills through content-based instruction. Repeatable for credit for students who place at the basic level on the IELI placement exam. (F,Sp,Su)

**IELI 1260 Reading II** (4)
Builds low intermediate to intermediate level reading skills. Students distinguish main ideas from supporting ideas. Extensive vocabulary work. Focuses on active reading, summarizing, and vocabulary attack skills. (F,Sp,Su)

**IELI 2310 Comprehending Academic Discourse** (3)
Introduction to listening strategies and note-taking, focusing on organization and information. Develops strategies for listening to authentic passages, such as news and documentaries. (F,Sp,Su)

**IELI 2320 Writing Authentic Texts** (4)
Assists students in developing more sophisticated writing skills, from more complex sentences to coherent paragraphs and various kinds of compositions. Students learn to use the library and the Internet to find resources for their writings. (F,Sp,Su)

**IELI 2330 Spoken Discourse and Cultural Communication** (3)
Emphasizes interpersonal communication and academic tasks with American undergraduate teaching fellows. Focuses on the dynamics of assuming various roles in small group discussions and presentations. (F,Sp,Su)

**IELI 2360 Reading Authentic Texts** (4)
Introduces strategies for reading several genres typical of university assignments, including excerpts from textbooks in several disciplines and popular magazine articles having academic value. Brief overview of scholarly journals. Introduction to strategies and exercises for vocabulary development. (F,Sp,Su)
IELI 2410 Comprehending Lecture Discourse (3)
Develops techniques for understanding the planned and spontaneous academic discourse of university classrooms. Focuses on information processing. (F,Sp,Su)

IELI 2420 Writing from Academic Sources (4)
Introduction to various academic writing demands. Students gather information from various sources, including interviews, surveys, and academic texts (textbooks, journals, etc.); analyze and summarize the information; and write documented essays and reports. (F,Sp,Su)

IELI 2440 Academic Discourse (3)
Designed to assist students in developing oral competency, with emphasis on comprehensibility in individual and group academic presentations. (F,Sp,Su)

IELI 2450 Topics for ESL (4) ⊗
Introduction to contemporary topics in culture and language. Focuses on language development through content-based instruction. Repeatable for up to 12 credits. (F,Sp,Su)

IELI 2460 Reading from Academic Sources (4)
Focuses on processes and strategies for a variety of academic and disciplinary genres; strategies for learning from lengthy and complex texts; and vocabulary, speed, and comprehension development. (F,Sp,Su)

IELI 2470 Cross-Cultural Perspectives of American Culture (4)
Provides understanding of what culture is and how it influences behavior and beliefs. Provides cross-cultural perspective on American value system and American institutions. (F,Sp,Su)

IELI 7920 College Teaching Seminar (1-3) ⊗
Workshop designed for international students who will hold teaching assistantships at the University. To be accepted into the workshop, students must take a qualifying language test. (F,Sp,Su)

IELI 5000 Information Access (3)
Introduction to finding information and resources using print and electronic sources. Emphasizes reference services, knowledge of basic reference/information sources, and resource sharing; and teaching information retrieval strategies within a school library media program. Taught off campus through Utah Education Network. (Su or Arr)

IELI 5010 Information Organization and Management (3)
Explores functions of information technology including circulation, cataloging, automation tools, and technical services within school library media program. Also considers policies and techniques for facilitating access to information in a school library media center. Taught off campus through Utah Education Network. (F)

IELI 5020 Collection Development (3)
Focuses on building and maintaining collections for library media programs. Discusses policy development for selection, protecting intellectual freedom, and review, evaluating, and maintaining materials in all formats. Evaluation of school library collections also investigated. Taught off campus through Utah Education Network. (Sp)

IELI 5030 Information Access (3)
Introduction to information and resources using print and electronic sources. Emphasizes reference services, knowledge of basic reference/information sources, and resource sharing; and teaching information retrieval strategies within a school library media program. Taught off campus through Utah Education Network. (Su or Arr)

IELI 5040 Library Media Center Administration (3)
Includes study of organization, personnel, budgets, programs, and management of a library media center. Students define their role within a school setting and in relation to that of the principal and teachers. Prerequisite: INST 5000/6060 or approval of instructor. Taught off campus through Utah Education Network. (Su or Arr)

IELI 5050 Library Media Programs (3)
Presents a wide variety of activities which are integral to a school library media program, including reading guidance, instructional development, curriculum development, media skill instruction, and information literacy. Prerequisite: INST 5040/6040 or approval of instructor. Taught off campus through Utah Education Network. (Su or Arr)

IELI 5100 Management and Maintenance of Information Technologies (1)
Introductory course in basic operation of technology tools used in school setting. Includes operation of video equipment, video cameras, Internet sites, CD-ROM, satellite receiving equipment, computer scanners, computer networks, and computer presentation systems. Taught off campus through Utah Education Network. (Arr)

IELI 5190 Library Media Practicum (1-6) ⊗
Observation and guided field experience in a library media center under professional library media specialists and instructional technology professionals. Bridge of theory into practice for students seeking certification. This course is required for those having limited or no school library media experience, as evaluated by their faculty advisor. Prerequisites: INST 5040/6040, 5050/6050; or approval of instructor. (F,Sp,Su)

IELI 5200 Principles and Practices of Technology for Secondary Teachers (2)
Integrated experience for pre-service secondary teachers to apply instructional design principles in their instruction. Hands-on experience using a wide variety of technological tools in practical learning environments. Application of technology as both process and product. Prerequisite: Admittance to teacher education. (F,Sp,Su)

INST 5210 Digital Audio-Video Production (3)*
Fundamental theories and practice in camera and computer-based audio and video production, including recording, editing, and digitizing audio and video segments for education and training applications. (F,Sp)

INST 5220 Computer-Based Instruction Authoring Using Toolbook (3)*
Fundamentals of programming computer-based instruction using the Toolbook authoring system. Prerequisite: Basic computer competencies. (F,Sp)

INST 5230 Instructional Graphic Production (3)*
Fundamental practices of using the computer to design and produce a wide variety of instructional graphics and animations. (F,Sp)
INST 5240 Producing Distance Education Resources (3)**
Focuses on production of Internet-based instructional resources for use in distance, flexible, and open learning. (Sp,Su)

INST 5250 Computer-Based Instruction Authoring Using Authorware (3)**
Fundamentals of programming computer-based instruction utilizing the Authorware authoring system. Prerequisite: Basic computer competencies. (Sp,Su)

INST 5260 Learning and Applying HTML (3)
Asynchronous on-line course, teaching web publishing using HTML (Hyper-Text Markup Language). Explores current web technologies and includes design and evaluation. (F,Sp,Su)

INST 5270 Multimedia Special Topic Studio 1 (3) ®
Selected special topics related to the development of multimedia products for instruction and training. (F,Sp,Su)

INST 5280 Multimedia Special Topic Studio 2 (3) ®
Selected special topics related to the development of multimedia products for instruction and training. (F,Sp,Su)

INST 5300 Multimedia Production for Instruction and Training (3)
Students use knowledge acquired in prerequisite courses to design, produce, and master a multimedia instructional product. Prerequisites: INST 5210, 5220, 5230, 5240. (Sp)

INST 5400 Computer Applications for Instruction and Training (3)
Introduction to use of computer applications, with special emphasis on software used in instruction and training. (F,Sp,Su)

INST 5520 Learning and Teaching at a Distance (3)
Focuses on issues and methods of teaching and learning in distance education. Students develop strategies for effectively integrating technologies and facilitating learning at a distance. (Sp)

INST 5550 Practicum in Distance Learning (3)
Students demonstrate effective practice by applying instructional development principles for designing, implementing, and evaluating instruction for distant learners. Prerequisite: INST 5520. (Su)

INST 5560 Designing Instruction for Students At-Risk (1-4) ®
Participants use information technologies for ongoing problem solving during and after the course. Competencies emphasized include the design, implementation, and evaluation of specific instructional practices appropriate for all students, and particularly for students at risk of academic failure. (F,Sp,Su)

INST 5750 Instructional Technology Workshop (1-4) ®
Special training and experience in latest concepts and innovations in instructional technology. Content changes to reflect most recent topics and problems facing the profession. (Su)

INST 5900 Independent Study (1-4) ®
Individually directed study and projects. Prerequisite: Departmental permission. (F,Sp,Su)

INST 6000 Foundations of Instructional Technology (3)
Considers the present, past, and future of instructional technology, while helping individual students to develop personal understanding of and orientation to the field. Prerequisite: Matriculation into Instructional Technology master’s program. (F)

INST 6010 Technology and its Role in the Transformation of Education (1-3)
Explores the critical role of educational technology as one tool in the transformation of education. Involves students in change-related projects in the local environment. Taught off-campus through EDNET. (F)

INST 6020 Collection Development (3)
(d5020)
Focuses on building and maintaining collections for library media programs. Discusses policy development for selection, protecting intellectual freedom, and review, evaluating, and maintaining materials in all formats. Evaluation of school library collections also investigated. Taught off campus through Utah Education Network. (Sp)

INST 6030 Information Access (3)
(d5030)
Introduction to finding information and resources using print and electronic sources. Emphasizes reference services, knowledge of basic reference/information sources, and resource sharing; and teaching information retrieval strategies within a school library media program. Taught off campus through Utah Education Network. (Sp)

INST 6040 Library Media Center Administration (3)
(d5040)
Includes study of organization, personnel, budgets, programs, and management of a library media center. Students define their role within a school setting and in relation to that of the principal and teachers. Prerequisite: INST 6060/5060 or approval of instructor. Taught off campus through Utah Education Network. (Su or Arr)

INST 6050 Library Media Programs (3)
(d5050)
Presents a wide variety of activities which are integral to a school library media program, including reading guidance, instructional development, curriculum development, media skill instruction, and information literacy. Prerequisite: INST 6040/5040 or approval of instructor. Taught off campus through Utah Education Network. (Su or Arr)

INST 6060 Foundations of Library Media Programs (3)
(d5060)
Introduction to historical and philosophical foundations of library media programs for teachers, administrators, and media specialists. Examines role of library media programs in schools and their contributions to the curriculum. Taught off campus through Utah Education Network. (F)

INST 6100 Management and Maintenance of Information Technologies (1)
(d5100)
Introductory course in basic operation of technology tools used in school setting. Includes operation of video equipment, video cameras, Internet sites, CD-ROM, satellite receiving equipment, computer scanners, computer networks, and computer presentation systems. Taught off campus through Utah Education Network. (Arr)

INST 6110 Information Organization and Management (3)
(d5110)
Explores functions of information technology including circulation, cataloging, automation tools, and technical services within school library media program. Also considers policies and techniques for facilitating access to information in a school library media center. Taught off campus through Utah Education Network. (F)

INST 6150 Communication, Instruction, and the Learning Process (3)
Examination of learning theory and communication theory, and their implications for instruction. Taught off-campus through EDNET. (Sp)

INST 6190 Library Media Practicum (1-6) ®
(d5190)
Observation and guided field experience in a library media center under professional library media specialists and instructional technology professionals. Bridge of theory into practice for students seeking certification. This course is required for those having limited or no school library media experience, as evaluated by their faculty advisor. Prerequisites: INST 6040/5040, 6050/5050; or approval of instructor. (F,Sp,Su)

INST 6210 Digital Video Disc Design and Production (3)**
Fundamental theories and practice in the design and development of Digital Video Disc (DVD) based instructional resources. (F,Su)

INST 6240 Instructional Analysis (2)
Introduces front-end analysis state of instructional design and development. Examines processes for conducting instructional needs assessment, audience analysis, learning environment analysis, and instructional task analysis. Prerequisite: Matriculation into Instructional Technology master’s program. (F)

INST 6250 Instructional Design (2)
Examines theory and practice of designing instruction. Emphasizes practical applica-
ations of design principles and techniques for creating instructional materials. Prerequisite: Matriculation into Instructional Technology master’s program. (F)

INST 6260 Learning Theory (3)
Detailed study of communication and learning theories as applied to the instructional design process. Examines principles and research upon which instructional design and instructional technology are based. Prerequisite: Matriculation into Instructional Technology master’s program. (F)

INST 6270 Implementation and Management of Instruction (2)
Focuses on techniques and methods for putting well-designed instruction and training into use in both traditional and nontraditional settings. Prerequisite: Matriculation into Instructional Technology master’s program. (Sp)

INST 6280 Instructional Evaluation (2)
Examines theories and implementation of both formative and summative evaluation of instruction. Includes expert and learner feedback, rapid prototyping, and cost analysis. Prerequisite: Matriculation into Instructional Technology master’s program. (Sp)

INST 6300 Professional Development Seminar (1)
Geared toward assisting master’s students in completing their degrees. Provides continuity from the first semester and encourages continued professional development in the discipline. (F,Sp,Su)

INST 6350 Instructional Design Process (3)
Examines key techniques in design of instruction. Applies principles to specific design problems. Introduces techniques for developing instructional products according to completed designs. Taught off-campus through EDNET. (F)

INST 6360 Computers in Education for In-service Teachers (3)
Introduction to microcomputer applications in education for in-service teachers. Includes hands-on experiences with range of software tools for design, production, and administration. Taught off-campus through EDNET. (Sp)

INST 6370 Design and Development of Computer-Based Instruction (3)
Overview of computer-based design issues, including interface/screen design, instructional strategy and interaction, and computer program logic. Includes hands-on experience with authoring systems. Taught off-campus through EDNET. (F)

INST 6380 Distance Learning—K-12 (3)
Designed for classroom teachers. Discusses technologies and applications of distance education to elementary and secondary school settings. Focuses on instructional strategies for effective teaching and learning at a distance. Taught off-campus through EDNET. (Sp)

INST 6390 Planning and Implementation for Technology (3)
Principles and practice of implementing innovations into real-world settings and evaluating their effectiveness. Taught off-campus through EDNET. (Sp)

INST 6400 Resources for Technology (3)
Acquisition and management of resources for technological innovation: proposal writing, financing of technological change, management of technology resources, and conduct of resource-related projects. Taught off-campus through EDNET. (Sp)

INST 6450 Instructional Development (2)
Application of theory, principles, and practice of instructional technology to the design of instructional products. Prerequisite: Matriculation into Instructional Technology master’s program. (F)

INST 6460 Distance Education (3)
Application of theory, principles, and practice, providing instruction to learners separated from the instructor by distance and/or time. Addresses characteristics, technologies, and current issues of distance education. (Sp)

INST 6470 Performance Systems (3)
Application of theory, principles, and practice of organizational systems and human competence in designing performance support systems, job aids, and just-in-time instruction. (F)

INST 6480 Instructional Simulations (3)
Application of theory, principles, and practice of instructional technology in designing model-centered experiential instruction. (F)

INST 6490 Instructional Technology in Adult Education (3)
Application of theory, principles, and practice of instructional technology in providing instruction to adult learners. (Sp)

INST 6500 Instructional Development Tools (3)
Detailed study of processes, tools, and techniques for guiding and aiding the instructional design process. Emphasizes tools for project management, analysis, and design. (Sp)

INST 6510 Research and Evaluation in Instructional Technology (3)
Detailed study of methodologies for needs assessment, product evaluation, validation, and research. Includes methodological models, data collection, and data interpretation for both formative and summative evaluation. Prerequisite: Permission of instructor. (F)

INST 6750 Instructional Technology Workshop (1-4) ®
Special training and experience in the latest concepts and innovations in instructional technology. Content changes reflecting the most recent topics and problems facing the profession. (Su)

INST 6770 Practicum in the Improvement of Instruction (1-4) ®
A field-based program focused upon characteristics of effective teaching methodologies, teaching performance, curriculum decision making, value guidelines, and the characteristics of the learner. Taught on demand.

INST 6780 Instructional Technology Programs (1-3) ®
Designed primarily as an in-service experience for teachers, trainers, administrators, and instructional technology personnel to improve local programs and services. Taught on demand.

INST 6790 Instructional Technology in Education and Training (1-3) ®
Offered on request to instructional designers, teachers, administrators, and media personnel who have special needs related to instructional technology and seek assistance in improving their local programs.

INST 6800 Projects in Instructional Technology (6)
Guided experience in the development of instructional products. Includes several small, complete projects including analysis, design, development, implementation, and evaluation. Integrates teamwork, project management, and public presentation skills. Prerequisite: INST 6250 and matriculation into Instructional Technology master’s program. (F)

INST 6810 Research Seminar (1) ®
Provides opportunity for exchange of ideas by Instructional Technology master’s students pursuing a Plan A option. Includes discussion of publications and products. (F,Sp,Su)

INST 6820 Instructional Technology Design and Development Studio 1 (6) ®
Provides students with opportunity to work in teams with clients and leaders in the field on cutting-edge design and development projects. Students should plan to spend at least 20 hours per week working on the assigned project. Prerequisite: INST 6800. (Sp)

INST 6870 Current Issues Seminar (1-3) ®
Allows exploration of new cutting-edge topics in the field. Topics vary and are announced the semester prior to registration. Topics may be theory or practice based. (Arr)

INST 6900 Independent Study (1-6) ®
Individually directed study and projects. Prerequisite: Departmental permission. (F,Sp,Su)

INST 6910 Independent Research (1-6) ®
Individually directed research. Prerequisite: Departmental permission. (F,Sp,Su)
INST 6940 Internship (1-6) ®
An on-site experience in which the student applies knowledge and skills in a work environment. Used as culminating experience for the MS, Plan C. (F,Sp,Su)

INST 6960 Creative Project (1-6) ®
Individual experience in instructional product development. May be used as the culminating experience for the MEd and MS Plan C. (F,Sp,Su)

INST 6970 Thesis (1-6) ®
Individual work in MS thesis and Plan B report writing with guidance and criticism. (F,Sp,Su)

INST 6990 Continuing Graduate Advisement (1-8) ®
Allows students access to faculty and facilities to complete graduate thesis, project, and papers. (F,Sp,Su)

INST 7000 Pro-seminar I in Instructional Technology (3)
Lectures and discussions on advanced topics in instructional technology and related disciplines. Required for Instructional Technology EdS and PhD students. (F)

INST 7010 Pro-seminar II in Instructional Technology (3)
Continuation of INST 7000. Lectures and discussions on advanced topics in instructional technology and related disciplines. Required for Instructional Technology EdS and PhD students. Prerequisite: INST 7000. (Sp)

INST 7150 Advanced Seminar in Instructional Technology (3) ®
In-depth study of various topics including learning theory, instructional design, instructional theory, instructional development tools, production techniques, and instructional applications in different cultures. Specific topics for each semester will be announced. (F,Sp,Su)

INST 7200 Quantitative and Design Research in Instructional Technology (3)*
Examines current trends, applications, methods, and research questions that are appropriate to the use of quantitative and design research within the field of instructional technology. (F)

INST 7300 Qualitative and Interpretive Research in Instructional Technology (3)
Examines current trends, applications, methods, and research questions that are appropriate to the use of qualitative and interpretive research within the field of instructional technology. (Sp)

INST 7450 Internship in Program Evaluation (1-4) ®
Experience in practical aspects of program evaluation through planned, supervised evaluation project. Participation must be approved by student’s supervisory committee. (F,Sp,Su)

INST 7460 Internship in Research (1-4) ®
Experience in conducting research through planned, supervised evaluation project. Participation must be approved by student’s supervisory committee. (F,Sp,Su)

INST 7820 Practicum in Instructional Technology (2) ®
Preparation of project funding proposal for submission to a funding agency. Prerequisite: Permission of instructor. Enrollment limited to Instructional Technology EdS and PhD students only. (F,Sp,Su)

INST 7870 Current Issues Seminar (1-3) ®
Allows exploration of new cutting edge topics in the field. Topics vary and are announced the semester prior to registration. Topics may be theory or practice based. (Arr)

INST 7900 Independent Study (1-6) ®
Individually directed study and projects. Prerequisite: Departmental permission. (F,Sp,Su)

INST 7910 Independent Research (1-6) ®
Provides for individually directed research. Prerequisite: Departmental permission. (F,Sp,Su)

INST 7920 College Teaching Seminar (1-3) ®
Develops skills and knowledge necessary for college teaching. Activities are designed to help participants in a variety of areas, including instructional development and presentation skills development. (Arr)

INST 7960 Practicum, Educational Specialist (1-9) ®
Culminating project/externship in partial fulfillment of the Educational Specialist degree. (F,Sp,Su)

INST 7970 Dissertation (1-18) ®
Individual work on research problems in the PhD program. (F,Sp,Su)

INST 7990 Continuing Graduate Advisement (1-9) ®
Allows graduate students access to faculty and facilities to complete graduate dissertation. (F,Sp,Su)

**Taught 2005-2006.
1Parenthetical numbers preceded by d indicate a dual listing.
® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

Italian (ITAL)

See Department of Languages, Philosophy, and Speech Communication, pages 244-248

ITAL 1010 Italian First Year I (4)
Communicative competencies in the four language skills: speaking, listening, reading, and writing, with exposure to cultures and customs. Native speaker instructor. Self-study with tutorial assistance. (F)

ITAL 1020 Italian First Year II (4)
Communicative competencies in the four language skills: speaking, listening, reading, and writing, with exposure to cultures and customs. Native speaker instructor. Self-study with tutorial assistance. Prerequisite: ITAL 1010 or equivalent. (Sp)

ITAL 1010 Italian Second Year I (4)
Second-year overview of speaking, listening, reading, and writing, with exposure to cultures and customs. Native speaker instructor. Self-study with tutorial assistance. Prerequisite: ITAL 1020 or equivalent. (F)

ITAL 1020 Italian Second Year II (4)
Second-year overview of speaking, listening, reading, and writing, with exposure to cultures and customs. Native speaker instructor. Self-study with tutorial assistance. Prerequisite: ITAL 2010 or equivalent. (Sp)

Interdisciplinary Studies (ITDS)

See Interdisciplinary Studies Major, page 233

ITDS 4900 Senior Thesis/Project (3)
Students majoring in Interdisciplinary Studies are required to complete a 3-credit thesis or project as part of the major. The thesis or project must be either a research paper or a creative activity appropriate to the theme of the Interdisciplinary Studies major. Each student works with his or her faculty advisor to determine an appropriate topic of study or a project. The student and advisor outline the protocol and parameters of the thesis or project. Prerequisite: Instructor’s permission. (F,Sp,Su)
Industrial Technology and Education (ITE)

ITE 1000 Orientation to Technology Education (1)
Introduction to the technology education teaching profession, including programs, facilities, goals, and opportunities. (F)

ITE 1010 Communications Technology (3)
Introduction to tools, materials, equipment, and processes used to transmit and receive messages. Major emphasis on hardware, software, communications, and the digital age. (F)

ITE 1020 Control Technology (3)
Exploration of the concepts and processes relating to the control and automation (both hard and programmable) of technical systems in the areas of energy and power, transportation, and agricultural and related biotechnologies. (Sp)

ITE 1030 Material Processing Systems (3)
Introduction to properties of industrial materials (metallic, polymeric, ceramic, and composite), processes used to produce standard stock and finished products, and the use of precision measuring instruments in manufacturing. (F,Sp)

ITE 1040 Construction and Estimating (3)
Overview of construction industry and its practices. Reviews four major parts of construction industry, including: (1) Inputs: materials; (2) Process: design and building of structures; (3) Outputs: sites, buildings, etc.; and (4) Feedback: effects of building systems. Provides prospective technology education teachers with opportunity to study and perform activities related to the field of construction and estimating. At completion of course, students should be able to demonstrate knowledge and skills required to implement a construction technology program. (Sp)

ITE 1100 The Aviation Profession (1)
Covers attributes of aviation professional, career planning, and certification process. (F,Sp)

ITE 1130 Flight Principles (2)
Basic flight theory and physics of flight. Aircraft control systems related to flight. Ground handling and servicing of aircraft. Special lab fee. (F)

ITE 1140 Aircraft Components and Principles (2)
Materials and hardware, as well as nondestructive inspection applicable to aircraft. Plumbing methods, maintenance publications, and aircraft weight and balance control. (F)

ITE 1170 Aircraft Structures (3)
Accepted methods and repair for metal structures. Organic finishes and application techniques with laboratory applications and practical experience. (F)

ITE 1200 Computer-Aided Drafting and Design (3)
Provides students with ability to accurately produce basic engineering, 2-D, and pictorial drawings using traditional and computer-aided drafting techniques. Introduction to drafting fundamentals and equipment associated with the drafting industry, including drawings, reproductions, and computer-aided techniques. (F,Sp,Su)

ITE 1240 Aircraft Maintenance (3)
Maintenance, repair, alteration, and inspection of aircraft. Assembly and rigging of control systems with laboratory application of maintenance assembly and rigging procedures. Prerequisites: ITE 1130, 1140. (Sp)

ITE 1640 Introduction to Welding (3)
Theory of Oxy-Acetylene Welding, Shielded-Metal Arc Welding, and Gas Metal Arc Welding. (F)

ITE 2030 Manufacturing Enterprise (3)
Focuses on the instructional strategy of establishing a manufacturing enterprise utilizing woodworking equipment and techniques. Topics include management; finance and marketing strategies; and the design of product, tooling, and production systems. Prerequisite: ITE 1030. (F)

ITE 2100 Aircraft Reciprocating Powerplants and Accessories (3)
Theory of operation, maintenance, and repair of reciprocating engines, propellers, exhaust systems, ignition systems, and fuel systems with laboratory applications of principles and components studied. Prerequisite: ITE 2110 (must be taken concurrently). (F)

ITE 2110 Aircraft Reciprocating Powerplants and Accessories Lab (3)
Laboratory application of principles studied in ITE 2100. Prerequisite: ITE 2100 (must be taken concurrently). (F)

ITE 2140 Aircraft Turbine Powerplants and Maintenance Operations (3)
Theory of turbine powerplants, including turbine engine and components operation, hot section inspection, and servicing. Aircraft engine 100-hour inspections and maintenance, with laboratory applications of principles and components studied. Prerequisite: ITE 2150 (must be taken concurrently). (Sp)

ITE 2150 Aircraft Turbine Powerplant Maintenance Operations Lab (3)
Theory of turbine powerplants, including turbine engine and components operation, hot section inspection, and servicing. Aircraft engine 100-hour inspections and maintenance, with laboratory applications of principles and components studied. Prerequisite: ITE 2140 (must be taken concurrently). (Sp)

ITE 2170 Aircraft Systems (2)
Theory and operation of aerospace environmental systems, communication, navigation and guidance systems, fuel and propellant systems, fire detection, and warning. (Sp)

ITE 2180 Aircraft Hydraulic and Pneumatic Systems (2)
Theory and operation of aircraft hydraulic, landing gear, and brake systems. (F)

ITE 2190 Aircraft Systems Lab (1)
Laboratory application of principles and components studied in ITE 2170. Prerequisite: ITE 2170 (must be taken concurrently). (Sp)

ITE 2200 Aircraft Hydraulics and Pneumatics Systems Lab (1)
Laboratory application of principles and components studied in ITE 2180. Prerequisite: ITE 2180 (must be taken concurrently). (F)

ITE 2240 Analog Devices and Circuits (3)
Study of differential amplifiers; operational amplifiers; regulators; and generator instrumentation amplifier, multiplier, and active filters. Prerequisites: ITE 2310; ITE 2400 (must be taken concurrently). (F)

ITE 2250 Internship (1-4)
Planned supervised work experience in industry. Must have departmental approval. (F,Sp,Su)

ITE 2270 Computer Engineering Drafting (2)
Provides students with ability to accurately produce computer-aided drafting software. Since there are no drafting prerequisites for this course, drafting fundamentals are also introduced. (F,Sp,Su)

ITE 2300 Q1 Electronic Fundamentals (4)
Study and application of DC and AC concepts, semiconductors, digital electronics, and microcomputers. Prerequisite: MATH 1050. (F,Su)

ITE 2310 AC/DC Circuits (2)
Study of AC/DC principles beyond those taught in ITE 2300. Includes network theorems, capacitance, inductance, impedance, reactance, resonance, and transformers. Prerequisite: ITE 2300. (Sp)

ITE 2320 Electronic Drafting (2)
Study of electronic drafting practices. Students exposed to various areas of electronic drafting and fabrication. Prerequisite: ITE 2300. (F)
ITE 2330 Private Pilot Ground School (4)
Instructions in principles of flight, aircraft and engine operation, weather, navigation, radio aids to navigation, radio communications, and federal air regulations. Prerequisite for FAA Private Pilot written exam. (F,Sp,Su)

ITE 2350 Private Pilot Certification (1)
FAA approved flight training program meeting all requirements for, and in the issuance of, the Private Pilot License. Prerequisite: ITE 2330 (may be taken concurrently). (F,Sp,Su)

ITE 2360 Digital Circuits (3)
Logic circuits, combinational and repeated circuits, counters, shifts registers, state tables, PLD’s, and digital computer simulations. Prerequisite: ITE 2300 or equivalent. (Sp)

ITE 2370 Computer and Microprocessor Programming (3)
Introduction to microprocessors and computers. Study of machine language programming, assemblies and cross assemblies, emulators, and input and output devices. Prerequisite: ITE 2300. (Sp)

ITE 2400 Active Devices and Circuits (3)
Study of diodes; transistor principles, including semiconductor theory, bipolar, and field effect device characteristics; and modern thyristor devices. Prerequisite: ITE 2310. (F)

ITE 2420 FAA Regulations, Records, and Certification (2)
Maintenance forms, records, and regulations releasing aircraft to airworthiness status. Certification of maintenance technicians is also included. (Sp)

ITE 2430 Aircraft Electrical Systems and Components (2)
Aircraft electrical power generating systems. Theory of generation, alternators, regulators, and control systems with laboratory application of principles and systems studied. Prerequisite: ITE 2300. (Sp)

ITE 2440 Aircraft Electrical Systems Laboratory (2)
Laboratory application of principles and systems studied in ITE 2430. Prerequisites: ITE 2300; ITE 2430 (must be taken concurrently). (Sp)

ITE 2510 Intermediate Flight (1)
FAA approved flight training program that fulfills the cross country requirements for commercial and instrument ratings. Prerequisite: ITE 2350. (F,Sp,Su)

ITE 2520 Instrument Pilot Ground School (4)
Ground school approved by FAA under Part 141 of the Federal Aviation Regulations. Designed to prepare students to pass the FAA oral and written examinations required for becoming instrument rated pilots. Prerequisite: ITE 2350. (F,Sp,Su)

ITE 2540 Instrument Pilot Certification I (1)
FAA approved flight training program meeting all the requirements for, and the issuance of, the Instrument Pilot Airplane Rating. Prerequisites: ITE 2550, ITE 2520 (may be taken concurrently). (F,Sp,Su)

ITE 2550 Instrument Pilot Certification II (1)
Continuation of ITE 2540. Prerequisite: ITE 2540. (F,Sp,Su)

ITE 2620 Commercial Pilot Ground School (2)
Commercial flight operations including performance, cross country planning, advanced systems operations, complex airplanes, and flight maneuvers. Prerequisites: ITE 2350 and 2520. (F,Sp)

ITE 2660 Commercial Pilot Certification (1)
Flight instruction to meet FAA requirements and completion of tests for certification. Prerequisites: ITE 2540; ITE 2620 (may be taken concurrently). (F,Sp,Su)

ITE 2670 GMA, FCA, and GTA Welding (3)
Theory and skills course covering Gas Metal Arc Welding, Flux Core Arc Welding, and Gas Tungsten Arc Welding. Enrollment limited to Welding Engineering Technology majors or by permission. Prerequisite: ITE 1640. (Sp)

ITE 2720 CFI and CFII Ground School (3)
Designed to prepare students to pass the FAA oral and written examinations required for becoming certified flight and instrument instructors. Combines Certified Flight Instructor and Certified Flight Instructor-Instrument into one course. Prerequisite: ITE 2660. (F,Sp)

ITE 2740 CFI Certification (1)
FAA-approved flight training program meeting all requirements for the issuance of the Certified Flight Instructor Airplane Rating. Prerequisite: ITE 2720 (may be taken concurrently). (F,Sp,Su)

ITE 2850 Statics and Strength of Materials (3)
Engineering technology course coveringresultants and equilibrium of force systems; moments of inertia; method of work; stress, strain, and deflection due to tension, compression, and torsion; and Mohr’s circle for stress and strain. Prerequisites: MATH 1050, 1060. (F)

ITE 2860 CFII Certification (1)
FAA approved flight training program meeting all the requirements for, and issuance of, the Certified Flight Instructor, Airplane Instrument Rating. Prerequisites: ITE 2720 and 2740 (may be taken concurrently). (F,Sp,Su)

ITE 2880 Multi-Engine Certification (1)
FAA approved flight training program meeting all the requirements for, and issuance of, the Multi-Engine Airplane Rating and the Certified Flight Instructor Multi-Engine Airplane Rating. Prerequisite: ITE 2660. (F,Sp,Su)

ITE 3010 National Airspace, Air Traffic Control, and Airport Administration
Study of air traffic control system, airspace usage, and facilities. Airport planning, development, and management and their importance to the achievement of a successful airport operation. Management of publicly owned and operated airports, ranging in size from general aviation to the large air carrier hubs. (F)

ITE 3030 Computer-Integrated Manufacturing Systems (3)
Introduction to principles, operations, and applications of computer-controlled manufacturing systems, including: CNC, CAD/CAM, robotics, programmable logic controllers, bar code readers, etc. Prerequisite: ITE 1030. (Sp)

ITE 3040 Engineering Systems (3)
Prepares students to teach engineering at the secondary level. Includes basic overview of math concepts needed to successfully teach engineering, problem solving, teamwork, design, technical communication, and engineering fundamentals. Through use of open-ended problem solving methodologies, students receive hands-on experience while teaching concepts of statics, dynamics, thermodynamics, electrical circuits, and engineering economics. (F,Sp)

ITE 3050 Computer Systems and Networking (3)
Introduction to modern graphic and electronic communication systems. Emphasizes design, development, production, and dissemination of both electronic and graphic messages. Covers major concepts, including desktop publishing, and audio and video production techniques. (Sp)

ITE 3060 Codes, Weld Inspection, and Quality Assurance (3)
Study of ASME and AWS codes as relating to procedure qualification and welder qualification for fabrication of pressure vessels and structures, and how codes relate to quality assurance and ISO 9000. Prerequisite: ITE 2670. (F)

ITE 3070 Technology Education for Elementary Schools (3)
Introduction to technology education and to science, technology, and society (STS) curricula for elementary schools, emphasizing teaching, developing, and managing technology-based activities. (F)

ITE 3090 Welding Power Sources (2)
Study of power sources used to generate and control voltage and amperage for welding. Prerequisites: ITE 2300, 2310, 2670. (Sp)

ITE 3120 Aviation Law (3)
Law as it affects aviation industry. Rights and responsibilities of individual organizations and the aviation community. Regulation and liability pertaining to design, manufacturing, operation, and maintenance of aircraft. Prerequisite: ITE 1100. (F)
ITE 3140 Advanced Avionics Systems and Flight Simulation (3)
In-depth study of state-of-the-art aircraft instrumentation systems and advanced flight training utilizing a flight simulator. Prerequisite: ITE 2540. (F,Sp,Su)

ITE 3200 Methods in Industrial Education I (3)
Classroom laboratory practicum for design, practice, and performance of industrial education demonstrations and lab activities. Prerequisites: ITE 1000; ITE 3300 (must be taken concurrently). (F)

ITE 3220 Architecture and Construction Systems (3)
Basics of architectural computer-aided drafting. Includes introduction to principles of construction. Explores residential and commercial systems, emphasizing construction codes. Prerequisites: ITE 1200, MATH 1010. (F)

ITE 3230 Machine and Production Drafting (3)
Teaches students to accurately produce both design drawings and working drawings. Explores techniques, symbols, and conventions used to represent gears, cams, jigs, and fixtures. Also includes advanced techniques of production drawing, emphasizing Geometric Dimensioning and Tolerancing. Prerequisites: ITE 1200, MATH 1050, or equivalent. (F)

ITE 3240 Technical Illustration (3)
In-depth study of technical illustration. Includes preparation of pictorial drawings with rendering added. Explores industrial and architectural environments. Introduces rendering and animation software, emphasizing three-dimensional modeling. Prerequisite: ITE 1200. (Sp)

ITE 3270 Advanced Computer-Aided Drafting (3)
Designed to enhance CADD productivity, encourage customization, and introduce students to advanced CADD techniques, including programming and introduction to parametric design. Prerequisite: ITE 1200. (Sp)

ITE 3280 Advanced Turbine Engines (2)
Advanced study of turbojet propulsion. Comparative examination of jet, fan, turbo-prop, and turbo-shaft engines. Prerequisite: ITE 2150. (F)

ITE 3300 Clinical Experience I (1)
Field-based experiences in secondary schools. Students complete 30 hours of tutoring students and assist teachers with managerial, clerical, and other professional tasks. Prerequisites: ITE 1000; ITE 3200 (must be taken concurrently). (F)

ITE 3380 Microprocessor and Computer Interfacing (3)
Microcomputer interface applications, including digital system interface, serial and parallel interfacing, and D/A and A/D converters. Prerequisites: ITE 2240, 2370. (Sp)

ITE 3390 Microcontrollers (3)
Study of microcontrollers and applications. Includes programming and building circuits. Prerequisites: ITE 3300. (F)

ITE 3400 Communication Circuits (3)
Introduction to radio frequency communication circuits. Includes oscillators, modulators, transmitters, receivers, transmission lines, antennas, RF propagation, digital signal processing, GPS, and spread spectrum. Prerequisites: ITE 2300 and 2400. (Sp)

ITE 3410 FCC License (1)
Prepares students to obtain the FCC General Radio Telephone Operator’s License. Covers electronic fundamentals through microwave radar and FCC rules and regulations. Prerequisite: ITE 3400. (Sp)

ITE 3440 DSC Science, Technology, and Modern Society (3)
Designed to challenge students from all academic majors to develop an understanding of the dynamic interaction between science, technology, and society. Explores responsibility of humans for directing the utilization of technology as a creative enterprise. (F,Sp)

ITE 3510 Introduction to Networking (3)
Study of hardware and software required to build, install, maintain, and support a local area network. Emphasizes laboratory applications. Prerequisite: BIS 5400 (may be taken concurrently). (F)

ITE 3610 AeroTechnology Design I (1)
Students select and plan a senior project. Requires written proposal, including technical description of the project and management plans. (Sp)

ITE 3630 Fusion Joining and Brazing Processes (3)
Study of SAW, ESW, GMAW-EG, RW, PAW, PAC, Electron Beam, Laser, Friction, Brazing, and other welding processes. Prerequisites: Professional status and ITE 2670. (F)

ITE 3670 Design for Welding (3)
Design of weldments and welded connections. Prerequisite: ITE 2850. (Sp)

ITE 3710 Electronics/Computer Design I (1)
Students select and plan a senior project. Requires written proposal, including technical description of the project and management plans. Prerequisite: ITE 2320 (may be taken concurrently). (F)

ITE 3740 Facility and Equipment Maintenance (3)
Systems approach to facility, equipment, and tool maintenance, including principles of woodworking, machine construction, adjustment, and sharpening.

ITE 3810 Welding Design I (1)
Students select and plan a senior project. Requires written proposal, including technical description of the project and management plans. (Sp)

ITE 3820 Nondestructive Testing (3)
Fundamental concepts relating to liquid penetrant, magnetic particle, ultrasonic, radiography, and other NDT processes. Prerequisites: MATH 1100 and PHYX 1800. (Sp)

ITE 3900 Principles and Objectives of Industrial Education (3)
Comprehensive study of philosophy and purposes of industrial education programs and their place in the total program of modern education.

ITE 3930 Evaluation of Industrial Subjects (2)
Factors for evaluation of attitudes, skills, work habits, technical information, and instrument construction.

ITE 4200 Composite Manufacturing Processes and Repair (3)
Composite manufacturing processes, composite materials survey, tooling design and fabrication, autoclave processes, vacuum bag techniques, filament winding processes, equipment requirements, materials cutting and storage, and composite materials testing. (Sp)

ITE 4250 Internship (1-6) (d6200)
Planned supervised work experience in industry. Prerequisite: Departmental approval. (F,Sp,Su)

ITE 4280 Airline Operations (3)
Study of airline operations and their organizational structure. Examines functions of airline dispatcher, operations specialists, managers, and cockpit flight crew. Discussion of advanced flight planning, aircraft performance and loading considerations, and impact of weather on flight operations and routing priorities. Prerequisite:ITE 1100. (F)

ITE 4300 Clinical Experience II (1)
Field-based experience, in which students complete 30 hours of teaching-related experiences in the classroom. Prerequisites: ITE 3200, 3300; ITE 4400 (must be taken concurrently). (Sp)

ITE 4310 Corrosion and Corrosion Control (2)
Analysis of corrosion mechanisms for ferrous metals, nonferrous metals, and nonmetallic materials, as well as the control of corrosion. Prerequisites: CHEM 1110 and MATH 1060. (Sp)

ITE 4400 Methods in Industrial Education II (3)
Techniques of teaching as applied to individual and group instruction. Students apply various methods in presenting lessons. Prerequisites: ITE 3200, 3300; ITE 4300 (must be taken concurrently). (Sp)
ITE 4480 Certified Flight Instructor Practicum (2)
Under supervision of ground school instructor, students gain practical experience teaching ground school subjects. Prerequisite: ITE 2740.

ITE 4490 Human Factors in Aviation Safety (3)
Examines major causative agent in aircraft accidents: the human being. Emphasizes psychological and physiological factors enhancing accident probability. Includes detailed analysis of ergonomics (human engineering) and its influence on safety. Prerequisite: ITE 1100. (Sp)

ITE 4580 Occupational Safety and Health Management (2)
Management practices and principles as applied to safety and health ethics, laws, organizations, programs, and varied functions of the safety and health professional.

ITE 4610 CI AeroTechnology Design II (3)
Execution and completion of a team or individual project. Requires design reviews and written reports. Prerequisite: ITE 3610. (F)

ITE 4620 CI AeroTechnology Design III (3)
Preparation and presentation of a team or individual project. Writing and speaking skills emphasized through technical reports and presentations. Prerequisite: ITE 4610. (Sp)

ITE 4660 CI Flight Senior Project (3)
Students select, plan, and execute an approved senior project. Writing and speaking skills emphasized through technical reports and presentations. (F,Sp)

ITE 4700 Student Teaching in Postsecondary Schools (4)
Planning, presenting, and evaluating instruction for students in postsecondary industrial and technical programs under the supervision of an experienced teacher. Enrollment by permission only.

ITE 4710 CI Electronics/Computer Design II (3)
Execution and completion of a team or individual project. Requires design reviews and written reports. Prerequisite: ITE 3710. (Sp)

ITE 4810 CI Welding Design II (3)
Execution and completion of a team or individual project. Requires design reviews and written reports. Prerequisite: ITE 3810. (F)

ITE 4820 CI Welding Design III (3)
Preparation and presentation of a team or individual project. Writing and speaking skills emphasized through technical reports and presentations. Prerequisite: ITE 4810. (Sp)

ITE 4930 Independent Study (1-4) ®
Upon application, students may propose and complete work above and beyond regular coursework to support or supplement their major. (F,Sp,Su)

ITE 4940 Related Industrial Experience (1-12) ®
Provided for in industry schools conducted on university level. Approved by department upon application for trade competency examination and work experience in industry. (F,Sp,Su)

ITE 5040 Manufacturing Enterprise (3)
Focuses on management technology used to establish a manufacturing enterprise, engineer a product and production system, finance the operation, and market the product. Prerequisite: ITE 1030.

ITE 5220 CI Program and Course Development (4)
Review of basic principles and practices of curriculum and course development used in applied technology and technology education. Emphasizes components needed to develop a curriculum guide. Prerequisites: ITE 3200, 3300. (Sp)

ITE 5230 Technical Training Innovative Program (1-4) ®
Prepares prospective and incumbent teachers to implement and conduct contemporary programs. Includes skill development and the philosophy needed for curriculum innovation.

ITE 5240 Principles of Technology (2-3)
Introduction to applied technology principles forming the basis for today’s society.

ITE 5400 Regional Jet Ground School I (4)
Introduction to a typical commercial jet aircraft in use by Regional Airlines. Course includes the following: Aircraft Systems, Standard Operating Procedures, and Flight Planning and Performance. Introduction to Airline Flight Operations in preparation for entry-level pilot positions with a regional airline. Prerequisite: ITE 2660. (F)

ITE 5410 Regional Jet Ground School II (4)
Continuation of ITE 5400. Prerequisite: ITE 2660. (Sp)

ITE 5500 Student Teaching Seminar (2)
Focuses on observations and problems arising during student teaching. Includes review of teaching plans, procedures, adaptive classroom practices, and evaluation. Prerequisite: ITE 5600 (must be taken concurrently). (F)

ITE 5630 Student Teaching in Secondary Schools (10)
Candidates assigned to cooperating teachers in public secondary schools within their major and minor subjects. Students have professional responsibilities with teaching. Prerequisite: ITE 5500 (must be taken concurrently). (F)

ITE 5750 Welding Metallurgy I (3)
Metallographic principles applied to welding and weldability of ferrous metals. Prerequisites: CHEM 1110 and ITE 2670. (F)

ITE 5760 Welding Metallurgy II (3)
Metallographic principles applied to welding and weldability of nonferrous metals. Prerequisite: ITE 5750. (Sp)

ITE 5800 Seminar—Technology Education (1-3) ®
Provides opportunity for students to participate in variety of enriching experiences, such as guest speakers, field trips, demonstrations, and conferences.

ITE 5890 Seminar—Welding Engineering Technology (1) ®
Professional seminar specifically designed to introduce students to industry experts. Limited to welding students. (F,Sp)

ITE 5900 Workshop in Industrial Technology and Education (1-4) ®
Special workshops for education or industry. May be repeated providing content varies.

ITE 5910 Special Problems in Industrial Technology and Education (1-4) ®

ITE 5920 Related Technical Training (1-12) ®

ITE 6090 Program Design in Technology and Industrial Education (3)
Study of contemporary program design and development in technology and industrial education. Reviews complete curriculum developmental process. (F,Sp,Su)

ITE 6100 Contemporary Issues in Technology and Industrial Education (3)
Study of present and future foundational professional developments in technology and industrial education. Students identify and investigate contemporary trends and issues affecting and facing technology and industrial education. (F,Sp,Su)

ITE 6150 Evaluation and Assessment in Technology and Industrial Education (3)
Study of various methods used to measure and evaluate student achievement, including cognitive, affective, and psychomotor. Reviews principles of learning and teaching, and of evaluation in instruction. (F,Sp,Su)

ITE 6200 Composite Manufacturing Processes and Repair (d4200)
Composite manufacturing processes, composite materials survey, tooling design and fabrication, autoclave processes, vacuum bag techniques, filament winding processes, equipment requirements, materials cutting and storage, and composite materials testing. (Sp)
 ITE 6250 Internship (1-6)  
Advanced instruction through supervised work experience in teaching, supervising, or administering educational or industrial program. (F,Sp,Su)

 ITE 6310 Corrosion and Corrosion Control (2)  
Analysis of corrosion mechanisms for ferrous metals, nonferrous metals, and nonmetallic materials, as well as the control of corrosion. Prerequisites: CHEM 1110 and MATH 1060. (Sp)

 ITE 6440 Technology and Society (3)  
Study of dynamic interaction between technology and society. Examines human responsibility for directing changes in our future. (F,Sp,Su)

 ITE 6450 Administration and Organization of Technology and Industrial Education (3)  
Administrative and supervisory techniques for successful operation of technology education and applied technology education programs. (F,Sp,Su)

 ITE 6520 Explorations of Industry (3)  
Study of contemporary industry, business, and service through a series of site visits. Includes various management and finance methods and techniques. (F,Sp,Su)

 ITE 6610 Computer Delivery Systems in Technology and Industrial Education (3)  
Introduces current computer technologies used in education. Explains how these technologies aid in development, preparation, and delivery of materials in a professional environment. Explores educational research and development of these technologies, with results being disseminated to others in the discipline. (F,Sp,Su)

 ITE 6750 Research in Technology and Industrial Education (3)  
Introduction to practical research planning and design. Guides students from proposal selection to completed proposal to final research report. (F,Sp,Su)

 ITE 6800 Seminar (1-2)  
(F,Sp,Su)

 ITE 6900 Readings and Conference (1-3)  
Advanced individualized study on selected topics in technology and industrial education. Scheduled consultation with faculty member. (F,Sp,Su)

 ITE 6910 Experimental Laboratory in Technology and Industrial Education (3)  
Introduction to elements of a research report through selection and development of experimental study utilizing tools, equipment, materials, and processes for improving programs and teaching techniques. (F,Sp,Su)

 ITE 6930 Independent Study (1-6)  
Advanced educational experience through individual investigation. (F,Sp,Su)

 ITE 6960 Master’s Project (3-6)®  
Development of creative project emphasizing a thoroughly developed plan of action. Includes proposal, project paper, and final presentation. (F,Sp,Su)

 ITE 6970 Thesis Research (1-9)  
(F,Sp,Su)

 ITE 6990 Continuing Graduate Advisement (1-3)®  
(F,Sp,Su)

 ITE 7230 Foundations of Technology and Industrial Education (3)  
Study of the objectives, legislative foundations, principles, philosophy, impact, and organization of technology and industrial education. (F,Sp,Su)

 ITE 7400 Occupational Analysis and Curriculum Development (3)*  
Students learn techniques for conducting an occupational analysis (both job and task analysis) and for developing performance-based or competency-based curriculum. Explores industrial and educational applications for this style of curriculum development.

 ITE 7460 Finance and Grant Writing in Technology and Industrial Education (3)  
Procedures in financial administration of industrial education monies. Budget preparation, budget operation and control, and school accounting. In-depth review of steps and techniques needed for grant writing. (F,Sp,Su)

 ITE 7500 Internationalizing Institutions of Higher Education (3)  
Explores the need and methodology of internationalizing higher education institutions, with the purpose of understanding the global society and delivering education worldwide. (F,Sp,Su)

 ITE 7600 Academic Issues and Politics in Higher Education (3)  
Study of higher education in Utah, the social political impacts, and the role of faculty members in higher education institutions. (F,Sp,Su)

 ITE 7810 Research Seminar (1-6)  
Identification of research problems, consideration of research strategies and methods, application of research and statistical concepts in departmental focus, and interaction with faculty. (F,Sp,Su)

 ITE 7900 Independent Study (1-3)*  
Individually directed reading and conference. Departmental approval required before registration. (F,Sp,Su)

 ITE 7970 Dissertation Research (1-15)®  
(F,Sp,Su)

 ITE 7990 Continuing Graduate Advisement (1-3)®  

Japanese (JAPN)

Japanese First Year I (JAPN 1010)  
First course in beginning Japanese. Proficiency in the recognition of the basic Japanese sound system by learning Hiragana and Katakana. Communicative mastery of sentences having polite and plain forms of verbs, adjectives, and copula. Exposure to Japanese culture and customs. (F)

Japanese First Year II (JAPN 1020)  
Second course in beginning Japanese. Introduction to the basic 100 Kanji. Mastery of more complicated sentences, including conditional temporal, volitional, and potential expressions. Exposure to Japanese culture and customs. Prerequisite: JAPN 1010 or equivalent. (Sp)

Japanese Second Year I (JAPN 2010)  
First course in intermediate Japanese. Proficiency in reading and writing 150 additional Kanji. Mastery of the last basic grammar topics, such as passive, causative, passive causative, and giving/receiving expressions. Introduction to honorific/humble expression. Exposure to Japanese culture and customs. Prerequisite: JAPN 1020 or equivalent. (F)

Japanese Second Year II (JAPN 2020)  
Second course in intermediate Japanese. Proficiency in reading 150 additional Kanji and writing 200 additional Kanji. Mastery of frequently used idioms and expressions. Exposure to more authentic reading materials. Competency in writing short essays. Exposure to Japanese culture and customs. Prerequisite: JAPN 2010 or equivalent. (Sp)

Japanese Third Year I (JAPN 3010)  
First segment of the third-year Japanese reading/writing course. Proficiency in reading and writing an additional 500 Kanji. Prerequisite: JAPN 2020 or equivalent. (F)
JAPN 3020 Japanese Third Year II (4)
Second segment of the third-year Japanese reading/writing course. Proficiency in reading and writing an additional 500 Kanji. Prerequisite: JAPN 3010 or equivalent. (Sp)

JAPN 3050 Japanese Calligraphy (1)
Study of Japanese writing system through practicing the art of calligraphy. No prerequisites. Also taught as ART 3050. (Sp)

JAPN 3100 Readings in Contemporary Japanese Culture (3)
Introduction to contemporary Japanese culture through readings from newspapers and other source materials. Prerequisites: JAPN 3010 and 3020. (F)

JAPN 3510 Japanese for the Business Environment (3)
Mastery of technical terms related to Japanese business and its environment. Communicative competency in contemporary Japanese society. Prerequisite: JAPN 3020. (Sp)

JAPN 4250 Internship/Coop (3-9)
Cooperative education through internship programs provided by companies in Japan. Intended for students participating in the U.S.-Japan internship program. Prerequisites: JAPN 3010, 3020, and 3510. (Su)

JAPN 4920 Japanese Language Tutoring (1) ®
Allows students to develop tutoring skills by assisting professors in lower-division courses or fulfilling instructional duties for a comparable amount of time in the language laboratory, public schools, or similar activities with departmental approval. May be repeated to a maximum of 3 credits. (F,Sp,Su)

© Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

Journalism and Communication (JCOM)
See Department of Journalism and Communication, pages 237-239

JCOM 1000 BSS Introduction to Mass Communication (3)
History, philosophy, structures, and functions of the mass media (newspapers, magazines, TV and radio, advertising, and public relations) and their intersection with other social institutions. Media economics and the impacts of new technologies on media institutions and society. (F,Sp)

JCOM 1110 Beginning Newswriting for the Mass Media (3)
Techniques of writing news for various media. News values, philosophy, and practice. Elementary news-gathering and interviewing skills. Practice in various newswriting forms. Structures of the news industries and work place. Prerequisites: ENGL 1010 or equivalent, English Proficiency Test, typing test, and permission of department. (F,Sp,Su)

JCOM 2000 BSS Media Smarts: Making Sense of the Information Age (3)
Critical analysis of the roles and performance of mass media content and messages, and their influence on society. Emphasizes critical reading of news, entertainment, and advertising content regarding women, minorities, children, and other groups. Basic mass media ethics and law. Prerequisite: ENGL 1010. (F,Sp)

JCOM 2110 CI Introduction to Online Journalism (2)
Use of interactive computer networks, databases, and other electronic resources for news reporting and writing. Practice in research and information evaluation for news stories and features in news and public relations contexts. Prerequisites: Minimum grades of C+ in JCOM 1000, 1110, and 2000. (F,Sp)

JCOM 2120 CI Reporting Public Affairs (3)
Theory and practice of reporting public affairs, community news, and features. Emphasizes advanced news gathering techniques, understanding local political structures, news and feature writing skills, interviewing, media law, ethics, and cultural sensitivity. Prerequisites: Minimum grades of C+ in JCOM 1000, 1110, and 2000. (F,Sp)

JCOM 2150 Beginning Photojournalism (3)
Theory and practice of photojournalism. Roles and functions of photographic images in the news media, both print and electronic. Practice in use of cameras and in darkroom techniques. Students furnish cameras and some materials. Prerequisite: ART 2800 or permission of instructor. (F,Sp)

JCOM 2200 Introduction to Video Media (3)
Introduction to the theories and practice of video production and functions in broadcasting and the electronic mass media, including concepts, techniques, and impacts of various video approaches. Prerequisites: Minimum grades of C+ in JCOM 1000, 1110, and 2000. (F,Sp)

JCOM 2210 Writing for Electronic Media (3)
Theory and practice of reporting public affairs for broadcast and electronic media. Emphasizes news gathering, understanding local political structures, news and feature writing, commercial and continuity writing, interviewing, media law, ethics, and cultural sensitivity. Prerequisites: Minimum grades of C+ in JCOM 1000, 1110, and 2000. (F,Sp)

JCOM 2300 Introduction to Public Relations (3)
Survey of theories and practice of public relations in a variety of business, corporate, governmental, and nonprofit organizational settings. Elements of promoting organizational messages and communicating with various publics. Prerequisites: Minimum grades of C+ in JCOM 1000, 1110, and 2000. (F,Sp)

JCOM 2310 CI Writing for Public Relations (3)
Theory and practice of information-gathering for public relations, including basic news releases, features, speeches, annual reports, newsletters, and brochures, broadcasting, and other forms. Emphasizes advanced news gathering techniques, interviewing, media law, ethics, and cultural sensitivity. Prerequisites: Minimum grades of C+ in JCOM 1000, 1110, and 2000. (F,Sp,Su)

JCOM 3010 Communication Research Methods (3)
Analysis of communication theories and their application in research settings. Basics of communication research methods and analysis of research results in mass media and public relations contexts. (F,Sp)

JCOM 3110 CI Beyond the Inverted Pyramid (3)
Theory and practice of longer literary forms for newspapers and magazines. Feature writing, investigative and interpretive journalism, emphasizing advanced information-gathering and writing skills, analysis of audiences, and markets. Prerequisites: Minimum grades of C in JCOM 2120 or permission of instructor. (Sp)

JCOM 3120 CI Copy Editing and Publication Design (3)
Editing and preparation of news stories and artwork for publication. Principles and practice of publication layout and design. Prerequisites: Minimum grades of C in JCOM 2120, 2210, or 2310; or permission of instructor. (F,Sp)

JCOM 3140 DSS Opinion Writing (3)
Study and practice of persuasive editorial and opinion writing for the mass media. (F,Sp)

JCOM 3300 DSS Corporate Communications (3)
Theory and practice of communication processes and techniques to connect both internal and external constituencies in business and organizational settings. Emphasizes communication theories and measurement of effectiveness of various strategies. Prerequisites: Minimum grades of C in JCOM 2300 and 2310. (F,Sp)

JCOM 3400 DSS Gender and Communication (3)
Processes through which various forms of communication create gender roles and ideals for women and men, resulting in different gender-based communication patterns. Social implications and emphasis on gender in media professions. (F,Sp)

JCOM 3410 DSS Film as Cultural Communication (3)
Analysis of the economic, ideological, political, and cultural constraints influencing film content. How written texts are changed or distorted when translated into film. (F,Sp)

JCOM 4000 Senior Seminar in Mass Communication (1)
Capstone seminar required of all majors. Includes small discussion groups to pull together and synthesize experiences of students in all emphases. Examination of fundamental mass communication issues. Preparation for mass media careers. Prerequisite: Senior standing. (F,Sp)
JCOM 4010 DSS Mass Communication Ethics (3)
Survey of the history and development of the mass media, and their influence on other social institutions. Theory and practice of historical research, with heavy emphasis on use of databases, archival, and other primary sources to conduct original historical research. (F,Sp)

JCOM 4020 DSS Mass Media and Society (3)
Study of theories and practice of the impact of mass media in conjunction with other social institutions: political, social, cultural, ideological, economic, and religious. Prerequisite: Junior standing. (Sp)

JCOM 4030 DSS Mass Media Law (3)
Principles and theories of constitutional and case law governing the mass media, including libel and privacy, copyright, press freedom, broadcast regulation, and press responsibility. Prerequisite: Junior standing. (F,Sp)

JCOM 4110 CI Computer-Assisted Reporting (3)
Advanced computer-based investigative and in-depth information-gathering and newswriting, including intensive use of computer databases to collect and analyze data. Prerequisites: Minimum grades of C in JCOM 2120 or 2210 or 2310; or permission of instructor. (Sp)

JCOM 4120 CI Sports Writing (3)
Information-gathering and writing of news and feature stories about sports for print and electronic mass media. Prerequisites: Minimum grades of C in JCOM 2120 or 2210 or 2310; or permission of instructor. (F,Sp)

JCOM 4150 Advanced Digital Photojournalism (3)
Advanced lab work in the use of cameras and photographic production techniques, photo imaging, and manipulation. Concludes with student exhibition of work. Prerequisite: Minimum grade of C in JCOM 2150 or permission of instructor. (F,Sp)

JCOM 4210 CI Newscast I (4)
Basics of electronic newsgathering and writing for electronic news media. Use of electronic video equipment for creation of on-air newscast and other visual news materials. Prerequisite: Minimum grade of C in JCOM 2200. (F,Sp)

JCOM 4220 CI Newscast II (4)
Newsgathering organization and practice in electronic and video news production, including directing and producing, writing for video news, use of studio equipment, use of video production equipment, staff management, and control room operations. Prerequisites: Minimum grades of C in JCOM 2210 and 4210. (F,Sp)

JCOM 4230 Corporate Video (3)
Project-based lab work in studio video productions for real-world clients. Use of video field equipment and production facilities. Completion of video packages. Prerequisites: Minimum grades of C+ in JCOM 1000, 1110, and 2000; or permission of instructor. (F,Sp)

JCOM 4500 Projects in Communication (1-5) ®
Individualized directed study in communication topics, based upon student proposal to instructor. Prerequisite: Permission of instructor. Repeatable for up to 6 credits. (F,Sp,Su)

JCOM 4510 Communication Internship (1-3) ®
Supervised, real-world training and practice in communication work places, including news and business environments. Prerequisite: Permission of instructor. Maximum of 6 credits may count toward the student’s major. (F,Sp,Su)

JCOM 4520H Senior Thesis (1-3)
Planning and execution of an in-depth research paper or project, as approved by the instructor, culminating in a formal public presentation. Required of all journalism and communication students for graduation in Honors Program. Students must also complete HONR 4800H1. (F,Sp)

JCOM 4530 Special Topics in Communication (3) ®
Advanced study in specialized communication topic areas. A maximum of 5 credits may be applied toward the major. (F,Sp,Su)

JCOM 5010 Mass Media Historiography (3)
Examines the nature of genre-based images in a variety of mass media, from advertising to magazines, television, and film. Analysis of gender stereotypes and portrayals in news and entertainment media, along with resulting social impacts. Senior standing required for enrollment in JCOM 5410; permission of instructor required for enrollment in JCOM 5410. (F,Sp)
JCOM 5420 The Mass Media and Politics (3)
Examination of the role of the mass media in the political process, including both campaigns and governance. Examination of political advertising, news coverage, polling, opinion formation strategies, and politicians’ use of new media technologies. (F)

JCOM 6000 Introduction to Graduate Study in Mass Communication (3)
Overview of mass communication theories and research methodologies designed to prepare the student for the graduate course of study and to assist in planning research agenda. (F)

JCOM 6010 Mass Media Historiography (d5010) (3)
Survey of the history and development of the mass media, and their influence on other social institutions. Theory and practice of historical research, with heavy emphasis on use of databases, archival, and other primary sources to conduct original historical research. (F,Sp)

JCOM 6020 Mass Communication Theory (d5020) (3)
Advanced study of major mass communication theories and issues, and their evidence in case studies. Application of theory to significant societal problems. (F)

JCOM 6030 International Communications Problems (d5030) (3)
Study of mass communication influences and effects within and between nations. Systems and techniques of mass communication as functions of national identity and development. (F,Sp)

JCOM 6040 Seminar in Mass Media Research Methods (d5110) (3) 
Introduction to the major theoretical perspectives and methodologies in mass communication research. Repeatable for credit with departmental permission. (Sp)

JCOM 6050 Seminar in Mass Media Issues and Problems (d5050) (3)
Variable topic seminar concerning research of issues and problems in mass media principles and practice. Repeatable for credit with departmental permission. (F,Sp)

JCOM 6110 Literary Journalism (d5110) (3)
In-depth analysis and practice of literary and stylistic elements of long-form journalistic and other nonfiction writers. (F)

JCOM 6210 Website Design and Production (d5210) (3)
Principles and practice of producing interactive, computer-based multimedia products in various forms (CD-ROM, Internet), combining text, full-motion video, and sound for news and business clients. Prerequisite: Permission of instructor. (Sp)

JCOM 6220 Advanced Video Production (d5220) (3)
Training and practice in advanced techniques of video production, including computer graphics generation, nonlinear video editing, and other specialized professional techniques for electronic video materials. Prerequisite: Minimum grade of C in JCOM 4220 or 4230; or permission of instructor. (F)

JCOM 6230 Advanced Video Documentary Production (d5230) (3)
Advanced production of long-form video productions and packages, including writing scripts, directing and production, control room applications, and advanced video production techniques. Prerequisite: Minimum grade of C in JCOM 4220 or 4230; or permission of instructor. (Sp)

JCOM 6300 Public Relations Agency I (d5300) (3)
Hands-on experience in public relations and corporate image maintenance. Strategies for organizational positioning and use of mass media in furthering corporate objectives. Prerequisite: Minimum grade of C in JCOM 3300. (F,Sp)

JCOM 6310 Mass Media Management (d5310) (3)
Examines theories, methods, and practice of management of mass media businesses, including personnel, marketing, and market positioning. Prerequisite: Permission of instructor. (F,Sp)

JCOM 6320 Public Relations Agency II (d5320) (3)
Advanced public relations agency management skills. Prerequisite: Permission of instructor. (F,Sp)

JCOM 6400 Mass Media Criticism (d5400) (3)
Critical analysis of mass media content, emphasizing the media’s social, cultural, and political impacts. Use of advanced research techniques. Permission of instructor required for enrollment in JCOM 6400; senior standing required for enrollment in JCOM 5410. (F,Sp)

JCOM 6410 Gender and the Mass Media (d5410) (3)
Examines the nature of gender-based images in a variety of mass media, from advertising to magazines, television, and film. Analysis of gender stereotypes and portrayals in news and entertainment media, along with resulting social impacts. Permission of instructor required for enrollment in JCOM 6410; senior standing required for enrollment in JCOM 5410. (F,Sp)

JCOM 6420 The Mass Media and Politics (d5420) (3)
Examination of the role of the mass media in the political process, including both campaigns and governance. Examination of political advertising, news coverage, polling, opinion formation strategies, and politicians’ use of new media technologies. (F)

JCOM 6430 Mass Media Law (d4030) (3)
Principles and theories of constitutional and case law governing the mass media, including libel and privacy, copyright, press freedom, broadcast regulation, and press responsibility. (F,Sp)

JCOM 6440 Mass Communication Ethics (d4010) (3)
Study of ethical systems and philosophies and their applications to the practice of mass communication. (Sp)

JCOM 6500 Special Projects in Mass Communication Research and Practice (1-3) 
Directed study into specified research or real-world problems in the mass media and mass communication industries. Prerequisite: Departmental permission. Repeatable for credit with departmental permission. (F,Sp,Su)

JCOM 6510 Directed Readings in Mass Communication (1-12) 
Directed readings, tutorial or experiential learning/project in mass communication. Prerequisite: Instructor and department head approval. (F,Sp,Su)

JCOM 6600 Internship (1-6) 
Supervised training in selected communication work places. Prerequisite: Permission of graduate supervisory committee. (F,Sp,Su)

JCOM 6790 Thesis Research (1-3) 
Prerequisite: Departmental permission. Repeatable for credit with departmental permission. (F,Sp,Su)

JCOM 6990 Continuing Graduate Advisement (1-3) 
Prerequisite: Departmental permission. Repeatable for credit with departmental permission. (F,Sp,Su)

1Parenthetical numbers preceded by d indicate a dual listing.
2Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.
Korean (KOR)
See Department of Languages, Philosophy, and Speech Communication, pages 244-248

KOR 1010 Korean First Year I (4)
Communicative competencies in the four language skills: speaking, listening, reading, and writing, with exposure to cultures and customs. (F)

KOR 1020 Korean First Year II (4)
Communicative competencies in the four language skills: speaking, listening, reading, and writing, with exposure to cultures and customs. Prerequisite: KOR 1010 or equivalent. (Sp)

KOR 2010 Korean Second Year I (4)
Development of grammatical knowledge and writing skills. Prerequisite: KOR 1020 or equivalent. (F)

KOR 2020 Korean Second Year II (4)
Development of advanced reading comprehensibility skill through discussions and summaries of a variety of texts. Prerequisite: KOR 2010 or equivalent. (Sp)

KOR 3010 Korean Third Year I (4)
Development of advanced reading, writing, and conversational skills. Prerequisite: KOR 2020 or equivalent. (F)

KOR 3020 Korean Third Year II (4)
Continuous development of advanced reading, writing, and conversational skills. Prerequisite: KOR 3010 or equivalent. (Sp)

KOR 3510 Business Korean (3)
Designed to help students acquire a broad knowledge of business Korean and relevant Korean culture. Develops language skills and cultural knowledge useful for performing basic functions within the Korean business environment. Focuses on important business terms, phrases, and business etiquette. Prerequisite: KOR 2010 or equivalent language proficiency. (F)

KOR 4920 Korean Language Tutoring (1) ©
Allows students to develop tutoring skills by assisting professors in lower-division courses or fulfilling instructional duties for a comparable amount of time in the language laboratory, public schools, or similar activities with departmental approval. May be repeated to a maximum of 3 credits. (F,Sp,Su)

© Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

Landscape Architecture and Environmental Planning (LAEP)
See Department of Landscape Architecture and Environmental Planning, pages 240-243

LAEP 1030 BCA Introduction to Landscape Architecture (3) ©
Environment as a basis for land use and design decisions. Topics discussed include environmental awareness, the planning and design process, and design related to open space, communities, and the region. Three one-hour lectures per week. (F,Sp,Su)

LAEP 1200 Basic Graphics in Landscape Architecture (4)
Graphic techniques for landscape architectural drawings, including plans, elevations, isometrics, perspective, rendering, and model construction. Various media explored for preparing drawings and sketches for presentation. Two three-hour studios per week. (F)

LAEP 1350 Theory of Design (4)
Basic elements of design with emphasis upon their relationship to landscape architecture. Form and spatial relationships are stressed through student development of two-and three-dimensional design models. Design theory applied to materials of landform, vegetation, water, and architecture. Two three-hour studios per week. Prerequisite: Must be declared LAEP major or have permission of instructor. (Sp)

LAEP 2250 Internship and Cooperative Education (1-5) ©
Course credit for professional experience outside the classroom prior to graduation. A statement of professional goals and a summary report following the experience are required. (F)

LAEP 2300 History of Landscape Architecture (3)
An examination of landscape change in the context of its history from ancient to present times, with a primary emphasis on the visual qualities of designed landscapes. Three one-hour lectures per week. (F)

LAEP 2600 Q1 Landscape Construction I (4)
Introduction to site engineering, grading, cut and fill calculation, stormwater drainage, and erosion control. Two one-hour lectures and two two-hour studios per week. Prerequisite: LAEP 1200 (may be taken concurrently). (F)

LAEP 2650 Architecture and the Built Environment (4)
Exploration of architectural form and structure in exterior environments. Emphasis placed on space created by architectural forms and their relationship to the surrounding landscape. Energy and water conservation measures with respect to the built environment. Prerequisite: LAEP 1200. (Sp)

LAEP 2700 CI Site Analysis and Design (5)
Site survey, analysis, and design synthesis. Focuses on human behavior and natural resources as design considerations for future land use planning. Student teams survey and analyze sites’ landscape and cultural resources for future land use planning. (F)

LAEP 2720 Site Planning and Design (5)
Serves as a lower-division capstone course, synthesizing lower-division landscape architecture coursework and applying that knowledge to site scale design projects. Includes units on design methodology, site planning and circulation, and creative problem solving. Three three-hour studios per week. Prerequisite: LAEP 2700. (Sp)

LAEP 3100 Recreation/Open Space (5)
Focuses on regional and urban open space planning and design including project scale recreation design. Includes design seminars, field trips, and guest lecturers. Three three-hour studios per week. Prerequisite: LAEP 2720 or permission of instructor. (F)

LAEP 3120 Residential Planning and Design (5)
Focuses on large-scale residential projects, planned unit developments, and community facilities. Three three-hour studios per week. Prerequisite: LAEP 3100. (Sp)

LAEP 3300 Advanced Computer Applications in Landscape Architecture (4)
Emphasizes the major analytical and technical components of resource planning and design using computer techniques. Two three-hour studios per week. Prerequisite: LAEP 2720 or instructor’s permission. (F)

LAEP 3500 Planting Design (2-4)
Emphasizes plant and environment relationships and plant community dynamics as they relate to planting design. In addition, basic planting design principles will be introduced. Includes application of planting design principles to a variety of project types. One segment will focus on land reclamation planting in nonirrigated landscapes. Two three-hour studios per week. Prerequisite: PLSC 2620. (F)

LAEP 3610 Landscape Construction II (4)
Introduction to construction materials, wood construction, and free-standing and retaining walls. Introduction to layout and dimensioning, basic theory and technical aspects of roadway alignment, and theory and design of sprinkler irrigation. Two three-hour studios per week. Prerequisites: LAEP 2600, MATH 1050. (Sp)

LAEP 3700 City and Regional Planning (3)
Introduction to historic and current theory and methods of city and regional planning. Includes legislative, administrative, and implementation practices of the general comprehensive plan. Three lectures per week. (Sp)

LAEP 4100 Urban Theory, Systems, and Design (5)
Emphasizes historical, cultural, and functional aspects of the city. Planning and de-
sign activities focus on social and behavioral contributions to urban form. Three three-hour studios per week. Prerequisite: LAEP 3120. (F)

**LAEP 4110 Construction Document Preparation**  (4)
Design project through detail design development and completion of the working drawings and specifications. Two three-hour studios per week. Prerequisite: LAEP 3120. (F)

**LAEP 4120 Emerging Areas in Landscape Architecture**  (5)
Exploration of new and emerging areas in the profession of landscape architecture. National and international issues in regional landscape planning, landscape restoration/bioengineering, and visual resource management are among several issues which may be examined. Three three-hour studios per week. Prerequisite: LAEP 4100. (Sp)

**LAEP 4250 Internship and Cooperative Education**  (1-5) ®
Course credit for professional experience outside the classroom prior to graduation. Statement of professional goals and a summary report following the experience are required. (F,Sp,Su)

**LAEP 4350 Travel Course**  (1) ®
Major field trip to examine a variety of projects in planning and design. (Sp)

**LAEP 4810 Tutorial**  (1) ®
Directed readings and discussions of landscape issues. Prerequisite: Instructor’s permission. (F,Sp,Su)

**LAEP 4950 Seminar**  (1)
Directed readings and reports on current and emerging areas of the profession. One recitation hour per week. (F,Sp,Su)

**LAEP 5400 Low Water Landscaping**  (3)
Examines arid ecosystems, emphasizing the Intermountain West, and recreating such ecosystems in a range of amenity landscapes. Also covers procurement, propagation, establishment, and maintenance of plants appropriate for low water landscapes. Also taught as PLSC 5400/6400. (F)

**LAEP 6100 Regional Landscape Analysis and Planning**  (5)
Landscape planning theory, methods, and case studies focusing on analysis of major physiographic region. Alternative planning scenarios are proposed, including their evaluation. (F)

**LAEP 6110 Landscape Planning for Wildlife**  (3)
Application of principles of landscape ecology to planning for wildlife in urban, suburban, and exurban landscapes. Discussion of restoration of disturbed habitats in these environments. Includes real-world projects and field trips. Addresses issues of landscape restoration and bioengineering. (Sp)

**LAEP 6120 Regional Landscape Policy and Implementation**  (2)
Case studies and/or implementation strategies for planning alternatives developed in LAEP 6100. (Sp)

**LAEP 6160 Professional Practice**  (2)
Assigned readings and reports on current topics and trends in the practice of landscape architecture and environmental planning. (Sp)

**LAEP 6250 Internship and Cooperative Education Program**  (1-5) ®
Course credit given for professional experience outside the classroom prior to graduation. Statement of professional goals and summary report following the experience are required. (F,Sp,Su)

**LAEP 6400 Low Water Landscaping**  (3)
Examines arid ecosystems, emphasizing the Intermountain West, and recreating such ecosystems in a range of amenity landscapes. Also covers procurement, propagation, establishment, and maintenance of plants appropriate for low water landscapes. Also taught as PLSC 6400/5400. (F)

**LAEP 6740 Planning Theory and Methods**  (3)
Analysis of techniques utilized to implement the comprehensive plan. Major topics include zoning, capital improvements, subdivision regulations, code enforcement, and growth controls. (Sp)

**LAEP 6750 Implementation and Regulatory Techniques in Planning**  (3)
Review of planning theory and implementation techniques based on advanced readings, case studies, and research projects. Scale of material proceeds from regional landscape planning to rural and town planning. (F)

**LAEP 6860 Faculty/Interdisciplinary Seminar**  (1)
Landscape architecture and environmental planning options and research potential presented by departmental faculty. Also introduces students to other interdisciplinary programs and faculty within the University. (F)

**LAEP 6890 Seminar on Research Methods and Thesis Proposals**  (2)
Explores various research methods from both case studies and faculty presentations. Also includes preparation of thesis proposals and abstracts, and discussion of graduate degree completion requirements. (Sp)

**LAEP 6900 Special Problems**  (1-5) ®
Selected problems to meet individual student and areas of concentration. Registration by permission of departmental faculty. (F,Sp,Su)

**LAEP 6910 Reading Seminar I**  (1)
Selected readings directed by department faculty. (F)

**LAEP 6930 Reading Seminar II**  (1)
Selected readings directed by department faculty. (Sp)

**LAEP 6960 Master’s Project**  (1-6) ®
Requires research, analysis, and production of a given subject area, including its final planning, design, and documentation. (F,Sp,Su)

**LAEP 6970 Thesis Research**  (1-6) ®
(F,Sp,Su)

**LAEP 6990 Continuing Graduate Advisement**  (1-3) ®
(F,Sp,Su)

® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

© This course is also offered by online correspondence and/or CD through Continuing Education Time Enhanced Learning.
Language (LANG)

See Department of Languages, Philosophy, and Speech Communication, pages 244-248

LANG 3990 Special Topics (1-5) Repeatable for credit. Additional readings or research done beyond the material covered in other language courses. May be repeated for credit if different topic is covered. Prerequisite: Instructor’s permission. (F,Sp,Su)

LANG 4200H Senior Honors Seminar (1) Credit for completing and presenting a senior honors thesis project. Requirement may be fulfilled by publishing the thesis in an academic journal, defending the thesis before a faculty committee, presenting the thesis at an academic conference, or presenting the thesis in the languages session during Scholar’s Day. (Sp)

LANG 4210H Senior Honors Thesis (1-4) Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

Liberal Arts and Sciences (LAS)

See Liberal Arts and Sciences Major, page 249

LAS 4900 Independent Study/Workshop (1-3) Repeatable for credit. Independent, interdisciplinary study resulting in an original work. After obtaining permission from a Liberal Arts and Sciences advisor to take this course under the supervision of a particular instructor, the student must also obtain the instructor’s permission. (F,Sp)

Latin (LATN)

See Department of History, pages 221-225

LATN 1010 Beginning Latin I (5) Basics of Latin grammar and vocabulary. Beginning readings. (F)

LATN 1020 Beginning Latin II (5) Intermediate concepts of grammar and vocabulary. Intermediate readings. Prerequisite: LATN 1010. (Sp)

LATN 3100 Intermediate Latin Prose (3) Readings in Latin prose. Prerequisite: Minimum grade of C or higher in LATN 1020.

LATN 3130 Intermediate Latin Poetry (3) Readings in Latin poetry. Prerequisite: Minimum grade of C or higher in LATN 1020.

LATN 4100 Advanced Latin Readings (3) Repeatable for credit. Readings in Latin poetry and/or prose. Prerequisite: Minimum grade of C or higher in LATN 3100 and 3130. (F,Sp)

LATN 4930 Directed Readings in Latin Poetry and Prose Authors (1-3) Directed readings in advanced Latin poetry and prose authors. Prerequisite: Successful completion of at least three semesters of Latin. (F,Sp,Su)

LING 2250 Cooperative Education (1-3) Course credit for professional experience outside the classroom. Statement of professional goals and a summary report following the experience are required. (F,Sp)

LING 3300 Clinical Experience I (1) First clinical practicum in middle and secondary schools. Arranged by special methods instructor. Required at Level I. Corequisite: LING 4400 or 6400. Prerequisites set by Secondary Education Department. (F,Sp)

LING 4100 The Study of Language (3) Investigates ways in which human languages are structured, how they change, how they reflect the cultures in which they are used, and how they are learned. Also taught as ANTH 4100. (F,Sp)

LING 4190 Language Laboratory Methodology and Techniques in Foreign Language Instruction (2) Practical instruction and demonstration of a modern foreign language laboratory operation, including the use of audio, video, and computer equipment to teach the four basic skills: listening, speaking, reading, and writing. Prerequisite: 15 credits in upper-division language courses. (Sp)

LING 4250 Cooperative Education (1-3) Course credit for professional experience outside the classroom. Statement of professional goals and a summary report following the experience are required. (F,Sp,Su)

LING 4300 Clinical Experience II (1) Second clinical practicum in middle and secondary schools. Arranged by special methods instructor. Required at Level II. Corequisite: LING 4400 or 6400. Prerequisites set by Secondary Education Department. (F,Sp)

LING 4400 Teaching Modern Languages (3) Methods course for teaching majors or minors in any of the modern languages. Considers the context of the present secondary language classroom, effective teaching techniques that can be used in that context, and significant trends in teaching and learning languages. Taken concurrently with LING 4300. Prerequisite: Permission of instructor. (F,Sp)

LING 4520 Technology for Language Teaching (3)** Web- and disk-based technology for developing electronic course modules for the language learning classroom. (Su)

LING 4900 Analysis of Cross-Cultural Difference (3) Develops awareness of what culture is and how it shapes perceptions and attitudes. Through interactive student-centered activities, students learn to analyze cultural differences. (Sp)

LING 4920 Practicum in Language Tutoring (1) Repeatable for credit. Allows language students to develop tutoring skills by assisting professors daily in lower-division courses or fulfilling instructional duties for a comparable amount of time in the language laboratory, public schools, or similar activities with departmental approval. May be repeated for up to a maximum of 3 credits. (F,Sp,Su)

LING 5500 Student Teaching Seminar (2) Capstone seminar focused upon student teaching issues, professional development, and principles of effective instruction, with emphasis on reflective teaching. (F,Sp)

LING 5630 Student Teaching in Secondary Schools (10) Thirteen-week culminating practicum experience in which students assume full-time teaching responsibilities under direction of cooperating teachers in their major and minor fields. Prerequisites set by Secondary Education Department. (F,Sp)

LING 6010 Research in Second Language Learning (3) Readings in current SLL literature evaluated in terms of their implications for classroom practice. (F)
LING 6190  Language Laboratory Methods  (2)
For students who intend to become teachers of a foreign language. Teaching procedures, as well as administrative and mechanical techniques, relating to the language lab and its components. (Sp)

LING 6300  Clinical Experience I  (1)
First clinical practicum in middle and secondary schools for Master of Second Language Teaching students. Arranged by special methods instructor. Required at Level I. Corequisite: LING 6400. Prerequisites set by Secondary Education Department. (F,Sp)

LING 6310  Clinical Experience II  (1)
Second clinical practicum in middle and secondary schools for Master of Second Language Teaching students. Arranged by special methods instructor. Required at Level II. Corequisite: LING 6400. Prerequisites set by Secondary Education Department. (F,Sp)

LING 6400  Second Language Teaching: Theory and Practice  (3)
Survey of theories about memory, assigning meaning to recall, and methods L2 language teaching. Considers the context of the present secondary language classroom, effective teaching techniques that can be used in that context, and significant trends in teaching and learning languages. Taken concurrently with LING 6310. Prerequisite: Permission of instructor. (F,Sp)

LING 6410  Teaching Modern Languages  (3)
Methods course for graduate students seeking teacher licensure in any of the modern languages. Considers the context of the present secondary language classroom, effective teaching techniques that can be used in that context, and significant trends in teaching and learning languages. Taken concurrently with LING 6310. Prerequisite: Permission of instructor. (F,Sp)

LING 6650  Linguistic Analysis  (3)
Comparative study of linguistic patterns across languages. Linguistic structures and language typology for teachers of modern languages. (Sp)

LING 6650  Technology for Language Teaching  (3)**
(d4520)
Web- and disk-based technology for developing electronic course modules for the language teaching classroom. (Su)

LING 6800  Topics in Second Language Acquisition  (3) ®
Advanced seminar in the acquisition and teaching of languages. (F,Sp,Su)

LING 6900  Culture Teaching and Learning: Theory and Practice  (3)
Examines culture learning and connection between development of communicative and cultural competence in the second language learner. Reviews theory, research, and practice in the field of intercultural communication as relating to second language teaching and learning. (Sp)

LING 6910  Exploring the Portfolio  (1)
Investigation of the portfolio process, including distinguishing qualities of superior portfolios. Students write their teaching philosophy and gather artifacts for their portfolio. Must be taken during the first semester of the Master of Second Language Teaching program. First of a sequence of three required courses. (F,Sp,Su)

LING 6920  Developing the Portfolio  (1)
Further development of the portfolio including revision of the student’s teaching philosophy, given insights from courses taken. Reexamination and revision of artifacts gathered, as well as addition of new artifacts. Prerequisite: LING 6910. (F,Sp,Su)

LING 6930  Finishing the Portfolio  (1)
Further work toward completion of the portfolio, including careful development of main themes in the teaching philosophy and artifacts; addition of final artifacts; and revision for coherence, clarity, and brevity. Must be taken during the final semester of the Master of Second Language Teaching program. Prerequisite: LING 6920. (F,Sp,Su)

LING 6940  Independent Study  (1-3) ®
Individually directed readings and conference. Departmental permission required before registration. Prerequisite: Approval of instructor. (F,Sp,Su)

LING 6990  Continuing Graduate Advisement  (1-9) ®
Allows students access to faculty and facilities to complete graduate thesis, project, and papers. (F,Sp,Su)

1Parenthetical numbers preceded by d indicate a dual listing.
**Taught 2005-2006.

**Mechanical and Aerospace Engineering (MAE)**

MAE 1200  Engineering Graphics  (2)
Introduction to technical sketching, solid modeling, and engineering graphics. Concurrent engineering design process applied to a project. Students start with hand sketches, then move through variational geometry solid models, with tolerance analysis and control, until they have produced a complete set of manufacturing drawings conforming to the ASME standard. Prerequisite: MATH 1060. (F,Sp)

MAE 2060  Material Science  (3)
Study of atomic and microscopic structures of metals, polymers, ceramics, and composite materials, and how these structures affect material properties. Prerequisites: CHEM 1210 and ENGR 2840 (both may be taken concurrently). (F,Sp)

MAE 2200  Engineering Numerical Methods I  (2)
Introduction to computational methods, emphasizing software development using FORTRAN 95. Prerequisite: MATH 1220. (F)

MAE 2210  Engineering Numerical Methods II  (3)
Explores basic tools of numerical analysis, solution to ordinary and partial differential equations, software development using FORTRAN 95, and applications using computer algebra packages. Prerequisites: MAE 2200; MATH 2210; 2250 (may be taken concurrently). (Sp)

MAE 2250  Cooperative Practice  (3)
Planned work experience in industry. Detailed program must have prior approval. Written report required. (F,Sp,Su)

MAE 2400  Thermodynamics I  (3)
First and second laws of thermodynamics; analysis of open and closed systems; equations of state; power and refrigeration cycles; and problem solving methodology. Prerequisites: MATH 1220; MATH 2210 (may be taken concurrently). (Sp,Su)

MAE 2600  Manufacturing Processes  (3)
Introduction to manufacturing processes and CAD/CAM. Material forming, machining, finishing, and joining. Integration of manufacturing and CAD, plus the fundamentals and application of statistical process control. (Sp)

MAE 3040  Mechanics of Solids  (3)
Stress, strain, and deflection due to flexure and shear. Combined stresses, instability, nonsymmetric bending, torsion, and energy methods. Prerequisite: ENGR 2040. (F)

MAE 3320  Advanced Dynamics  (3)
Particle and rigid body dynamics. Work and kinetic energy, conservation of energy, impulse-momentum, conservation of linear and angular momentum. Kinematics and kinetics in 2-D and 3-D. Newtonian and Lagrangian Mechanics. Prerequisites: ENGR 2020; MAE 2200 (may be taken concurrently). (F)

MAE 3340  Instrumentation and Measurements  (3)
Principles and application of mechanical instrumentation and experimentation. Sensing elements, signal conditioning, data acquisition, statistical analysis of data, and instrumentation system design. Prerequisites: ENGR 2040 and ECE 2200. (Sp)

MAE 3400  Thermodynamics II  (3)
Second law analysis, power and refrigeration cycles, property relations, gas mixtures, psychrometrics, chemical reactions, chemical equilibrium, introduction to heat transfer, steady state and transient conduction. Prerequisites: MAE 2400; MAE 2200 (may be taken concurrently). (F)

MAE 3420  Fluid Mechanics  (3)
Application of fluid dynamic theory to inviscid and viscous, incompressible and
compressible, and external and internal fluid flows, with emphasis on laminar and turbulent boundary layers. Prerequisites: ENGR 2020, MAE 2200, 2400 (MAE 2200 may be taken concurrently). (F)

MAE 3440 QI Heat and Mass Transfer (3)
Introduction to convection, external flow, internal flow, free convection, boiling and condensation, heat exchangers, radiation and diffusion mass transfer. Includes design project. Prerequisites: MAE 3400, 3420; MAE 2210 (may be taken concurrently). (Sp)

MAE 3800 Design I (2)
First course in senior design sequence. Design process, teaming skills, engineering economics, project selection and management, proposal writing, technical writing, and technical presentations. Prerequisite: ENGR 2040. (Sp)

MAE 4300 Machine Design (3)
Computer-aided design and synthesis of mechanisms, mechanical linkages, cams, fasteners, welds, gears, bearings, power transmission components, and lubrication. Component failure analysis based on metal fatigue related to dynamic loading. Prerequisite: MAE 3040. (Sp)

MAE 4400 CI Fluids/Thermal Laboratory (2)
Laboratory experiences in observation and measurement of fundamental fluid and thermal phenomena. Prerequisites: MAE 3340, 3440. (F)

MAE 4800 CI Design II (3)
Senior design project, including a technical presentation and a critical design review. Prerequisites: MAE 3440, 3800, 4300. (F,Sp)

MAE 5020 Finite Element Methods in Solid Mechanics I (3)
Introduction to finite element methods and their application to the analysis and design of mechanical engineering systems. Prerequisite: MAE 3040. Also taught as CEE 5020. (F)

MAE 5060 Mechanics of Composite Materials I (3)
Stress-strain relations for nonisotropic composites, such as fiber-reinforced plastic laminates, properties and their uses, strength and life determination, and methods for design using composite materials. Prerequisite: MAE 3040 or CEE 3010. Also taught as CEE 5060. (Sp)

MAE 5300 Vibrations (3)
Vibration of single and multiple degree of freedom, and discrete mass systems. Natural frequencies and mode shapes for free, damped, and undamped systems. Forcing functions and transient responses. Matrix methods, numerical solution, and random vibrations. Applications and design. Prerequisites: ENGR 2020, 2040. (F)

MAE 5310 Dynamic Systems and Controls (3)
Study of continuous-time systems, classical and modern systems design methods, transfer function models, state space, dynamics of linear systems, and frequency domain analysis and design techniques. Introduction to controllability and observability, and full-state pole placement controller design. Laboratory work required. Prerequisite: MAE 3340. (F)

MAE 5410 Design and Optimization of Thermal Systems (3)
Discussion of the basic considerations that occur in the design of thermal systems, including problem formulation, appropriate modeling and solution methodologies, optimization techniques, and economic analysis. Prerequisite: MAE 3440. (F)

MAE 5420 Compressible Fluid Flow (3)
Application of conservation of mass, momentum, and energy to the design and analysis of compressible fluid systems. Prerequisites: MAE 3400, 3420. (Sp)

MAE 5440 Computational Fluid Dynamics (3)
Introduction to computational fluid dynamics and heat transfer using the finite-volume method. Extensive code development. Application of a commercial CFD solver to a problem of interest. Prerequisites: MAE 3420 and 3440. (Sp)

MAE 5500 Aerodynamics (3)
Fundamentals of incompressible, inviscid flow; aerodynamic forces and moments; airfoil characteristics; incompressible flow around two-dimensional airfoils and finite wings; three-dimensional incompressible flow; and introduction to aircraft performance. Prerequisite: MAE 3420. (F)

MAE 5510 Dynamics of Atmospheric Flight (3)
Aircraft equations of motion; aerodynamic forces and moments; aircraft stability and control in roll, pitch, and yaw; aircraft motion with six degrees of freedom; aircraft performance and design; and design project. Prerequisite: MAE 5500. (Sp)

MAE 5520 Elements of Space Flight (3)
Introduction to astrodynamics and orbital design. Spacecraft systems engineering including spacecraft subsystems (e.g., attitude control, communications, power, structures). Introduction to propulsion and launch vehicles. Prerequisites: MAE 3320 or PHYX 3550; or both ECE 2410 and 2530. (F)

MAE 5530 Space System Design (3)
Students in teams perform a space system design involving all aspects, including technical, cost, and schedule. Class is linked to national design competitions and/or current USU spacecraft design projects. Prerequisite: MAE 5520. (Sp)

MAE 5600 Manufacturing Process Planning and Statistical Quality Control (3)
Explores how to produce products in today’s manufacturing environment. Topics include forecasting, planning, facility layout, job design, planning, scheduling, total quality management, and statistical process control as they relate to manufacturing firms. Prerequisite: MAE 2600. (F)

MAE 5610 Hydraulics and Pneumatics (3)
Hydraulic and pneumatic circuit theory, components, and systems analysis and design. Efficiency and performance evaluation, based on steady and transient flow principles and force and energy transfer concepts. Introduction to electrohydraulic control systems. Prerequisite: MAE 3420. (Sp)

MAE 5620 Manufacturing Automation (3)
Principles of automation technology as applied to manufacturing systems. Topics include motion control, PLC, robotics, CNC, and system integration. Prerequisite: MAE 2600. (F)

MAE 5630 Machining Theory and Applications (3)
Introduces fundamental metal cutting theory (such as chip formation, cutting forces and temperatures, and tool wear) and its applications, including high-speed machining of aerospace and other difficult-to-machine alloys. Prerequisites: MAE 2600 and 3040. (Sp)

MAE 5640 Design for Manufacturability (3)
Product design for economic production. Manufacturing processes (especially primary processes), associated tooling cost and design, and resultant product design requirements. Prerequisites: MAE 2600 and 3800. (F)

MAE 5650 Nontraditional and Additive Manufacturing Processes (3)
Introduction to nontraditional and additive manufacturing processes, including rapid prototyping, laser processing, and electrical discharge machining. Prerequisites: MAE 2060, 2600, and 3440. (Sp)

MAE 5680 Manufacturing Planning and Simulation (3)
Explores planning and simulation methods for process design issues in electronics manufacturing (EM) and discrete parts manufacturing. Students learn planning, modeling, and simulation methods at the process and system level. Prerequisite: MAE 5600. (Sp)

MAE 5900 Cooperative Practice (3)
Planned work experience in industry. Detailed program must have prior approval. Written report required. Student must be in professional program. (F,Sp,Su)

MAE 5930 Special Problems (1-3) ®
Formulation and solution of practical or theoretical problems. Prerequisite: Permission of department head. (F,Sp,Su)

MAE 6010 Finite Element Methods in Solid Mechanics II (3)**
Advanced theory and applications of finite element methods to both static and dynamic solid mechanics problems. Prerequisite: MAE 5020. Also taught as CEE 6010. (Sp)
MAE 6040 Continuum Mechanics and Elasticity (3)
Mechanics of continuous media; tensors, stress, strain, deformation, rate equations, and constitutive equations. Plane stress, plane strain, torsion, and bending theories, as well as problem solutions, investigated for linear elastic materials. Prerequisite: MAE 3040 or CEE 3010. (F)

MAE 6050 Experimental Methods in Structural Engineering (3)
Experimental techniques used in research and design in structural engineering and mechanics. Structural models. Theory and practical applications. Development of principles used to design research projects. Prerequisite: Instructor’s consent. Also taught as CEE 6050. (Sp)

MAE 6070 Mechanics of Composite Materials II (3)**
Second course in composite materials. Stress-strain states of laminated composite structures, including interlaminar stresses, failure criteria, and hygrothermal stresses. Prerequisite: MAE 5060. Also taught as CEE 6070. (F)

MAE 6080 Boundary Element Method (3)
Presents introduction to boundary element method to solve fluid and solid mechanics problems. Prerequisites: FORTRAN programming skills, MAE 3040, 5020. (Sp)

MAE 6090 Theory of Plates and Shells (3)
Introduction to plate and shell theories. Development of bending and buckling of plates and shells through classical theory. Prerequisite: MAE 3040 or CEE 3010. Also taught as CEE 6090. (F)

MAE 6130 Structural Dynamics and Seismic Design (3)
Development and solutions for equations of motion for single- and multi-degree of freedom systems. Dynamic analysis by Modal Superposition and Response Spectra. Design of structures for seismically active areas. Also taught as CEE 6130. (Sp)

MAE 6180 Dynamics and Vibrations (3)***
Fundamentals of two-dimensional and three-dimensional rigid body dynamics, including Newtonian, Lagrangian, and Leavitt Energy Methods. Equations of motion, mode shapes, and natural frequencies for continuous media and multi degree-of-freedom systems. Prerequisite: MAE 5300 or CEE/MAE 6130. Also taught as CEE 6180. (Sp)

MAE 6200 Linear Multivariable Control (3)
Modeling, analysis, and design of multi-input, multi-output control systems, including both state space and transfer matrix approaches, with an emphasis on stability. Prerequisite: ECE 4310, MAE 5310, or equivalent. Also taught as ECE 6320. (F)

MAE 6300 Nonlinear and Adaptive Control (3)
Methods of nonlinear and adaptive control system design and analysis. Includes qualitative and quantitative theories, graphical methods, frequency domain methods, sliding surface design, linear parameter estimation methods, and direct and indirect adaptive control techniques. Prerequisite: ECE/MAE 6320. Also taught as ECE 6330. (Sp)

MAE 6400 Aircraft Dynamics and Flight Simulation (3)**
Aircraft control and maneuverability, control response and transfer functions, nonlinear dynamics with gyroscopic and aerodynamic coupling, Euler angle formulations, direction cosine formulation, quaternion formulation, numerical integration methods, software design and development. Prerequisite: MAE 5510. (Sp)

MAE 6410 Fluid Dynamics (3)
Basic laws of fluid motion, Navier-Stokes equations, kinematics of the flow field, fundamental exact solutions of viscous flow, and elements of turbulence. Prerequisite: MAE 3420 or CEE 3500. (F)

MAE 6420 Experimental Methods in Fluid Mechanics (3)***
Explores process and techniques involved in acquisition, analysis, and presentation of experimental data, with particular emphasis on aerodynamic applications. Topics include digital signal processing, statistics, uncertainty analysis, hot wire anemometry, and wind tunnel testing. Prerequisite: MAE 3420. (Sp)

MAE 6430 Boundary Layer Theory and Convection Heat Transfer (3)

MAE 6440 Advanced Computational Fluid Dynamics (3)
Advanced topics in computational fluid dynamics using the finite-volume method, compressible flow algorithms including body-fitted nonorthogonal grids, linear solvers, turbulence modeling, and parallel computing. Includes extensive code development. (F)

MAE 6450 Thermodynamics (3)***
Topics in classical and statistical thermodynamics, including distribution functions, free molecular flow, electron and photon gas modeling, derived properties of solids, and thermodynamic applications in areas of current research interest. Prerequisite: MAE 3400. (F)

MAE 6460 Conduction Heat Transfer (3)***
Integral, differential, and numerical methods for solving engineering problems associated with the diffusion of heat in a rigid solid. Prerequisite: MAE 3440. (Sp)

MAE 6480 Radiation Heat Transfer (3)***
Radiation theory and applications. Includes utilization of computer software. Prerequisite: MAE 3440. (F)

MAE 6490 Turbulence (3)***
Fundamentals of turbulent fluid flow, with emphasis on providing student with sufficient physical and mathematical background to critically evaluate current literature and make original research contributions. Topics include stochastic tools, the governing equations, transition to turbulence, isotropic turbulence, measurement techniques, and free and wall bounded turbulent shear flows. Prerequisite: MAE 6410 or instructor’s consent. (Sp)

MAE 6510 Aviation Electronics (3)
Aviation electronics and navigation, including radio navigation, supersonic and hypersonic flight, and air traffic control. Prerequisite: MAE 3800. (F)

MAE 6570 Potential Fluid Flow (2)*
Application of the principles and methods of classical hydrodynamics to the solution of problems. Closed form solution to inviscid fluid flows obtained using complex variables and conformal mappings. Prerequisite: CEE 3510 or MAE 3420. Also taught as CEE 6570. (F)

MAE 6620 Advanced Topics in Metal Cutting (3)
Advanced topics in metal cutting mechanics, tool wear and tool life, chip control and breaking, high-speed and dry machining, surface roughness and integrity, and the optimization and monitoring of machining operations. Prerequisites: MAE 3800, 5630. (Sp)

MAE 6640 Life Cycle Engineering (3)
Familiarizes students with re-engineering, cost/benefit analysis, value engineering, and life cycle design. Students will analyze costs and benefits of design decisions
over the product life (needs, market, use, service, reliability, retirement, etc.) while improving the life cycle design of industrial products. Prerequisite: Graduate standing or permission of instructor. (F)

MAE 6800 Advanced Machine Design (3)***
Advanced topics in fluid film and boundary lubrication. Dynamics and vibration consideration in design of machine systems and fatigue failure theories. Prerequisite: MAE 4300. (Sp)

MAE 6900 Seminar (0.5) ®
Overview of graduate program requirements, current research, and research opportunities. Presentations from graduate students, faculty, and outside speakers. Master’s degree candidates must include 1 credit and doctoral degree candidates must include 2 credits of MAE 6900 in an approved program of study. Prerequisite: Graduate standing or approval of department head. (F,Sp)

MAE 6930 Special Problems (1-3) ®
Independent or group study of engineering problems not covered in regular course offerings. (F,Sp,Su)

MAE 6950 Design Project (3)
Individual projects involving the design, development, and/or testing of components, devices, or systems. Formal report required. (F,Sp,Su)

MAE 6970 Thesis Research (1-9) ®
Independent or group study of engineering problems not covered in regular course offerings. (F,Sp,Su)

MAE 6990 Continuing Graduate Advisement (1-12) ®
Presentations from graduate students, faculty, and outside speakers. Master’s degree candidates must include 1 credit and doctoral degree candidates must include 2 credits of MAE 6990 in an approved program of study. Prerequisite: Graduate standing or approval of department head. (F,Sp,Su)

MAE 7040 Elasticity (3)***
Energy theorems, variational techniques, complex variable solutions, and three-dimensional solutions for linear elastic materials. Prerequisite: MAE 6040 or instructor’s consent. (Sp)

MAE 7050 Plasticity (3)***
Analysis of stresses, deformation, and collapse in devices constructed of plastic material. Prerequisite: MAE 6040 or CEE 6080/5080 or instructor’s consent. Also taught as CEE 7050. (Sp)

MAE 7080 Advanced Plate and Shell Theory (3)
Analysis of plate and shell structures by classical and numerical methods. Emphasis on numerical solutions. Prerequisite: Instructor’s consent. Also taught as CEE 7080. (F)

MAE 7350 Intelligent Control Systems (3)***
Intelligent control strategies, including neural network, fuzzy logic, associated memory networks, and rule-based control systems. Prerequisite: ECE/MAE 6320 or instructor approval. Also taught as ECE 7350. (Sp)

MAE 7360 Optimal and Robust Control (3)
Advanced methods of control system analysis and design. Operator approaches to optimal control, including LQR, LQG, and L1 optimization techniques. Robust control theory, including QRT, H-infinity, and interval polynomial approaches. Prerequisite: ECE/MAE 6320 or instructor approval. Also taught as ECE 7360. (F)

MAE 7380 Advanced Dynamics and Vibrations (3)***
Advanced techniques in dynamics and vibrations. Prerequisite: CEE/MAE 6180. (F)

MAE 7580 Advanced Finite Element Analysis in Fluid Mechanics (3)
Application of the finite element method to analysis of problems in fluid mechanics. Use of higher order element to two- and three-dimensional flows. Prerequisites: CEE 3510, CEE/MAE 6570; or MAE 3420, CEE/MAE 5020. Also taught as CEE 7580. (Sp)

MAE 7930 Special Problems (1-3) ®
Independent or group study of engineering problems not covered in regular course offerings. (F,Sp,Su)

MAE 7970 Dissertation Research (1-12) ®
(F,Sp,Su)

MAE 7990 Continuing Graduate Advisement (1-12) ®
(F,Sp,Su)

® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

**Maught 2005-2006.
***Maught alternate years. For further information, consult department.

Mathematics (MATH)

See Department of Mathematics and Statistics, pages 254-259

MATH 0900 Elements of Algebra (3) ©
Review of elementary algebra in preparation for MATH 1010. Remedial class not carrying USU or transfer credit. Remedial fee required. (F,Sp,Su)

MATH 1010 Intermediate Algebra (3) ©
Linear equations and inequalities, polynomials and exponents, rational expressions, roots and radicals, quadratic equations, lines and system of linear equations. Prerequisite: MATH 0900 or Math ACT score of at least 18, or successful completion of placement test. Required for entrance to USU. Course fee required. (F,Sp,Su)

MATH 1030 QL Quantitative Reasoning (3)
Exploration of contemporary mathematical thinking, motivated by its application to problems in modern society. Emphasizes development of skill in analytical reasoning. Prerequisite: Math ACT score of at least 23. Satisfactory score on placement exam required for MATH 1050, or MATH 1010. (F,Sp)

MATH 1050 QL College Algebra (4) ©
Real and complex number systems, graphs, inverse functions, polynomial and rational functions, exponential and logarithmic functions, systems of equations, elementary matrix algebra, induction, binomial theorem, permutations and combinations. Graphing calculator required. Prerequisite: MATH 1010, or Math ACT score of at least 23, or satisfactory score on placement exam. (F,Sp,Su)

MATH 1060 Trigonometry (2) ©
Trigonometric functions, equations, identities, and applications. Graphing calculator required. Prerequisite: MATH 1010, or Math ACT score of at least 23, or satisfactory score on placement exam. May be taken concurrently with MATH 1050. (F,Sp,Su)

MATH 1100 QL Calculus Techniques (3)
Techniques of elementary calculus, differentiation, integration, elementary optimization, and introduction to partial derivatives. Applications in business, social science, and natural resources. Graphing calculator required. Prerequisite: MATH 1050, or a Math ACT score of at least 25. (F,Sp,Su)

MATH 1210 QL Calculus I (4)
Analytic geometry, differential and integral calculus, transcendental functions, and applications. Graphing calculator required. Prerequisites: MATH 1050 and 1060, or an AP Calculus score of at least 3 on the AB test, or a Math ACT score of at least 27. (F,Sp,Su)

MATH 1220 QL Calculus II (4)
Integration, infinite series, introduction to vectors, and applications. Graphing calculator required. Prerequisite: MATH 1210, or AP score of at least 4 on Calculus AB exam or at least 3 on Calculus BC exam. (F,Sp,Su)

MATH 2020 QL Introduction to Logic and Geometry (3)
Logic; introduction to algebraic geometry and Euclidean geometry. MATH 2020 is a mathematics content course, not a methods course. Prerequisite: MATH 1050 or Math ACT score of at least 25. Course fee required. (F,Sp,Su)

MATH 2110 QL Multivariable Calculus (3)
Vector calculus, multiple integration, partial derivatives, line and surface integrals. The theorems of Green, Gauss, and Stokes. Prerequisite: MATH 1220 or AP Calculus score of 5 on BC exam. (F,Sp,Su)

MATH 2250 QL Linear Algebra and Differential Equations (4)
Linear systems, abstract vector spaces, matrices through eigenvalues and
eigenvectors, solution of ode’s, Laplace transforms, first order systems. Prerequisite: MATH 1220 or AP Calculus score of 5 on BC exam. (F,Sp,Su)

MATH 2260 Internship and Cooperative Studies (1-6) ®
Lower-division internship/cooperative work experience. (F,Sp,Su)

MATH 2270 QI Linear Algebra (3)
Topics from linear algebra, including matrices, abstract vector spaces, linear independence, bases, eigenvalues, eigenvectors, orthogonality, least squares approximation, and linear transformations. Recommended for Math and Math Education majors. Prerequisite: MATH 1220 or AP Math score of 5 on Calculus BC exam. (F)

MATH 2280 QI Ordinary Differential Equations (3)
First-order differential equations: solution techniques, numerical methods and applications. Higher-order scalar equations; linear systems, phase plane analysis. Additional topics selected from: series solution techniques, boundary value problems, Sturm-Liouville theory, bifurcation analysis. Prerequisites: MATH 2210 and 2270. (F)

MATH 2910 Directed Reading and Conference (1-3) ®
Prerequisite: Prior arrangement with specific instructor. (F,Sp,Su)

MATH 3110 Modern Geometry (3)
Euclidean and non-Euclidean geometry, with emphasis on historical significance of parallel postulate. Axiomatic development of geometry and theorems. Prerequisite: MATH 1220. (Sp)

MATH 3300 School Laboratory for Mathematics Teachers Level I (1)
Provides preservice mathematics teachers with supervised experiences working with teachers and students in middle and secondary schools. Activities coordinated with other Level I professional education courses. (F,Sp)

MATH 3310 Discrete Mathematics (3)
Logic and axiomatics, sets, functions, counting methods, recurrence relations, graph theory, Boolean algebras, combinatorial circuits, automata, grammars, and languages. Prerequisite: MATH 1220. (F,Sp,Su)

MATH 4200 CI Foundations of Analysis (3)
Fundamental concepts of analysis studied from a rigorous point of view. Rigorous development of the real number system and calculus. Emphasis on learning how to construct proofs. Prerequisites: MATH 2210, 2250; or MATH 2210, 2270, 2280. (F,Sp)

MATH 4230 QI Applied Mathematics in Biology (3)***
Formulation, analysis, and experimental tests of mathematical models in biology. Combines mathematics, computing, experimental design, and statistical analysis while applying the scientific method to biological systems. Lectures, recitations, and a laboratory. Prerequisites: Biol 1220 and MATH 2250; or permission of instructor. Programming experience recommended. Also taught as Biol 4230. (Sp)

MATH 4250 Advanced Internship/Co-op (1-6) ®
An internship/cooperative work experience which has been determined by the department to be at the 4000-level. (F,Sp,Su)

MATH 4300 School Laboratory for Mathematics Teachers Level II (1)
Provides preservice mathematics teachers with supervised experiences working with teachers and students in middle and secondary schools. Activities coordinated with other Level II professional education courses. (F,Sp)

MATH 4310 CI Introduction to Algebraic Structures (3)
First course in theory of algebraic structures. Topics include elementary group and ring theory. Prerequisites: MATH 2210, 2270, 2280; or MATH 2210, 2250. (F,Sp)

MATH 4400 History of Mathematics and Number Theory (3)
Chronological parallel of math history with civilization, evolution of mathematical thought, historical foundations of numbers, computation, geometry, algebra, trigonometry, and calculus. Introduction to number theory. Prerequisites: At least one of MATH 4200 and 4310, and concurrent enrollment in the other. (Sp)

MATH 4500 Methods of Secondary School Mathematics Teaching (3)
A teaching methods course required of all prospective secondary school mathematics teachers. Prerequisites: MATH 3110; and one of MATH 4200 or 4310. (F,Sp)

MATH 4620 Computer Aided Math for Secondary Math Teachers (3)
Problem solving using symbolic manipulation software on computers. Topics include material introduced in MATH 1210, 2210, 2250, 2270, and 2280. Includes instruction in the use of modern computerized devices in the classroom. Prerequisites: MATH 2210, 2250; or MATH 2210, 2270, 2280. (F)

MATH 4630 Computer Aided Math for Scientists and Engineers (3)
Problem solving for scientists and engineers, using symbolic manipulation software on computers. Undergraduate mathematical concepts are revisited and extended. Prerequisites: MATH 2210, 2250; or MATH 2210, 2270, 2280. (Sp)

MATH 4700 Engineering Mathematics and Statistics (3)
Advanced engineering mathematics and statistics including: random variables; distributions; central limit theory; hypothesis testing; Anova; quality control; Fourier series; introductory analytic and numerical methods for elliptic, parabolic, and hyperbolic PDEs; and modern software packages. Prerequisites: MATH 2210; MATH 2250 or 2280. (F,Sp)

MATH 4910 Directed Reading and Conference (1-3) ®
Registration requires prior arrangement with specific instructor. (F,Sp,Su)

MATH 5110 Differential Geometry (3)***
Introduction to geometry of curves and surfaces in three dimensions, using graphic and symbolic software. Prerequisites: MATH 2210, 2250; or MATH 2210, 2270, 2280. (F)

MATH 5210 Introduction to Analysis I (3)
One and several variable calculus from an advanced point of view. Proofs of all main theorems in calculus. Prerequisite: MATH 4200 or 5510. (F)

MATH 5220 Introduction to Analysis II (3)
Continuation of MATH 5210. Rigorous development of multivariable advanced calculus. Prerequisite: MATH 5210. (Sp)

MATH 5270 Complex Variables (3)
Basic theory and applications of complex variables for mathematics, physics, and engineering students. Topics include analytic functions, contour integration, and residue theorem conformal mappings. Prerequisites: MATH 2210, 2250; or MATH 2210, 2270, 2280. (Sp)

MATH 5310 Introduction to Modern Algebra (3)***
Continuation of MATH 4310. Topics include: Sylow theory for finite groups, factorization theory for commutative rings, and Galois theory. Prerequisite: MATH 4310. (Sp)

MATH 5340 Theory of Linear Algebra (3)**
Vector space theory, linear transformations and matrices, eigenvalues and eigenvectors, inner product spaces, orthogonality, canonical forms, and Hermitian matrices. Prerequisites: MATH 2250 or 2270; or consent of instructor. (Sp)

MATH 5410 Methods of Applied Mathematics (3)
Basic modeling and qualitative understanding, including dimensional analysis (Buckingham Pi theorem). Asymptotic solutions, perturbation approaches, boundary layers in differential equations, variational calculus, Hamilton’s principle, and conservation of energy. Emphasizes practical approaches to science and engineering problems. Prerequisites: MATH 2210, 2250; or MATH 2210, 2270, 2280. (F)

MATH 5420 Partial Differential Equations (3)
Modeling with partial differential equations, diffusion, and wave equations. Classical solution techniques including: maximum principles, separation of variables (eigenfunctions), method of characteristics, Fourier and Laplace transforms, and singularity methods (Green’s Functions). Emphasizes understanding and solving physical equations. Prerequisite: MATH 2250 or 2280. (Sp)

MATH 5460 Introduction to the Theory and Application of Nonlinear Dynamical Systems (3)
Qualitative behavior of nonlinear maps and ordinary differential equations. Stability
of solutions, bifurcation theory, chaos, and applications. Prerequisite: MATH 2250 or 2280. (Sp)

MATH 5500 Capstone Mathematics and Statistics for Teachers (3)
Builds on competencies attained in mathematics and statistics, enabling students to connect with and relate mathematics and statistics to real-world problem solving, while enhancing their capacity to explain conceptual mathematics. Prerequisites: MATH 4200, 4310, and 4400. (F)

MATH 5510 Introduction to Topology (3)
Elementary point-set topology, topological spaces, separation axioms, metric spaces, compactness, connectedness, order topology, countability axioms, continuity, and homomorphisms. Prerequisite: MATH 2210 or equivalent. (F)

MATH 5570 Actuarial Math I (3)***
Introduction to theory of risk and its application to construction and analysis of models for insurance systems. Prerequisites: MATH 5710, STAT 3000, and permission of instructor. (F)

MATH 5580 CI Actuarial Math II (3)***
Continuation of MATH 5570. Prerequisite: MATH 5570. (Sp)

MATH 5610 Computational Linear Algebra and Solution of Systems of Equations (3)
Numerical solutions of systems of linear and nonlinear equations, methods for eigensystems, least squares problems, finding roots of functions and nonlinear systems, constrained and unconstrained optimization. Prerequisites: MATH 2210, MATH 2250 or 2270, and a high-level programming language. (F)

MATH 5620 Numerical Solution of Differential Equations (3)**
Numerical solution of differential equations, initial and boundary value problems, finite difference, finite element, and spectral methods (FET) applied to ODEs and PDEs. Prerequisites: MATH 2210; MATH 2250 or 2270; MATH 2280; and a high-level programming language. (Sp)

MATH 5640 Optimization (3)
One-semester introductory survey of optimization, including both continuous and combinatorial problems. Topics include: linear programming, constrained and unconstrained optimization, network models, dynamic programming, and integer programming. Prerequisites: MATH 2210; and MATH 2250 or 2270. (Sp)

MATH 5710 Introduction to Probability (3)
Discrete and continuous probability, random variables, distribution and density function, joint distributions, conditional probabilities and expectations, Bayes' theorem, moments, moment generating functions, inequalities, convergence in probability and distribution, and central limit theorem. Prerequisites: MATH 2210; and MATH 2250 or 2270. (F,Sp)

MATH 5720 Introduction to Mathematical Statistics (3)
Basic theory of point and interval estimation and hypothesis testing. Topics include: sufficiency and completeness; method-of-moments, best unbiased, maximum likelihood, Bayes', and empirical Bayes' estimators; Neyman-Pearson lemma; and likelihood ratio tests. Prerequisite: MATH 5710. (Sp)

MATH 5760 Stochastic Processes (3)*
Application of stochastic processes to engineering and science. Topics include Markov chains, Poisson processes, renewal theory, and Brownian motion. Prerequisite: MATH 5710. (F)

MATH 5810 Topics in Mathematics (1-3) ®
MATH 5820 Topics in Mathematics (1-3) ®
Prerequisite: Permission of instructor. (F,Sp,Su) (F,Sp,Su)

MATH 5910 Directed Reading and Conference (1-3) ®
Prerequisite: Prior arrangement with a specific instructor. (F,Sp,Su)

MATH 5950H Honors Senior Project (1-4)
A senior project required for completion of the departmental honors program. Prerequisite: Permission of instructor. (F,Sp,Su)

MATH 6110 Differential Geometry (3)*
MATH 6120 Differential Geometry (3)*
Topics include manifolds, calculus on manifolds, tensor calculus and differential forms, Lie groups, Riemannian geometry, deRham’s Theorem, and Hodge theory. Prerequisite: MATH 5110 or 5220; MATH 6110 must be completed prior to MATH 6120. (F) (Sp)

MATH 6210 Real Analysis (3)*
MATH 6220 Real Analysis (3)*
Measure theory, abstract integration, differentiation, introduction to functional analysis, Hilbert and Banach spaces. Prerequisite: MATH 5210; MATH 6210 must be completed prior to 6220. (F) (Sp)

MATH 6250 Graduate Internship/Cooperative Studies (1-6) ®
Graduate internship/cooperative work experience. (F,Sp,Su)

MATH 6270 Complex Variables (3)*
Analytic functions, singular points, conformal maps, harmonic functions, analytic continuation, Residue theory. Prerequisite: MATH 5210 or 5270. (Sp)

MATH 6310 Modern Algebra (3)*
MATH 6320 Modern Algebra (3)*
Algebraic structures, including vector spaces, groups, rings, algebras, and modules. Topics include: category theory, elementary commutative ring theory, and algebraic geometry. Prerequisite: MATH 5310; MATH 6310 must be completed prior to 6320. (F) (Sp)

MATH 6340 Multilinear Algebra and Matrix Theory (3)*
MATH 6350 Multilinear Algebra and Matrix Theory (3)*
Permutation groups and representations, tensor spaces, symmetry classes of tensors, generalized matrix functions, matrices and graphs, and combinatorial matrix algebra. Prerequisite: MATH 5340; MATH 6340 must be completed prior to 6350. (F) (Sp)

MATH 6410 Ordinary Differential Equations I (3)*
Existence-uniqueness theory, linear equations and systems, nonlinear equations, and stability. Prerequisite: MATH 5210. (F)

MATH 6420 Ordinary Differential Equations II (3)*
Introduction to the theory of partial differential equations, including existence and uniqueness. Prerequisite: MATH 5220 or 6410. (Sp)

MATH 6440 Ordinary Differential Equations II (3)*
Asymptotic behavior, periodicity, boundary value problems, and perturbation methods. Prerequisite: MATH 6410. (Sp)

MATH 6450 Partial Differential Equations II (3)*
Advanced existence and uniqueness theorems, behavior of solutions, Sobolev spaces. Prerequisites: MATH 6210; and MATH 5420 or 6420. (Sp)

MATH 6470 Advanced Asymptotic Methods (3)*
Theory of asymptotics and perturbations. Boundary layers for ordinary and partial differential equations. Free boundary problems, shocks, multiple-scale methods, and WKB methods. Prerequisite: MATH 5420. (Sp)

MATH 6510 Topology (3)*
MATH 6520 Topology (3)*
Homotopy theory, fundamental groups, covering spaces, singular homology with applications to spheres and Euclidean spaces, CW complexes, cohomology ring, and Poincare duality. Prerequisites: MATH 4310, 5510; and MATH 5310 or consent of instructor. MATH 6510 must be completed prior to 6520. (F) (Sp)

MATH 6610 Numerical Analysis (3)*
Linear and nonlinear equations, large scale problems, and eigenvalues. Prerequisites: MATH 5210, 5610, or consent of instructor. (F)

MATH 6620 Numerical Analysis (3)*
Numerical solution of ordinary and partial differential equations. Prerequisite: MATH 6610 or consent of instructor. (Sp)

MATH 6640 Optimization (3)*
Unconstrained problems, smooth function methods, linearly constrained problems,
linear and quadratic programming, nonlinearly constrained methods, and practicalities. Prerequisite: MATH 5220 or consent of instructor. (Sp)

MATH 6750 Probability Theory (3)*
MATH 6760 Probability Theory (3)*
Probability spaces, random variables, distribution functions, expectations, independence, modes of convergence, limit theorems, and applications. Prerequisite: MATH 5210; MATH 6750 must be completed prior to 6760. (F) (Sp)

MATH 6810 Topics in Mathematics (Topic) (3)*
MATH 6820 Topics in Mathematics (Topic) (3)*
Prerequisite: Consent of instructor. (F) (Sp)

MATH 6910 Directed Reading and Conference (1-3)*
Prerequisite: Prior arrangement with specific instructor. (F,Sp,Su)

MATH 6970 Thesis (1-9)*
(F,Sp,Su)

MATH 6990 Continuing Graduate Advisement (1-3)*
(F,Sp,Su)

MATH 7110 Geometry (Topic) (3)*
MATH 7120 Geometry (Topic) (3)*
(F) (Sp)

MATH 7210 Analysis (Topic) (3)*
MATH 7220 Analysis (Topic) (3)*
(F) (Sp)

MATH 7310 Algebra (Topic) (3)*
MATH 7320 Algebra (Topic) (3)*
(F) (Sp)

MATH 7410 Differential Equations (Topic) (3)*
MATH 7420 Differential Equations (Topic) (3)*
(F) (Sp)

MATH 7510 Topology (Topic) (3)*
MATH 7520 Topology (Topic) (3)*
(F) (Sp)

MATH 7610 Numerical Analysis (Topic) (3)*
MATH 7620 Numerical Analysis (Topic) (3)*
(F) (Sp)

MATH 7750 Probability (Topic) (3)*
MATH 7760 Probability (Topic) (3)*
(F) (Sp)

MATH 7810 Topics in Mathematics (Topic) (3)*
MATH 7820 Topics in Mathematics (Topic) (3)*
(F) (Sp)

MATH 7910 College Teaching Internship (3)
(F,Sp,Su)

MATH 7970 Dissertation Research (1-15)*
(F,Sp,Su)

MATH 7990 Continuing Graduate Advisement (1-9)*
(F,Sp,Su)

*Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

© This course is also offered by online correspondence and/or CD through Continuing Education Time Enhanced Learning.

MHR 4730 Business and Society (3) Examines the relationship of business enterprises with their external environment and helps students to develop an analytical framework for addressing the business and society relationship over one’s career in business or government. Helps students recognize, formulate, and analyze moral issues, as well as trace decisions forward to personal, cultural, and societal consequences.

MHR 4800 Independent Research and Readings (1-3) Provides opportunity for student to pursue special interests under tutorship of faculty. Prerequisite: Approval of faculty member and department head. (F,Sp,Su)

MHR 4880 CI Business Strategy in an Entrepreneurial Context (3) Integrative capstone course dealing with processes, methods, and steps involved in starting and growing small to mid-size business ventures. Emphasizes cross-functional challenges of market entry, finance, operations, managing business growth, and entrepreneurs’ responsibilities to society. Prerequisites: Senior standing; MHR 3110, BA 3400, 3500, 3700. (F,Sp)

MHR 4890 CI Business Strategy in a Global Context (3) Integrative capstone course dealing with challenges and strategies associated with international business. Students develop global business judgment and perspective, recognize, formulate, and analyze moral issues, as well as trace decisions forward to personal, cultural, and societal consequences.

MHR 4950H Senior Honors Thesis/Project (3) Creative project that will then be written up, and presented, as a Senior Thesis as required for an Honors Plan. (Sp)

MHR 5350 Contemporary Manufacturing Management (3) Examines contemporary principles, techniques, and research findings of high-performance manufacturing. Analysis of leading models of management and continuous improvement, based upon best company practices, particularly lean, just-in-time manufacturing. (F)

MHR 5640 Selected Topics in Management and Human Resources (1-3) Selected topics in management and/or human resources are pursued in depth. Topics and instructor may vary.

MHR 5610 Advanced Business Law (3) Detailed investigation of business law, including law of contracts, torts, property, secured transactions, commercial paper, and business organizations. Prerequisite: MHR 2990.

MHR 6300 Human Resource Applied Research (1-3) Provides applied research for selected human resource topics. (F)

MHR 6350 Contemporary Manufacturing Management (3) Examines contemporary principles, techniques, and research findings of high-performance manufacturing. Analysis of leading models of management and continuous improvement, based upon best company practices, particularly lean, just-in-time manufacturing. (F)

MHR 6500 Managing Individuals and Groups (3) Focuses on development of interpersonal and team skills. Includes development of organizational systems supporting effective use of human resources, including performance management, motivation, selection, training, rewards, and career development. (F)

MHR 6510 Performance Management (1-3) Introduces Human Resource Management, and then undertakes an in-depth analysis of performance management process, including job analysis, choice of raters, performance feedback, employee motivation and discipline, and training for improvement of individual performance.

MHR 6550 Human Resource Planning and Staffing (3) Focuses upon creation of competitive advantage through strategic human resources planning and staffing. Topics include job analysis, preparing candidate specifications, recruitment, assessment, and placement. Also covers pertinent laws/regulations and applicable descriptive/inferential statistics. (F)

MHR 6620 Training and Organizational Development (3) Provides advanced treatment of employee, management, and organizational development. Specific topics include: historical background, needs assessment, program design and implementation, outcomes evaluation, and how individuals and organizations change. (Sp)

MHR 6630 Compensation and Benefits (3) Strategic analysis of compensation and benefits policies and programs. Includes job evaluation systems, job pricing, wage and salary surveys, statistical methods used in compensation, and employee benefits. (Sp)

MHR 6640 Selected Topics in Management and Human Resources (1-3) Selected topics in management and/or human resources are pursued in depth. Topics and instructor may vary.

MHR 6650 Team and Interpersonal Effectiveness (3) Experiential course designed to develop team effectiveness, and specific managerial and leadership skills contributing to interpersonal competence and effectiveness in work groups and organizations. (F)

MHR 6670 Employee Relations and the Labor Movement (3) Comprehensive survey of union-management relationships, including labor markets and the labor movement, labor history and law, union organization and government, and contract negotiation and administration. Includes exercises and cases in negotiations and grievance processes. (Sp)

MHR 6690 Human Resource Policy and Strategy (3) Capstone course in Human Resource Management, designed to integrate concepts learned in specialized courses to the management of a total Human Resource function, with integration from both strategic and tactical perspectives. Covers domestic and international issues, as well as organizational change and development. (Sp)

MHR 6700 Employment Law (3) Examines laws related to employment, labor relations, civil rights, compensation, safety, health, and retirement. Provides experience in dispute resolution techniques in a nonunion employment setting, including negotiation, mediation, and arbitration. (F)

MHR 6890 Global Business Strategy (3) Integrative capstone course, taking a CEO’s perspective, addressing global competi-
tiveness, strategic assessment, policy development, and strategy execution. Must be taken at end of advanced MBA core. (Sp)

MHR 6900 Independent Research and Readings (1-3) ®
Provides opportunity for students to pursue special interests under tutelage of the faculty. Prerequisite: Approval of faculty member and department head. (F,Sp,Su)

MHR 6960 Professional Paper (3)
Preparation of paper of professional quality, designed to demonstrate ability to complete a major project and effectively present the results.

MHR 6970 Thesis (1-4) ®
Designed for students preparing a master’s degree thesis. (F,Sp,Su)

MHR 6990 Continuing Graduate Advisement (1-3) ®
(F,Sp,Su)

1Parenthetical numbers preceded by d indicate a dual listing.
2This course will be taught as needed. For information about availability, check with Management and Human Resources Department.
3Admission to this course is restricted to students who have been admitted to a USU major with a career total 2.67 or higher GPA and who have completed at least 40 credits.
® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.
© This course is also offered by online correspondence and/or CD through Continuing Education Time Enhanced Learning.

Military Science (MS)
See Department of Military Science, pages 265-266

Basic Course

MS 1010 Introduction to Leadership (2) ®
Establishes a foundation for self and team development through participation in adventure training and team-building activities. Among the subjects presented are: land navigation, leader behavior and unit effectiveness, and effective time management. A two-hour weekly leadership lab is required, as well as one weekend field training exercise. (F,Sp,Su)

MS 1020 Leadership Skills (2) ®
Emphasizes self and team development through participation in classroom and leadership lab. Subject matter includes small unit operations, branches of the Army, troop leading procedures, communications skills, and the organization of company-sized Army units. A two-hour weekly leadership lab is required, as well as one weekend field training exercise. (F,Sp,Su)

MS 2010 Leadership Development (2) ®
Builds on previous leadership instruction, enhancing student skills in land navigation, small unit tactics, written and oral communication, event planning, group coordination and effectiveness, and first aid. During this course, students develop basic skills for leading others in a tactical environment. A two-hour weekly leadership lab is required, as well as one weekend field training exercise. (F,Sp,Su)

MS 2020 Small Unit Leadership (2) ®
Focuses on leader effectiveness. Analyzes selected historical leaders and battles, using the principles of war and other tenets. Student-led discussions highlight lessons learned relative to leadership and organizational success. Oral communication skills are central to this course. A two-hour weekly leadership lab is required, as well as one weekend field training exercise. (F,Sp,Su)

MS 2400 Physical Readiness (1) ®
Physical conditioning course employing U.S. Army principles of fitness. Subjects include: body composition, nutrition, cardiorespiratory fitness, muscle endurance and strength, circuit training, and drills. (F,Sp,Su)

MS 2420 Ranger Preparation (2) ®
Participation in Army ROTC Ranger Challenge program. Advanced military training with practical application of skills taught in MS 1010 and 4020. (F,Sp)

MS 2430 Air Assault (2)
Two-week course conducted at an Army installation in the continental U.S. Provides students with training in helicopter operations, including sling loading and rappelling. Prerequisite: Instructor’s approval. (F,Sp)

MS 2440 Airborne Operations (2)
Three-week course conducted at Fort Benning, Georgia. Provides students with training in military skydiving techniques with practical applications. Prerequisite: Instructor’s approval. (F,Sp)

MS 2510 ROTC Basic Camp (1-6)
Five-week leadership camp conducted at Fort Knox, Kentucky. Designed to introduce students to basic military skills and leadership requirements. Training includes rappelling, marksmanship, small unit tactics, physical fitness, and leadership. Open only to students who have not completed MS 1010, 1020, 2010, and 2020. Prerequisites: Must pass physical exam and must obtain instructor’s approval. (F,Sp)

Advanced Course

MS 3010 Organizational Leadership and Small Unit Tactics (3)
Develops leadership skills within the framework of the U.S. Army. Focuses on theory and application of decision making, planning, organizing, management control, and communications. Also emphasizes small unit tactics and advanced land navigation skills. A two-hour weekly leadership lab is required, as well as one weekend field training exercise. (F,Sp,Su)

MS 3110 Staff Organization and Operations (1-3) ®
Special project staff work for joint Army/Air Force campus ceremonies, leadership labs, field training exercises, and training camps. (F,Sp,Su)

MS 3210 Independent Study (1-3) ®
Students select advanced topics of interest and arrange credit under program advisor supervision in areas related to military science. (F,Sp,Su)

MS 4010 Command and Staff Functions (3)
Addresses functions/roles of the commander/leader and the staff. Explores organizational planning and problem solving, written and oral communications, training management, and evaluation systems. A two-hour weekly leadership lab is required, as well as three one-hour physical fitness sessions per week and one weekend field training exercise. (F,Sp,Su)

MS 4020 Officer Perspectives (3)
Conference course addressing roles and responsibilities of junior Army officers. Examines environmental stewardship, threats to U.S. security, Army modernization initiatives, the military justice system, and the law of war. A two-hour weekly leadership lab is required, as well as three one-hour physical fitness sessions per week and one weekend field training exercise. (F,Sp,Su)

MS 4110 Advanced Staff Operations (1-3) ®
Special project staff work for joint Army/Air Force campus ceremonies, leadership labs, field training exercises, and training camps. Students in this course provide mentoring and guidance to students in MS 3110. Prerequisite: Instructor’s permission. (F,Sp,Su)

MS 4400 Advanced Physical Readiness (1) ®
Provides advanced instruction in physical fitness employing Army techniques and procedures. Students assist Military Science faculty in the planning/conduct of physical fitness training activities performed by lower-division students. Prerequisite: Instructor’s permission. (F,Sp)

MS 4510 ROTC Advanced Camp (1-10) ®
Five-week leadership camp conducted at Fort Lewis, Washington. Advanced Camp environment stresses small-unit leadership under varying and challenging conditions. Prerequisites: Successful completion of basic course requirements and instructor’s approval. (F,Sp,Su)
MS 4520 Cadet Troop Leadership Training (2)
Two-week course conducted at an Army installation in the continental U.S. or overseas. Provides firsthand experience in an Army unit. Students learn about military life and the duties of a lieutenant. Prerequisites: MS 3010, 3020, 4510, and instructor’s approval. (F,Sp,Su)

MS 4610 Military History Seminar (1-3) ®
One-week course in which students travel to, research, and report on significant Civil War sites in the Eastern United States. Available to all students. Requires purchase of airfare and purchase of some food. (F,Sp,Su)

† Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

Music Courses (MUSC)
See Department of Music, pages 267-269

MUSC 1010 BCA Introduction to Music (3) ©
Nontechnical course to develop understanding and enjoyment of music. Through study of musical elements, as well as historical, cultural, and social influences, an awareness of the relationship between techniques and aesthetic values in world music can be developed. (F,Sp,Su)

MUSC 1020 BCA Fundamentals of Music (3) ©
In-depth look at the basic elements of music. Notes, rhythm, scales, intervals, key signatures, chords, cadences, and chord progressions. Includes basic ear training. (F,Sp,Su)

MUSC 1110 Music Theory I (3)
Fundamentals of music. Traditional diatonic harmony in four parts, using triads in root position, first inversion, and second inversion. Prerequisite: Knowledge of music notation. (F)

MUSC 1120 Music Theory II (3)
Traditional harmony in four parts, using nonchord tones, seventh chords, and secondary dominant functions. Prerequisite: MUSC 1110. (Sp)

MUSC 1130 Aural Skills I (1)
First in a four-semester sequence of aural skills (ear training) courses which develop the skills of sight singing, dictation, and the composite skill of critical listening. (F)

MUSC 1140 Aural Skills II (1)
Second in a four-semester sequence of aural skills (ear training) courses which develop the skills of sight singing, dictation, and the composite skill of critical listening. Prerequisite: MUSC 1130. (Sp)

MUSC 1150 Keyboard Harmony I (1)
Development of keyboard skills, in conjunction with MUSC 1110, for music majors and minors. (F)

MUSC 1160 Keyboard Harmony II (1)
Development of keyboard skills, in conjunction with MUSC 1120, for music majors and minors. Prerequisite: Completion of MUSC 1150 with a C- or better, or faculty authorization. (Sp)

MUSC 1310 Introduction to Music Therapy (2)
Introduces students to the field of music therapy through lectures, readings, and experiential work. For music therapy majors only. (F)

MUSC 1320 Music Therapy Ensemble (1) ®
Intended for music therapy majors. Designed to help students increase their performance skills in the areas of accompanying, improvisation, and popular music styles. (F,Sp)

MUSC 1400 Beginning Group Piano (1)
Group piano instruction for nonmusic majors. (Sp)

MUSC 1410 Intermediate Group Piano (1)
Group piano instruction for nonmusic majors. (Sp)
MUSC 1600  Voice Techniques  (1)
Acquaints the nonvocal major with the vocal instrument; its mechanism, terminology, and techniques. (F,Sp)

MUSC 1610  Introduction to Musical Theatre  (2)
Survey course dealing with history, evolution, influence, practice, and production of the American Musical Theatre. (Sp)

MUSC 1620  Introduction to Opera  (2)
Survey course tracing history and style of opera from Peri and Caccini’s “Euridice” of 1594 to contemporary works of John Eaton and Phillip Glass. (F)

MUSC 1630  Individual Vocal Instruction for Nonmusic Majors  (1-2) ®
Variable credit offered, depending upon lesson time (1 credit equals 30 minutes). Designed to give nonmusic majors private vocal instruction at any and all stages of advancement. (F,Sp,Su)

MUSC 1700  Individual Flute Instruction for Nonmusic Majors  (1-2) ®
Variable credit offered, depending upon lesson time (1 credit equals 30 minutes). Designed to give nonmusic majors private flute instruction at any and all stages of advancement. (F,Sp,Su)

MUSC 1710  Individual Oboe Instruction for Nonmusic Majors  (1-2) ®
Variable credit offered, depending upon lesson time (1 credit equals 30 minutes). Designed to give nonmusic majors private oboe instruction at any and all stages of advancement. (F,Sp,Su)

MUSC 1720  Individual Clarinet Instruction for Nonmusic Majors  (1-2) ®
Variable credit offered, depending upon lesson time (1 credit equals 30 minutes). Designed to give nonmusic majors private clarinet instruction at any and all stages of advancement. (F,Sp,Su)

MUSC 1730  Individual Bassoon Instruction for Nonmusic Majors  (1-2) ®
Variable credit offered, depending upon lesson time (1 credit equals 30 minutes). Designed to give nonmusic majors private bassoon instruction at any and all stages of advancement. (F,Sp,Su)

MUSC 1740  Individual Saxophone Instruction for Nonmusic Majors  (1-2) ®
Variable credit offered, depending upon lesson time (1 credit equals 30 minutes). Designed to give nonmusic majors private saxophone instruction at any and all stages of advancement. (F,Sp,Su)

MUSC 1800  Percussion Techniques  (1)
Provides basic playing experience and theoretical understanding of percussion instruments. Designed for music majors. (F)

MUSC 1810  Individual Trumpet Instruction for Nonmusic Majors  (1-2) ®
Variable credit offered, depending upon lesson time (1 credit equals 30 minutes). Designed to give nonmusic majors private trumpet instruction at any and all stages of advancement. (F,Sp,Su)

MUSC 1820  Individual Trombone Instruction for Nonmusic Majors  (1-2) ®
Variable credit offered, depending upon lesson time (1 credit equals 30 minutes). Designed to give nonmusic majors private trombone instruction at any and all stages of advancement. (F,Sp,Su)

MUSC 1830  Individual French Horn Instruction for Nonmusic Majors  (1-2) ®
Variable credit offered, depending upon lesson time (1 credit equals 30 minutes). Designed to give nonmusic majors private French horn instruction at any and all stages of advancement. (F,Sp,Su)

MUSC 1840  Individual Tuba/Euphonium Instruction for Nonmusic Majors  (1-2) ®
Variable credit offered, depending upon lesson time (1 credit equals 30 minutes). Designed to give nonmusic majors private tuba/euphonium instruction at any and all stages of advancement. (F,Sp,Su)

MUSC 1850  Individual Percussion Instruction for Nonmusic Majors  (1-2) ®
Variable credit offered, depending upon lesson time (1 credit equals 30 minutes). Designed to give nonmusic majors private percussion instruction at any and all stages of advancement. (F,Sp,Su)

MUSC 2130  Music Theory III  (3)
Traditional chromatic harmony in four parts, using modulation, mode mixture, and neapolitan and augmented sixth chords. Prerequisites: MUSC 1110 and 1120. (F)

MUSC 2150  Aural Skills III  (1)
Third in a four-semester sequence of aural skills (ear training) courses which develop the skills of sight singing, dictation, and the composite skill of critical listening. Prerequisites: MUSC 1130 and 1140. (F)

MUSC 2160  Aural Skills IV  (1)
Fourth in a four-semester sequence of aural skills (ear training) courses which develop the skills of sight singing, dictation, and the composite skill of critical listening. Prerequisites: MUSC 1130, 1140, and 2150. (Sp)

MUSC 2170  Keyboard Harmony III  (1)
Development of keyboard skills, in conjunction with MUSC 2130, for music majors. Prerequisite: Completion of MUSC 1160 with a C- or better, or faculty authorization. (F)

MUSC 2180  Computer Applications in Music  (2)
Presents operational knowledge of computer hardware and music software. Students use M101 work station to learn music notation, sequencing, and other select applications. Enrollment limited to Music majors only. (F,Sp)

MUSC 2310  Introduction to Observational and Behavioral Methods in Music Therapy  (2)
Basic behavioral terminology and methods, including systematic observations and recording methods for use in music therapy. Students conduct observations in clinical settings in the community. (F)

MUSC 2320  Music Therapy Methods and Materials  (2)
Music interventions and techniques appropriate for a wide range of patient populations, including hospitalized children, older adults, and individuals with orthopedic handicaps. Prerequisites: MUSC 1310 and 2310. (Sp)

MUSC 2410  Individual Organ Instruction (Second Instrument) for Music Majors  (1) ®
Designed to give music majors private organ instruction at any and all stages of advancement. One credit given for 30-minute lessons. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 2420  Piano Literature I  (3)**
Acquaints pianists with the standard piano composers and keyboard literature from the 14th Century to the Classical Period. (F)

MUSC 2430  Piano Literature II  (3)**
Acquaints pianists with the standard piano composers and keyboard literature from the Classical Period to the Romantic Period. (Sp)

MUSC 2440  Piano Literature III  (3)*
Acquaints pianists with the standard piano composers and keyboard literature from the Romantic Period to Impressionism. (F)

MUSC 2450  Piano Literature IV  (3)*
Acquaints pianists with the standard piano composers and keyboard literature from the Impressionist Period to the present day. (Sp)

MUSC 2460  Individual Jazz Piano Instruction for Nonmusic Majors  (1-2) ®
Variable credit offered, depending upon lesson time (1 credit equals 30 minutes). Designed to give nonmusic majors private jazz piano instruction at any and all stages of advancement. (F,Sp,Su)
MUSC 2470 Individual Jazz Piano Instruction (Second Instrument) for Music Majors (1) ®
Designed to give music majors private jazz piano instruction at any and all stages of advancement. One credit given for 30-minute lessons. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 2490 Individual Piano Instruction (Second Instrument) for Music Majors (1) ®
Designed to give music majors private piano instruction at any and all stages of advancement. One credit given for 30-minute lessons. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 2500 Individual String Bass Instruction (Second Instrument) for Music Majors (1) ®
Designed to give music majors private string bass instruction at any and all stages of advancement. One credit given for 30-minute lessons. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 2510 Individual Cello Instruction for Nonmusic Majors (1-2) ®
Variable credit offered, depending upon lesson time (1 credit equals 30 minutes). Designed to give nonmusic majors private cello instruction at any and all stages of advancement. (F,Sp,Su)

MUSC 2520 Individual Cello Instruction (Second Instrument) for Music Majors (1) ®
Designed to give music majors private cello instruction at any and all stages of advancement. One credit given for 30-minute lessons. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 2530 Individual Viola Instruction (Second Instrument) for Music Majors (1) ®
Designed to give music majors private viola instruction at any and all stages of advancement. One credit given for 30-minute lessons. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 2540 Individual Violin Instruction (Second Instrument) for Music Majors (1) ®
Designed to give music majors private violin instruction at any and all stages of advancement. One credit given for 30-minute lessons. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 2550 Guitar Styles (Blues/Bluegrass) (2)*
Designed to teach students to play blues and bluegrass guitar styles. Presentation of musical form and repertoire. Prerequisite: Knowledge of basic chords and some standard notation and/or tablature reading. (F)

MUSC 2560 Guitar Styles (Jazz/Classical) (2)*
Designed to teach students to play jazz and classical guitar styles. Presentation and analysis of pieces which have become “standard” repertoire. Prerequisite: Knowledge of basic chords and some experience reading standard notation and/or tablature. (Sp)

MUSC 2570 Fingerboard Theory I (2)
Basic music theory course in which students use the guitar as a tool for learning the fundamentals of music. (F)

MUSC 2580 Fingerboard Theory II (2)
Follow-up to MUSC 2570. Examination of theoretical concepts of music and how they can be visualized and played on the guitar. (Sp)

MUSC 2590 Individual Guitar Instruction (Second Instrument) for Music Majors (1) ®
Designed to give music majors private guitar instruction at any and all stages of advancement. One credit given for 30-minute lessons. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 2600 Women’s Choir (1) ®
Performance of choral works in a large choral organization open to all women without auditions. (F,Sp)

MUSC 2610 Choral Society (1) ®
Large select mixed choir performing major works for chorus and orchestra. Admission by audition only. (F,Sp)

MUSC 2640 Individual Vocal Instruction (Second Instrument) for Music Majors (1) ®
Designed to give music majors private vocal instruction at any and all stages of advancement. One credit given for 30-minute lessons. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 2660 Italian Diction for Singers (2)
Study of singing diction in Italian using International Phonetic Alphabet in spoken, sung, and written drills. (Sp)

MUSC 2670 German Diction for Singers (2)
Study of singing diction in German using International Phonetic Alphabet in spoken, sung, and written drills. (F)

MUSC 2680 French Diction for Singers (2)
Study of singing diction in French using International Phonetic Alphabet in spoken, sung, and written drills. (Sp)

MUSC 2700 Woodwind Techniques I: Flute, Clarinet (1)
Provides music education major with an introduction to performance and pedagogy of the flute and clarinet. Enrollment limited to majors, or with permission of instructor. (F)

MUSC 2710 Woodwind Techniques II: Saxophone, Oboe, Bassoon (1)
Provides music education major with an introduction to performance and pedagogy for the saxophone, oboe, and bassoon. Enrollment limited to majors or with permission of instructor. Prerequisite: MUSC 2700. (Sp)

MUSC 2720 Marching Band (2) ®
Preparation of musical entertainment and marching drills for football games. Prerequisite: Consent of director. (F)

MUSC 2730 Basketball Band (1) ®
Preparation of “pops” type music for basketball games. Audition necessary. Prerequisite: MUSC 2720. (Sp)

MUSC 2740 Recorder Techniques (1)
Provides music majors with introduction to performance and pedagogy of the recorder, including solo repertoire and ensembles. (Sp)

MUSC 2750 Individual Flute Instruction (Second Instrument) for Music Majors (1) ®
Designed to give music majors private flute instruction at any and all stages of advancement. One credit given for 30-minute lessons. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 2760 Individual Oboe Instruction (Second Instrument) for Music Majors (1) ®
Designed to give music majors private oboe instruction at any and all stages of advancement. One credit given for 30-minute lessons. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 2770 Individual Clarinet Instruction (Second Instrument) for Music Majors (1) ®
Designed to give music majors private clarinet instruction at any and all stages of advancement. One credit given for 30-minute lessons. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 2780 Individual Bassoon Instruction (Second Instrument) for Music Majors (1) ®
Designed to give music majors private bassoon instruction at any and all stages of advancement. One credit given for 30-minute lessons. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 2790 Individual Saxophone Instruction (Second Instrument) for Music Majors (1) ®
Designed to give music majors private saxophone instruction at any and all stages of advancement. One credit given for 30-minute lessons. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)
advancement. One credit given for 30-minute lessons. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 2800 Brass Techniques I: Trumpet, French Horn (1) ® Designed to give prospective music teachers a basic playing experience and theoretical understanding of the high brass instruments. (F)

MUSC 2810 Brass Techniques II: Trombone, Tuba, Euphonium (1) ® Designed to give prospective music teachers a basic playing experience and theoretical understanding of the low brass instruments. (Sp)

MUSC 2850 Individual Trumpet Instruction (Second Instrument) for Majors (1) ® Designed to give music majors private trumpet instruction at any and all stages of advancement. One credit given for 30-minute lessons. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 2860 Individual Trombone Instruction (Second Instrument) for Majors (1) ® Designed to give music majors private trombone instruction at any and all stages of advancement. One credit given for 30-minute lessons. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 2870 Individual French Horn Instruction (Second Instrument) for Majors (1) ® Designed to give music majors private French horn instruction at any and all stages of advancement. One credit given for 30-minute lessons. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 2880 Individual Tuba/Euphonium Instruction (Second Instrument) for Majors (1) ® Designed to give music majors private tuba/euphonium instruction at any and all stages of advancement. One credit given for 30-minute lessons. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 2890 Individual Percussion Instruction (Second Instrument) for Majors (1) ® Designed to give music majors private percussion instruction at any and all stages of advancement. One credit given for 30-minute lessons. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 3010 DHA Masterpieces of Music (3) Acquaints students with great masterpieces of music representing all periods of music history. Examines lives and times of various composers. (F,Sp)

MUSC 3020 DHA History of Jazz (3) Designed to give students an understanding of the development of jazz, popular music, and contemporary idioms, and their contributions to music and culture. (Sp)

MUSC 3100 Motivation and Classroom Management Strategies in Secondary Classroom Music (3) Provides experience in current materials, methods, and management of general music education program in secondary (grades 6-12) public schools. Designed for music education majors. (Sp)

MUSC 3110 Music History I: Origins through Baroque (3) History and literature of early, Renaissance, and Baroque periods. Prerequisite: MUSC 2110. (Sp)

MUSC 3120 Music History II: Classical and Romantic Periods (3) History and literature of the music of the classical and romantic periods. Prerequisite: MUSC 3110. (F)

MUSC 3130 CI Music History III/Theory IV: The Twentieth Century (3) Study of Twentieth Century music history and literature. Includes Twentieth Century tonal, atonal, and avant garde harmonies and compositional techniques. Prerequisites: MUSC 3110, 3120, 3140. (Sp)

MUSC 3140 Musical Form and Analysis (3) Study of imitative, cantus firmus, ostinato, and free contrapuntal procedures of Western music. Explores techniques of Sixteenth Century counterpart. Also includes study of phrase and period structure, small part fonts, theme and variations, rondo and sonata forms, and vocal form. Prerequisite: MUSC 2130. (Sp)

MUSC 3160 World Music (2) Explores music traditions of non-Western cultures throughout the world. Prerequisites: MUSC 2130. (Sp)

MUSC 3170 Conducting (2) Designed to provide students with basic conducting techniques. Prerequisite: Must be a music major, or must have faculty authorization. (F)

MUSC 3180 Scoring and Arranging (2) Theoretical and practical study of scoring for orchestral instruments in various combinations, ranging from small ensembles to full orchestra. Prerequisites: MUSC 2160 and 2180; or MUSC 3900; or permission of instructor. (F,Sp)

MUSC 3220 Choral Methods and Materials (2) Investigates factors relating to administration and teaching of choral music in middle and secondary schools. (F)

MUSC 3230 Choral Literature (2) Survey of choral music from the Renaissance, Baroque, Classical, Romantic, and Twentieth Century suitable for middle and secondary school choirs. (Sp)

MUSC 3240 Instrumental Methods and Materials (2) Examination of teaching methods and materials related to wind and percussion pedagogy. Study of literature, organization and administration, and teaching techniques. (Sp)

MUSC 3260 Elementary School Music (2) Methods and materials in singing, rhythms, creating music, listening, using classroom instruments, fundamentals of music, and movement skills, with emphasis on contemporary approaches to music education. Recommended: MUSC 1010. Enrollment limited to students accepted into the following majors: Music, music education, music therapy, elementary education, pre-elementary education, early childhood education, pre-early childhood education, and special education. Also must have completed a minimum of 45 credits prior to enrollment. (F,Sp,Su)

MUSC 3270 Teaching Strategies and Practicum in Elementary Music (3) In-depth applications of Orff, Kodaly, Dalcroze, and other current methodologies in music education. Includes curriculum design, assessment, and instructional and performance skill development. Students complete a K-6 music teaching practicum experience. Prerequisites: MUSC 1110, 3260. (Sp)

MUSC 3310 Music Therapy and the Exceptional Child (3) Effects of music on physical, social, cognitive, and communication skills of children with disabilities. Prerequisite: MUSC 2320. (F)

MUSC 3320 Psychology of Music I (2)** Psychological foundations of musical behavior, including psychoacoustics, rhythmic, melodic, and harmonic foundations; affective behaviors and music; musical preferences; functional music; musical ability; and music learning. Prerequisite: ECE 3260 or permission of instructor. (Sp)

MUSC 3330 Music Therapy Practicum (1-3) ® Supervised practicum experience in a community setting with disabled adults, children, older adults, or individuals in a medical setting. Prerequisite: MUSC 2320. (F,Sp)

MUSC 3360 MIDI Studio Techniques (2) Elements of synthesizer sound production and basic studio techniques. (Sp)

MUSC 3370 Sound Recording and Reinforcement Techniques (2) ® Explores techniques of studio recording, including microphones, mixing, and signal processing. (Sp)

MUSC 3400 Individual Piano Instruction for Music Majors (1-2) ® Provides 60-minute lessons, for either 1 or 2 credits, for music majors only. Number of credits granted depends upon practice time and extent of literature required. De-
signed to give music majors private piano instruction at any and all stages of advancement. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 3410  Ensemble and Accompanying  (1-2) ®
Accompanying vocal and instrumental works. Ensemble music for two pianos and four hands. Sight reading and repertoire development. Admission by audition only, with 16 students per section. (F,Sp)

MUSC 3420  Keyboard Skills I  (3)
Study of sightreading, transposing, improvising, figured bass, scales, chords, and score rendering. (F)

MUSC 3430  Keyboard Skills II  (3)
Continuation of MUSC 3420, with further study of sightreading, transposing, improvising, figured bass, scales, chords, and score reading. (Sp)

MUSC 3440  Individual Jazz Piano Instruction for Music Majors  (1-2) ®
Provides 60-minute lessons, for either 1 or 2 credits, for music majors only. Number of credits granted depends upon practice time and extent of literature required. Designed to give music majors private jazz piano instruction at any and all stages of advancement. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 3460  Church Music for Organists I  (3)*
Teaches students to read open scores, transpose hymns, and read scores using alto and tenor clefs. Explores history of hymnody, as well as history of church worship services. (F)

MUSC 3470  Church Music for Organists II  (3)*
Teaches students to read open scores, transpose hymns, and read scores using alto and tenor clefs. Explores history of hymnody, as well as history of church worship services. (Sp)

MUSC 3480  Individual Organ Instruction for Music Majors  (1-2) ®
Provides 60-minute lessons, for either 1 or 2 credits. Number of credits granted depends upon practice time and extent of literature required. Flexible course of study leading to enhanced musical and technical skills on the instrument. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 3500  Symphony Orchestra  (1) ®
Provides experience in performing standard orchestral literature. Admission by audition only. (F,Sp)

MUSC 3510  Orchestra Literature  (2)
Survey of materials, methods, and literature appropriate for elementary school, junior high/middle school, or high school level orchestra programs. (Sp)

MUSC 3520  String Pedagogy and Solo Literature  (2)** ®
For qualified string players whose interest is primarily in teaching stringed instruments. Materials and teaching techniques via actual teaching experience. Prerequisite: Permission of instructor. (F,Sp)

MUSC 3550  Individual Guitar Instruction for Music Majors  (1-2) ®
Provides 60-minute lessons, for either 1 or 2 credits, for music majors only. Number of credits granted depends upon practice time and extent of literature required. Designed to give music majors private guitar instruction at any and all stages of advancement. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 3560  Guitar History and Literature  (3)**
Development of guitar from its earliest ancestors to the present, including study of composers of music for guitar, guitarists, and changes to the instrument itself. (Sp)

MUSC 3570  Guitar Pedagogy I  (2)**
Prepares qualified guitarists to teach beginning and intermediate level students. Familiarizes participants with “business” aspects of teaching, how to set up a private studio, available materials, and teaching techniques. (F)

MUSC 3580  Guitar Pedagogy II  (2)**
Instruction in teaching various guitar styles. Experience in teaching class guitar and in private instruction. Review of available methods and materials. (Sp)

MUSC 3590  Electric Guitar Ensemble  (1) ®
Offers opportunity for guitarists to rehearse and perform ensemble music written for electric guitar. Ensemble includes bass and drums. (F,Sp)

MUSC 3600  Opera Workshop  (1-3) ®
Techniques of musical theater, including participation as cast or crew in musical or operatic stage productions or excerpts. (F,Sp)

MUSC 3610  Vocal Repertory I  (2)*
Survey of German Lieder and French Melodie, including styles, history, and performance practice. (F)

MUSC 3620  CI Vocal Repertory II  (2)*
Survey of Italian, American, and British song, including styles, history, and performance practice. (Sp)

MUSC 3630  Vocal Pedagogy I  (2)**
Theoretical course studying anatomy and function of the voice, methods for teaching techniques, respiration, phonation, articulation, and support and health of the voice. (F)

MUSC 3640  Vocal Pedagogy II  (2)**
Application of vocal theory to teaching of young, post-pubescent, and mature male and female voices, including challenges of teaching each particular type. Includes practicum in which students teach individual vocal lessons under instructor’s supervision. (Sp)

MUSC 3670  Individual Vocal Instruction for Music Majors  (1-2) ®
Provides 60-minute lessons, for either 1 or 2 credits, for music majors only. Number of credits granted depends upon practice time and extent of literature required. Designed to give music majors private vocal instruction at any and all stages of advancement. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 3700  Woodwind Ensemble  (1-2) ®
Helps students gain knowledge and understanding of literature for woodwind ensemble, to gain knowledge of rehearsal techniques for perfecting chamber music, and to demonstrate mastery of these skills through performance. Prerequisite: Permission of instructor. (F,Sp)

MUSC 3710  Individual Flute Instruction for Music Majors  (1-2) ®
Provides 60-minute lessons, for either 1 or 2 credits, for music majors only. Number of credits granted depends upon practice time and extent of literature required. Designed to give music majors private flute instruction at any and all stages of advancement. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 3720  Individual Oboe Instruction for Music Majors  (1-2) ®
Provides 60-minute lessons, for either 1 or 2 credits, for music majors only. Number of credits granted depends upon practice time and extent of literature required. Designed to give music majors private oboe instruction at any and all stages of advancement. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 3730  Individual Clarinet Instruction for Music Majors  (1-2) ®
Provides 60-minute lessons, for either 1 or 2 credits, for music majors only. Number of credits granted depends upon practice time and extent of literature required. Designed to give music majors private clarinet instruction at any and all stages of advancement. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 3740  Individual Bassoon Instruction for Music Majors  (1-2) ®
Provides 60-minute lessons, for either 1 or 2 credits, for music majors only. Number of credits granted depends upon practice time and extent of literature required. Designed to give music majors private bassoon instruction at any and all stages of advancement. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)
MUSC 3750 Individual Saxophone Instruction for Music Majors (1-2)®
Provides 60-minute lessons, for either 1 or 2 credits, for music majors only. Number of credits granted depends upon practice time and extent of literature required. Designed to give music majors private saxophone instruction at any and all stages of advancement. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 3760 Jazz Ensemble (1) ®
Select ensemble performing big band jazz music. Admission by audition only. (F,Sp)

MUSC 3770 Jazz Orchestra (1) ®
Preparation and performance of big band jazz music. Admission by audition only. (F,Sp)

MUSC 3780 Flute Ensemble (1) ®
Helps students gain knowledge and understanding of flute ensemble, to gain knowledge of rehearsal techniques for perfecting chamber music, and to demonstrate mastery of these skills through performance. (F,Sp)

MUSC 3790 DHA Symphonic Band (1) ®
Performance of significant works from symphonic band repertoire. Admission by audition or consent of instructor. (F,Sp)

MUSC 3800 Trombone Ensemble (1) ®
Intended for trombone majors and nonmajors interested in performing music specifically written and/or arranged for four to twelve trombones. (F,Sp)

MUSC 3810 Individual Trumpet Instruction for Music Majors (1-2) ®
Provides 60-minute lessons, for either 1 or 2 credits, for music majors only. Number of credits granted depends upon practice time and extent of literature required. Designed to give music majors private trumpet instruction at any and all stages of advancement. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp)

MUSC 3820 Individual Trombone Instruction for Music Majors (1-2) ®
Provides 60-minute lessons, for either 1 or 2 credits, for music majors only. Number of credits granted depends upon practice time and extent of literature required. Designed to give music majors private trombone instruction at any and all stages of advancement. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp)

MUSC 3830 Individual French Horn Instruction for Music Majors (1-2) ®
Provides 60-minute lessons, for either 1 or 2 credits, for music majors only. Number of credits granted depends upon practice time and extent of literature required. Designed to give music majors private French horn instruction at any and all stages of advancement. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp)

MUSC 3840 Individual Tuba/Euphonium Instruction for Music Majors (1-2) ®
Provides 60-minute lessons, for either 1 or 2 credits, for music majors only. Number of credits granted depends upon practice time and extent of literature required. Designed to give music majors private tuba/euphonium instruction at any and all stages of advancement. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp)

MUSC 3850 Brass Ensemble (1) ®
Helps students gain knowledge and understanding of brass ensemble, gain knowledge of rehearsal techniques for perfecting chamber music, and demonstrate mastery of these skills through performance. Prerequisite: Permission of instructor. (F,Sp)

MUSC 3860 Individual Percussion Instruction for Music Majors (1-2) ®
Provides 60-minute lessons, for either 1 or 2 credits, for music majors only. Number of credits granted depends upon practice time and extent of literature required. Designed to give music majors private percussion instruction at any and all stages of advancement. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 3870 Percussion Ensemble (1) ®
Provides opportunity for percussionists to perform select percussion literature in a chamber music setting. (F,Sp)

MUSC 3900 Jazz Improvisation (2)
Study of techniques of jazz improvisation applicable to all instruments. Prerequisites: MUSC 2130 and 2150; or permission of instructor. (F,Sp)

MUSC 3910 Individual Composition Instruction (1-12) ®
Individual study of techniques and procedures of music composition, emphasizing assistance in completing individual compositional projects, building composition portfolio, and preparing for composition recitals. Prerequisite: Permission of instructor. (F,Sp)

MUSC 3920 Marching Band Techniques (2)
Reviews methods and materials necessary for directing high school marching bands, including administration, music selection, drill design, and computer-assisted instruction. Prerequisite: Instructor’s permission. (F)

MUSC 3930 Band Literature (2)
Study of literature appropriate for beginning, intermediate, and advanced level band programs. Prerequisite: Instructor’s permission. (F)

MUSC 3950 Jazz Choir (1) ®
Emphasizes vocal ability, harmonic ear training, and rhythmic understanding. Ability to vocally improvise is helpful, though not a necessary prerequisite. Auditions held during the first week of fall semester. (F,Sp)

MUSC 4240 Advanced Conducting (2)
Covers techniques, procedures, materials, and philosophies appropriate to the motor skill of conducting and the pedagogy of rehearsal techniques with a band/choir/string ensemble. Students will be able to demonstrate techniques in music selection, score analysis, conducting gesture, and pedagogy. (F)

MUSC 4310 Music Therapy with Adult Populations (3)
Music therapy methods for adults with major mental illness. Overview of DSM-IV criteria. Psychotherapy models, including cognitive-behavioral and person-centered approaches to treatment. (F)

MUSC 4320 CI Psychology of Music II (2)
Research and laboratory course, emphasizing design, methods, and statistical procedures appropriate to research in music education and music therapy. Prerequisites: MUSC 3320, ECE 3260, STAT 1040, and permission of instructor. (Sp)

MUSC 4330 Clinical and Professional Issues in Music Therapy (2)
Ethical considerations and issues related to private practice, marketing, and reimbursement, as well as continued exploration of psychotherapeutic models and MT methods with adults, specifically anxiety disorders and personality disorders. Prerequisite: MUSC 4320. (Sp)

MUSC 4340 Internship in Music Therapy (2)
Six-month resident internship in affiliated, approved clinical setting. Prerequisite: Successful completion of senior year in music therapy. (F,Sp,Su)

MUSC 4360 MIDI Studio Practicum (1-3) ®
Students sharpen their MIDI studio skills by working on an individual MIDI musical production. Prerequisite: ECE 3260. (F,Sp)

MUSC 4370 Sound Recording and Reinforcement Practicum (1-3) ®
Students sharpen their recording studio skills by working on an individual musical production. (F,Sp)

MUSC 4410 Advanced Piano Pedagogy I (1-2) ®
Continuation of MUSC 1430 and 1440, with analysis, performance, and teaching of basic repertoire at intermediate to advanced levels. Prerequisites: MUSC 1430, 1440. (F)

MUSC 4420 Advanced Piano Pedagogy II (1-2) ®
Continuation of MUSC 4410, with analysis, performance, and teaching of basic repertoire at intermediate to advanced levels. Prerequisite: MUSC 4410. (Sp)

MUSC 4500 String Ensemble (1) ®
Offers opportunity for capable string players to study and perform music written for variety of small ensemble combinations. (F,Sp)
MUSC 4510 Individual Violin Instruction for Music Majors (1-2)®
Provides 60-minute lessons, for either 1 or 2 credits, for music majors only. Number of credits granted depends upon practice time and extent of literature required. Designed to give music majors private violin instruction at any and all stages of advancement. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 4520 Individual Viola Instruction for Music Majors (1-2)®
Provides 60-minute lessons, for either 1 or 2 credits, for music majors only. Number of credits granted depends upon practice time and extent of literature required. Designed to give music majors private viola instruction at any and all stages of advancement. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 4530 Individual Cello Instruction for Music Majors (1-2)®
Provides 60-minute lessons, for either 1 or 2 credits, for music majors only. Number of credits granted depends upon practice time and extent of literature required. Designed to give music majors private cello instruction at any and all stages of advancement. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 4540 Individual String Bass Instruction for Music Majors (1-2)®
Provides 60-minute lessons, for either 1 or 2 credits, for music majors only. Number of credits granted depends upon practice time and extent of literature required. Designed to give music majors private string bass instruction at any and all stages of advancement. Must be a pre-music major, music major, music education major, or music therapy major. (F,Sp,Su)

MUSC 4550 Acoustic Guitar Ensemble (1)®
Offers opportunity for guitarists to rehearse and perform intermediate and advanced music written for acoustic guitar. (F,Sp)

MUSC 4600 University Chorale (1)®
Select mixed choir performing a wide range of choral literature. Admission by audition only. (F,Sp)

MUSC 4610 National Standards Choir (1)®
Choral ensemble focusing on music education through choral performance. Explores methods for teaching music through performance to middle and high school students. Special attention paid to National Standards in Music. (F,Sp)

MUSC 4620 Choral Conducting Practicum (1)®
Application of principles of choral music education in public school setting. (F,Sp)

MUSC 4650 Chamber Singers (1)®
Select small ensemble performing a wide range of choral literature. Admission by audition only. (F,Sp)

MUSC 4700 Wind Orchestra (1)®
Highly-selective group, performing important traditional and contemporary works from the wind band repertoire. Entrance by audition only. (F,Sp)

MUSC 4900 Baroque Counterpoint (2)
Writing and analysis of tonal counterpoint in two, three, and four parts. Prerequisites: MUSC 1110, 1120, 2130, 3140. (F)

MUSC 4910 Music Composition (2)®
Instruction in principles of music composition, and guidance in completing individual composition projects. Also, analysis of selected Twentieth Century masterworks. Prerequisites: MUSC 1110, 1120, 2130, 3140. (Sp)

MUSC 4920 Individual Recital (1-6)®
Performance of pieces selected by the student and approved by the instructor, for performance in accordance with specific music area requirements. (F,Sp,Su)

MUSC 4930 Readings and Conference (1-6)®
Undergraduate course designed to provide special interest study. (F,Sp,Su)

MUSC 4940H Senior Thesis (1-6)®
As partial fulfillment of Honors Program requirements, students design and complete a major paper/project. Examples of projects include performance, composition, and musical analysis. (F,Sp,Su)

MUSC 6100 Graduate Performance Ensemble (1-2)®
Designed to give students opportunity for a high-level music experience in choral and instrumental performance ensembles. (F,Sp)

MUSC 6110 Advanced Conducting (2)
Students master manual technique of conducting and improve score study procedures, resulting in analysis and communication of musical ideas. (F,Sp)

MUSC 6120 Advanced Rehearsal Techniques (2)®
Provides students with conducting experience within their major performance areas; i.e., chorale, band, orchestra. This is accomplished through observation of rehearsal techniques and procedures, and by conducting rehearsals at the instructor’s discretion. (F,Sp)

MUSC 6130 Seminar in Music: Philosophy, Aesthetics, and Trends (2)
Study of philosophical bases for human responses to music and resulting musical behaviors. (F,Sp)

MUSC 6610 Practicum in Choral Performance (1-4)®
Provides the graduate student with insight into advanced choral techniques and methods of preparing choirs for performance by rehearsing one of the University choirs on assigned choral selections while being critiqued by the ensemble director. (F,Sp)

MUSC 6620 Seminar in Choral Literature (2)
Designed to study and internalize principal forms of choral music through discussion of historical evolution and stylistic characteristics of the periods of music. Embraces significant choral functions of every style period. (Sp,Su)

MUSC 6630 Individual Instruction for Graduates (1-2)®
Includes 60-minute lessons for either 1 or 2 credits. Number of credits granted depends upon practice time and extent of literature required. Designed to give graduate students private instruction at any and all stages of advancement. Prerequisite: Instructor’s permission. (F,Sp)

MUSC 6900 Independent Study (1-6)®
Advanced course designed to meet specific problems of the music educator and the applied music specialist. (F,Sp,Su)

MUSC 6910 Individual Recital (1-3)®
Preparation and presentation of graduate recital, under supervision of major professor. (F,Sp,Su)

MUSC 6920H Research and Thesis (2-6)®
Individual work in thesis writing with guidance and criticism. (F,Sp,Su)

® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.
© This course is also offered by online correspondence and/or CD through Continuing Education Time Enhanced Learning.
**Taught 2005-2006.
Navajo (NAV)

See Department of Languages, Philosophy, and Speech Communication, pages 244-248

NAV 3040 Navajo Literacy and Grammar for Native Speakers (3)
Designed to develop advanced skills in the grammar, comprehension, reading, and writing of Navajo. Integrates Diné holistic teaching concepts in accordance with the “Hózhó” línix four-direction Diné philosophy of learning paradigm. Prerequisite: Permission of instructor. (Sp)

NAV 3050 Navajo Descriptive and Narrative Writing (3)
Presents reading and writing in the genres of Navajo narration and description. Prepares students to take the Navajo Language Proficiency Exam, and integrates holistic teachings in accordance with the “Hózhó” línix four-direction Diné philosophy of learning paradigm. Prerequisite: Permission of instructor. (F)

NAV 4000 Teaching Navajo as a Second Language (3)
Addresses major issues in the teaching/learning of second languages, with emphasis on Navajo as taught in the public schools. Integrates Diné holistic teaching concepts in accordance with the “Hózhó” línix four-direction Diné philosophy of learning paradigm. Prerequisite: Permission of instructor. (F)

NAV 4110 Teaching Navajo to Native Speakers (3)
Addresses major issues and methods in teaching Navajo literacy and Navajo language arts to native speakers of Navajo. Integrates Diné holistic teaching concepts in accordance with the “Hózhó” línix four-direction Diné philosophy of learning paradigm. Prerequisite: Permission of instructor. (Sp)

National Environmental Policy Act (NEPA)

See Certificate Program in National Environmental Policy Act (NEPA), pages 270-271

NEPA 6200 How to Manage the NEPA Process and Write Effective NEPA Documents (2)
Introduction to National Environmental Policy Act (NEPA) and the Council on Environmental Quality regulations. Explores various levels of NEPA documentation and the skills necessary to identify the actions needed for a thorough environmental analysis.

NEPA 6210 Clear Writing for NEPA Specialists (2)
Teaches how to identify the writing and editing requirements unique to NEPA documents, including making graphics, writing chapters, and reviewing documents for accuracy.

NEPA 6220 Reviewing NEPA Documents (2)
Focuses on how to review the full range of NEPA documents, including Environmental Impact Statements (EISs), Environmental Assessments (EAs), Findings of No Significant Impact (FONSiS), and Records of Decisions (RODs).

NEPA 6230 Risk Communication for NEPA Specialists: Strategies and Implementation (2)
Explains meaning and application of risk communication. Explores full range of response communication, including development of a communication plan and strategy, standing before an audience, and responding to comments in writing.

NEPA 6240 Cultural and Natural Resource Management (2)
Teaches how to manage cultural and natural resources on public lands. Addresses pertinent laws and associated executive orders and regulations pertaining to the preservation of these resources and budget issues.

NEPA 6270 Environmental Compliance Overview (1)
Explores why environmental compliance is not only desirable and necessary, but is also a personal responsibility. Identifies key laws and regulations, with associated penalties affecting environmental compliance.

NEPA 6280 Interdisciplinary Team Building (1)
Teaches general principles of interdisciplinary team building. Explores how information flows and how this can impact the success of a team. Students work as a team to apply the principles learned to scenarios of day-to-day actions.

Nutrition and Food Sciences (NFS)

See Department of Nutrition and Food Sciences, pages 280-285

NFS 1000 World of Food and Nutrition (1)
Weekly seminars present and discuss current issues in food, diet, and health. Presentations about topics and research in food and nutrition, with orientation to programs in the Department of Nutrition and Food Sciences. (F)

NFS 1020 BLS Science and Application of Human Nutrition (3)
Role of dietary choices in providing nutrients and their relationship to the social, mental, and physical well-being of people. How to evaluate nutritional status with personal data using computer diet analysis program. (F,Sp,Su)

NFS 1050 Food Safety Manager Certification (0.5)
Covers food safety information required by the Utah Food Safety Manager Certification Act. Includes role of food handlers in controlling food-borne disease, time-temperature, employee hygiene, sanitation methods, preventing contamination from time of purchase to time of serving, food service facilities/equipment, and HACCP. (F,Sp,Su)

NFS 1240 Culinary Basics (3)
Develops fundamental skills specific to culinary arts. Investigates principles of ingredients and preparation methods. Practice provided in knife skills and cooking methods. Explores the effects of cooking on food quality. Enrollment limited to Nutrition
NFS 1250 Sanitation and Safety (3)
Principles of sanitation and safety applied to food operations. Emphasizes personal hygiene habits and food handling practices that protect the health and safety of employees and consumers. (Sp,Su)

NFS 2020 Nutrition Throughout the Life Cycle (3)
Application of nutrition principles to the human life cycle: nutrient functions, needs, sources, and alterations during pregnancy, lactation, growth, development, maturation, and aging. Prerequisite: NFS 1200. (Sp)

NFS 2030 Catering (3)
Provides skills and knowledge needed for preparing food. Analysis of the preparation of food and beverages for banquet and catering functions. Prerequisites: NFS 1240 and 1250. (F)

NFS 2040 Introduction to Biotechnology (1)
Introduces freshmen to the emerging field of biotechnology and the impact this technology has on society. Also taught as ADVS 2040, BIOL 2040, and PSB 2040. (Sp)

NFS 2050 Ala Carte (3)
Provides skills and knowledge necessary to apply principles of basic food preparation and service in a restaurant setting. Prerequisites: NFS 1240, 1250, and 2030. (Sp)

NFS 3000 Beginning Baking (4)
Introduction to theories and techniques of baking. Focuses on yeast dough production and basic desserts. Prerequisites: NFS 1240, 2030, 2050. (F)

NFS 3020 Nutrition and Physical Performance (2)
Includes information on macro/micronutrient metabolism during exercise, specific problems experienced by athletes or highly active persons, myths, ergogenic aids, and current interests. Prerequisite: NFS 1020. (F)

NFS 3030 Advanced Baking (4)
Focuses on pastry, advanced dessert preparation and presentation, and related topics. Prerequisite: NFS 3000. (Sp)

NFS 3060 Garde-Manger (4)
Emphasizes cold food preparation, presentation techniques, food displays, and meat fabrication. Prerequisite: NFS 2050. (F)

NFS 3100 QI Sensory Evaluation of Food (3)
Design and implementation of sensory testing of foods. Emphasizes physiology of senses, testing methods, statistical analysis, and taste panel experience. Prerequisite: STAT 3000. (Sp)

NFS 3110 DSC Food, Technology, and Health (3)
Impact of food technology on food spoilage, food preservation, food quality, and foodborne diseases. Basic processing operations and regulations ensuring a safe food supply. Prerequisite: University Studies Breadth Life Sciences course. (F)

NFS 3250 Occupational Experience in Nutrition and Food Sciences (1-3) 
On-the-job training. (F,Sp,Su)

NFS 3500 Beverage Management (2)
Studies in selection and service of beverages for the food service industry. Issues addressed include equipping, staffing, operating, marketing, and purchasing beverages. Addresses issues of responsible alcohol service. (F)

NFS 3510 The Business of Feeding (3)
Covers menu design, procurement, and starting the business. (Sp)

NFS 3600 Medical Terminology for Health Care Professionals (1)
Internet-based course teaches medical terminology by focusing on medical word-building rules, prefixes, suffixes, and whole-body terminology related to human body systems. Also includes coverage of anatomy, pathological conditions, and diagnostic treatments and procedures. (F,Sp,Su)

NFS 4020 Advanced Nutrition (3)
Structures, properties, and metabolism of protein, lipids, carbohydrates, vitamins, and minerals. Includes digestion, absorption, hormonal control, cellular biochemistry, metabolic interrelationships, excretion, etc. Prerequisites: NFS 1020, CHEM 3700, BIOL 2000. (F)

NFS 4030 Advanced Nutrition Applications (1)
Applications of metabolism of protein, lipids, carbohydrates, vitamins, and minerals. Must be taken concurrently with NFS 4020. (F)

NFS 4050 CI Education and Counseling Methods in Dietetics I (2)
Principles of education, counseling, and communication as applied to the field of nutrition education and clinical dietetics practice. Prerequisite: Junior level in Coordinated or Didactic Program in Dietetics. Corequisite: NFS 4550. (F)

NFS 4060 CI Education and Counseling Methods in Dietetics II (2)
Continuation of NFS 4050. Prerequisite: NFS 4050. Corequisite: NFS 4560. (Sp)

NFS 4070 Experimental Foods (4)
Science principles underlying modern food theory and practice. Relation of physical and chemical properties of food components and their systems to food preparation. Prerequisite: CHEM 1120 or 2300 or 2310. (Sp)

NFS 4250 Culinary Skills and Management Rotation (3-9)
Internship experience in various food service settings. Specific locations and durations to be arranged by instructor. Prerequisite: Junior standing. (F,Sp,Su)

NFS 4420 QI Nutrition Research Methodology (2)
Development of experimental design, data collection, statistical analysis, interpretation, and presentation of results. Clinical, community, and management data analysis. Interpretation and presentation, including bench marking, cost/benefit analysis, and continuous quality improvement projects. Enrollment limited to seniors within the Coordinated Program in Dietetics (CPD) or Didactic Program in Dietetics (DPD). Prerequisites: STAT 1040, MATH 1050. (Sp)

NFS 4440 QI Fundamentals of Food Engineering (4)
Engineering concepts taught in a fundamental sense and applied to food processing. Concepts include: general problem solving techniques, material and energy balances, fluid dynamics, heat transfer, refrigeration, and kinetics of common biological processes used in food preparation. Prerequisite: PHYX 2110. (F)

NFS 4480 Community Nutrition (3)
Introduction to public health nutrition, food programs, and national nutrition monitoring. Prerequisite: NFS 1020. (F)

NFS 4550 Nutrition Assessment/Clinical Nutrition I (4)
Introduction to the profession of dietetics, assessment of nutrition status, and nutrition care planning. Pathophysiology of disease states and applied medical nutrition therapy. Prerequisite: CHEM 3700. Enrollment restricted to Nutrition and Food Sciences majors only. (F)

NFS 4560 CI Clinical Nutrition II (4)
Continuation of NFS 4550. Prerequisite: NFS 4550. (Sp)

NFS 4570 Clinical Nutrition Experience I (1)
Practical experience in health care facilities. Integration and application of material learned in NFS 4550. Corequisite: NFS 4550. Prerequisite: Acceptance into Coordinated Program in Dietetics. (F)

NFS 4580 Clinical Nutrition Experience II (2)
Continuation of NFS 4570. Corequisite: NFS 4560. Prerequisite: NFS 4570. (Sp)

NFS 4660 CI Medical Dietetics (12)
In-depth study of nutrition relationships in disease development and treatment with clinical experience in medical facilities in Salt Lake City. Prerequisites: NFS 4550, 4560, 4570, 4580. (F)
NFS 4710  Quantity Food Preparation (2)
Principles of food preparation applied to large quantity production, menu planning, food selection, storage, and equipment. Prerequisite: NFS 4070 or consent of instructor. (F)

NFS 4720  QI Food Service Organization and Management (2)
Principles of organization, management theory, financial controls, human and labor relations, employee training, layout, and sanitation. Prerequisite: NFS 4710. (Sp)

NFS 4730  Quantity Food Preparation Lab (2)
Practical experience in quantity food preparation. Integration and application of NFS 4710. Corequisite: NFS 4710. Prerequisites: NFS 1240 and acceptance into Coordinated Program in Dietetics. (F)

NFS 4740  Food Service Organization and Management Lab (2)
Practical experience in food service management. Integration and application of NFS 4720. Prerequisite: NFS 4730. Corequisite: NFS 4740. (Sp)

NFS 4750  Management of Dietetics (3)
Principles of management in dietetics and current practice issues. Prerequisite: Must be enrolled in final year in Coordinated Program in Dietetics (CPD) or Didactic Program in Dietetics (DPD). (Sp)

NFS 4760  CI Maternal and Child Nutrition (3-4)
Normal and clinical nutritional requirements in pregnancy, lactation, and pediatrics. To be taken in Salt Lake City in conjunction with NFS 4660 or by Didactic Program in Dietetics (DPD) students in their final year. (F)

NFS 4810  History and Practices in World Cuisines (4)
Preparation of foods from around the world, incorporating historical and current food trends. Prerequisites: NFS 3030 and 3060. (Sp)

NFS 4900  Special Problems (1-4) ©
Individual problems and research problems in Nutrition and Food Sciences. (F,Sp,Su)

NFS 4990  Nutrition and Food Sciences Seminar (1)
Senior student paper and presentation on current topics in nutrition and food sciences. Prerequisite: Senior in NFS. (Sp)

NFS 5020  Meat Technology and Processing (4)
(d6020) Emphasizes understanding the conversion of muscle to meat, fabrication of carcasses into primal and retail cuts, and principles underlying manufacture of processed meats. (F)

NFS 5030  Dairy Technology and Processing (4)
(d6030) Processing milk into fluid milk products, cheeses, ice cream, yogurt, concentrated milks, and powders. Identity standards of regulated dairy products. Physical, chemical, and biochemical changes that occur during manufacture and storage. Microbiological, chemical, and physical deterioration and control. (F)

NFS 5110  CI Food Microbiology (4)
(d6110) Microorganisms in food spoilage, poisoning, preservation, and sanitation. Prerequisite: BIOL 3300. (Sp)

NFS 5120  QI Biologic Markers of Diet and Disease Risk Lab (2)
(d6120) Measurement and interpretation of biologic markers of nutritional status and disease risk. Markers measured in a variety of human tissues. Prerequisites: NFS 1020, BIOL 2000, CHEM 3700, MATH 1210, and STAT 2000. (Sp)

NFS 5160  Methods in Biotechnology: Cell Culture (3)
Techniques and fundamental knowledge for culturing mammalian and insect cells. Students will learn maintenance, growing, genetic engineering of cells, cytotoxicity, hybridoma creation, cloning, etc. Extensive laboratory experience is provided. Also taught as ADVS 5160, BIOL 5160, CHEM 5160, and PSB 5160. (Sp)

NFS 5200  Nutritional Epidemiology (2)
(d6200) Introduction to epidemiologic methods and their application to the study of nutrition, human health, and disease. Useful for students with career interests in nutrition, food sciences, dietetics, human health sciences, veterinary sciences, biology, public health, anthropology, social work, and public policy. Prerequisites: STAT 1040, NFS 1020. (F)

NFS 5210  Advanced Public Health Nutrition (2)
(d6210) Effects of diet on development and prevention of disease. Conditions of public health significance, including birth defects, coronary heart disease, hypertension, stroke, Alzheimer’s disease and other causes of dementia, cancer, osteoporosis, diabetes, and international health problems. Discussion of health concerns of minority populations, cross-cultural studies, government policy, and establishment of dietary recommendations. Prerequisites: STAT 1040 or higher, CHEM 3700 or higher. (Sp)

NFS 5220  Endocrine Aspects of Nutrition (2)
(d6220) Provides physiological background into hormones involved in nutrient regulation, as well as mechanisms of hormone action at the cellular and molecular levels. Includes action of steroids in the nucleus and membrane-based signal transduction pathways. Course includes lectures and literature reviews/presentations. Prerequisites: CHEM 3700 and NFS 4020, or consent of instructor. (F)

NFS 5240  Methods in Biotechnology: Protein Purification Techniques (3)
Reviews basic methods of protein purification, including scaled-up use of 100L fermenter, large-scale centrifugation, dialfiltration, chromatography, and use of BioCAD. Prerequisite: CHEM 3700. Also taught as ADVS 5240, BIOL 5240, CHEM 5240, and PSB 5240. (Sp)

NFS 5250  Occupational Experiences in Nutrition and Food Sciences (1-3) ®
On-the-job training. (F,Sp,Su)

NFS 5300  Advanced Micronutrient Nutrition (3)
(d6300) Explores the function, interaction, and practical significance of micronutrients in human metabolism and the ability of the diet to meet these needs. Relates nutrient biochemical functions to specific deficiency symptoms. Prerequisite: NFS 4020. (Sp)

NFS 5370  Molecular Methods in Nutrition Science (2)
(d6370) Theory of modern techniques used to study macromolecules and ions. Prerequisite: CHEM 3700. Also taught as ADVS/Biol/PSB 5370/6370. (Sp)

NFS 5400  Nutrition Update: Present Knowledge (2)* ©
Enriches and updates knowledge of nutrition, as well as implications for well-being of people, through presentation of recent advances in nutrition accomplished by worldwide research efforts of scientists from academia, government, and industry. Available only through Continuing Education Independent Study Division.

NFS 5500  QI Food Analysis (4)
(d6500) Application and theory of physical, chemical, and instrumental techniques for determination of composition and quality of food. Prerequisite: NFS 5560/6560. (Sp)

NFS 5510  Food Laws and Regulations (2)
(d6510) Provides background of federal/state laws and regulations and case law history affecting food production, processing, packaging, marketing, and distribution of food products. (Sp)

NFS 5560  Food Chemistry (4)
(d6560)
Chemical structure, properties, and reactions and interactions of the important chemical constituents of food. Prerequisites: CHEM 3700 and 3710. (F)

NFS 5610 Food and Bioprocess Engineering (3)
Standardization and compounding of biomaterials and food products; preservation processing using heat, refrigeration, concentration, and dehydration. Basic unit operations in the bioprocessing industry. Prerequisite: BIE 3200. Also taught as BIE 5610/6610. (F)

NFS 5750 Advanced Dietsetics Practicum (1-6)
Advanced dietsetics practicum in clinical nutrition, community nutrition, food service management, or research. Prerequisite: Must be enrolled in final year in Coordinated Program in Dietsetics (CPD) or Didactic Program in Dietsetics (DPD). (F,Sp,Su)

NFS 5760 Senior Practicum in Culinary Arts/Food Service Management (2)
Practical experience in food service settings, integrating and applying material learned in lectures and laboratories. (F,Sp)

NFS 5920 CI Food Product Development (3)
Capstone course that incorporates and unifies the principles of food chemistry, microbiology, engineering, processing, nutrition, sensory analysis, and statistics. Prerequisite: Senior standing. (F)

NFS 6020 Meat Technology and Processing (4)
Emphasizes understanding the conversion of muscle to meat, fabrication of carcasses into primal and retail cuts, and principles underlying manufacture of processed meats. (F)

NFS 6030 Dairy Technology and Processing (4)
Processing milk into fluid milk products, cheeses, ice cream, yogurt, concentrated milks, and powders. Identity standards of regulated dairy products. Physical, chemical, and biochemical changes that occur during manufacture and storage. Microbiological, chemical, and physical deterioration and control. (F)

NFS 6050 Community Public Health Internship I (3)
Supervised school nutrition education internship in elementary and secondary public schools developing child nutrition programs. Prerequisite: Acceptance into USU Extension Dietetic Internship Program. (F,Sp,Su)

NFS 6060 Community Public Health Internship II (3)
Supervised public health nutrition internship with state and district supplemental food program for women, infants, and children. Prerequisite: Acceptance into USU Extension Dietetic Internship Program. (F,Sp,Su)

NFS 6100 Sensory Evaluation of Foods (3)
Methods and practice in the sensory evaluation of foods. Testing facilities/environment, statistical design, testing method selection, and data interpretation. Prerequisite: STAT 3000 or permission of instructor. (Sp)

NFS 6110 Food Microbiology (4)
Microorganisms in food spoilage, poisoning, preservation, and sanitation. Prerequisite: BIOL 3300. (Sp)

NFS 6120 Biologic Markers of Diet and Disease Risk Lab (2)
Measurement and interpretation of biologic markers of nutritional status and disease risk. Markers measured in a variety of human tissues. Prerequisites: NFS 1020, BIOL 2000, CHEM 3700, MATH 1210, and STAT 2000. (Sp)

NFS 6140 Biotechnology of Lactic Starter Cultures (2)
Examination of genetics and microbiology of lactic starter cultures, emphasizing application of biotechnology in strain improvement and design. Prerequisites: BIOL 3300, CHEM 5700. (Sp)

NFS 6170 Principles of Food Safety Assurance (2)*
Explores prerequisite programs for HACCP, HACCP implementation, and food safety considerations in new product development. Prerequisite: BIOL 3300 or equivalent. (F)

NFS 6200 Nutritional Epidemiology (2)
Introduction to epidemiologic methods and their application to the study of nutrition, human health, and disease. Useful for students with career interests in nutrition, food sciences, dietetics, human health sciences, veterinary sciences, biology, public health, anthropology, social work, and public policy. Prerequisites: STAT 1040, NFS 1020. (F)

NFS 6210 Advanced Public Health Nutrition (2)
Effects of diet on education and prevention of disease. Conditions of public health significance, including birth defects, coronary heart disease, hypertension, stroke, Alzheimer’s disease and other causes of dementia, cancer, osteoporosis, diabetes, and international health problems. Discussion of health concerns of minority populations, cross-cultural studies, government policy, and establishment of dietary recommendations. Prerequisites: STAT 1040 or higher, CHEM 3700 or higher. (Sp)

NFS 6220 Endocrine Aspects of Nutrition (2)
Provides physiological background into hormones involved in nutrient regulation, as well as mechanisms of hormone action at the cellular and molecular levels. Includes action of steroids in the nucleus and membrane-based signal transduction pathways. Course includes lectures and literature reviews/presentations. Prerequisites: CHEM 3700 and NFS 4020, or consent of instructor. (F)

NFS 6250 Clinical Nutrition Internship I (4)
Supervised clinical nutrition experience including medical, geriatric, long-term care, and oncology. Prerequisite: Acceptance into USU Extension Dietetic Internship Program. (F,Sp,Su)

NFS 6260 Clinical Nutrition Internship II (4)
Supervised clinical nutrition experience including nutrition support, renal, pediatrics, intensive care units, outpatient care, and clinical staff experience. Prerequisite: Acceptance into USU Extension Dietetic Internship Program. (F,Sp,Su)

NFS 6300 Advanced Micronutrient Nutrition (3)
Explores the function, interaction, and practical significance of micronutrients in human metabolism and the ability of the diet to meet these needs. Relates nutrient biochemical functions to specific deficiency symptoms. Prerequisite: NFS 4020. (Sp)

NFS 6350 Food Service Systems Management Internship I (6)
Supervised school food service internship. Includes purchasing, inventory control, food service, and food production. Prerequisite: Acceptance into USU Extension Dietetic Internship Program. (F,Sp,Su)

NFS 6360 Food Service Systems Management Internship II (6)
Supervised school food service internship. Includes administration and food service staff supervision experience. Prerequisite: Acceptance into USU Extension Dietetic Internship Program. (F,Sp,Su)

NFS 6370 Molecular Methods in Nutrition Science (2)
Theory of modern techniques used to study macromolecules and ions. Prerequisite: CHEM 3700. Also taught as ADVS/BIOL/PSB 6370/5370. (Sp)

NFS 6450 Meat Science (3)
Structure of muscle tissue, chemistry of contraction and relaxation, factors affecting meat tenderness, and postmortem changes and their effect on meat quality. Prerequisite: CHEM 3700. (Sp)

NFS 6500 Food Analysis (4)
Application and theory of physical, chemical, and instrumental techniques for determination of composition and quality of food. Prerequisite: NFS 6560/5560. (Sp)
NFS 6510 Food Laws and Regulations (2)
(d5510)
Provides background of federal/state laws and regulations and case law history affecting food production, processing, packaging, marketing, and distribution of food products. (Sp)

NFS 6560 Food Chemistry (4)
(d5660)
Chemical structure, properties, and reactions and interactions of the important chemical constituents of food. Prerequisites: CHEM 3700 and 3710. (F)

NFS 6600 Food Proteins and Enzymes (3)*
Protein structure, folding, and purification; enzyme classification and nomenclature; reaction kinetics; and immobilization technology as applicable to food science. (F)

NFS 6610 Food and Bioprocess Engineering (3)
(d5610)
Standardization and compounding of biomaterials and food products; preservation processing using heat, refrigeration, concentration, and dehydration. Basic unit operations in the bioprocessing industry. Prerequisite: BIE 3200. Also taught as BIE 6610/5610. (F)

NFS 6750 Advanced Dietetics Practicum (1-6)
(65750)
Advanced dietetics practicum in clinical nutrition, community nutrition, food service management, or research. Prerequisite: Must be enrolled in final year in Coordinated Program in Dietetics (CPD) or Didactic Program in Dietetics (DPD). (F,Sp,Su)

NFS 6760 Special Topics in Food Science (1-3)
Selected topics in food science, based on individual faculty interests. (F,Sp,Su)

NFS 6770 Special Topics in Nutrition (2)
(67770)
Study of selected topics in nutrition, including reports on current advances and presentation of nutrition support topics (case studies) developed through research. (F,Sp)

NFS 6780 Advanced Institutional Food Service Management (3)
Principles of management applied to institutional food services and advanced professional certification curriculum. To enroll, student must be an MS candidate in dietetics or be eligible to take the national SFNS (School Food and Nutrition Service) exam. (Sp)

NFS 6900 Special Problems (1-4) ®
Individual problems and research problems for upper-division students in Nutrition and Food Sciences. (F,Sp,Su)

NFS 6970 Thesis Research (1-12) ®
For students working on MS research. (F,Sp,Su)

NFS 6990 Continuing Graduate Advisement (1-12) ®
(F,Sp,Su)

NFS 7700 Dairy Chemistry (2)**
Chemical structure, properties, biosynthesis, and reactions of the main constituents in milk. Application of this knowledge in the development and processing of foods. (F)

NFS 7770 Special Topics in Nutrition (2)
(d67770)
Study of selected topics in nutrition, including reports on current advances and presentation of nutrition support topics (case studies) developed through research. (F,Sp)

NFS 7800 Seminar (1) ®
Reports and discussion on research and current literature. (F,Sp)

NFS 7970 Dissertation Research (1-12) ®
For students working on PhD research. (F,Sp,Su)

NFS 7990 Continuing Graduate Advisement (1-12) ®
(F,Sp,Su)

*® This course is also offered by online correspondence and/or CD through Continuing Education Time Enhanced Learning.
*Paraphernal numbers preceded by d indicate a dual listing.
© Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.
**Taught 2005-2006.

Natural Resources (NR)

See College of Natural Resources, pages 115-116

NR 1010 BSS Humans and the Changing Global Environment (3)
Introduction to historical nature and extent of human environmental transformation at global and regional levels. Examination of how socio-economic, political, and scientific factors influence past and current perceptions, use and conservation of natural environments in Western and other cultures, and future options available. (F,Sp)

NR 2220 General Ecology (3)
Study of the interrelationships among organisms, humans, and their environments, addressing where and how organisms live. Adaptation, population growth, species interactions, biodiversity, and ecosystem function are explored for a wide variety of organisms and ecosystems. Prerequisites: BIOL 1210 and 1220. Also taught as BIOL 2220. (F,Sp)

NR 4440 Natural Resource and Environmental Policy Seminar (1) ®
Year-long invited speaker seminar series on natural resource and environmental policy issues. Students register for only one semester, but attend the seminars until a required number has been met. Students also complete an assignment. (F,Sp)

NR 6430 Natural Resource and Environmental Policy Cornerstone Seminar (3)
Interdisciplinary, team-taught cornerstone course for the Natural Resource and Environmental Policy Graduate Certificate Program. Introduces different disciplinary perspectives for analyzing natural resource and environmental policies and decision-making processes. Helps students understand the role of science in policy-making and how to integrate information from contentious perspectives. (Sp)

NR 6440 Natural Resource and Environmental Policy Seminar (1) ®
Year-long invited speaker seminar series on natural resource and environmental policy issues. Students are required to attend a minimum number of the seminars. Students also complete an assignment. This course is open to all USU students, but is required for NREPP students. (F,Sp)

NR 6450 Natural Resource and Environmental Policy Presentation (1)
In their last year of graduate school, certificate candidates make a presentation on policy dimensions of thesis or dissertation, as part of this student seminar series. Students receive one semester credit for this presentation. (F,Sp)

Nursing (NURS)

See Weber State University/Utah State University Nursing Program, page 279

NURS 1030 Foundations of Nursing Practice (3)
Nursing concepts introduced which are built upon throughout the nursing curriculum as students care for clients. (F)

NURS 1031 Foundations of Nursing Practice Clinical (3)
Companion course taught in concert with NURS 1030. Clinical experience running concurrently with NURS 1030. (F)
NURS 1040 Women’s Health and the Childbearing Family (2)
Theory focuses on meeting basic human needs of the family and newborn throughout the childbearing cycle. (Sp)

NURS 1041 Women’s Health and the Childbearing Family Clinical (1)
Companion course taught in concert with NURS 1040. (Sp)

NURS 1045 Nursing Care of Adults and Children (3)
Focused theory with emphasis on physiological and psychosocial needs of clients across the lifespan. (Sp)

NURS 1046 Nursing Care of Adults and Children Clinical (2)
Companion course taught in concert with NURS 1045. (Sp)

NURS 1050 Treatment Modalities (3)
Basic treatments and pharmacological agents used by nurses to promote health across the lifespan. (F)

NURS 1124 Transition into Associate Degree Nursing (2)
Socialization from practical nursing to the associate degree, registered nurse level. (F)

NURS 2050 Treatment Modalities (2)
Advanced treatments and pharmacological agents used by nurses to promote health across the lifespan. (F)

NURS 2060 Psychiatric/Mental Health Nursing (2)
Students explore caring strategies for promoting mental health and preventing illness across the lifespan. (Sp)

NURS 2061 Psychiatric/Mental Health Nursing Clinical (1)
Companion course taught in concert with NURS 2060. Clinical application of psychiatric/mental health nursing taught in NURS 2060. (Sp)

NURS 2070 Nursing Care of Adults and Children II (3)
Theory with emphasis on more complex physiological and psychosocial needs of clients across the lifespan. (F)

NURS 2071 Nursing Care of Adults and Children II Clinical (4)
Companion course taught in concert with NURS 2070. Clinical application of medical-surgical concepts learned in NURS 2070. (F)

NURS 2080 Patient Care Management (2)
Theory focuses on the synthesis of nursing knowledge and skills necessary for entrance into registered nursing practice. (Sp)

NURS 2081 Patient Care Management Clinical (3)
Companion course taught in concert with NURS 2080. Clinical synthesis of nursing knowledge and skills necessary for entrance into registered nursing practice. (Sp)

NURS 2283 Directed Readings and Projects (1-3)
Prerequisite: Instructor’s approval. (F,Sp)

NURS 2289 Cooperative Education (1-3)
Open to all students who meet the minimum co-op requirements of this department. Provides academic credit for on-the-job experience. (F,Sp)

HS 2230 Introductory Pathophysiology (3)
An introduction to the nature of disease and its effect on body systems. (Su)

Physical Education Activity (PE)
See Department of Health, Physical Education and Recreation, pages 217-220

PE 1000 Skiing (1) ®
Alpine ski instruction for all students. Offered for beginning, intermediate, and advanced levels. Focuses on knowledge, techniques, equipment, and safety necessary for participating in and enjoying alpine skiing, snowboarding, and telemark skiing. (Sp)

PE 1020 Cross Country Skiing (1) ®
Focuses on knowledge, techniques, equipment, and safety necessary to participate in and enjoy winter recreational activities, including cross country ski touring and snowshoeing. (Sp)

PE 1100 Basketball (1) ®
Designed to help the recreational player become more familiar with the basic skills involved in the game of basketball. During the course, games and/or a “mini” tournament will be played. (Sp)

PE 1110 Flag Football (1) ®
Designed to help students develop and understand the skills and strategies of recreational flag football through active participation. (F)

PE 1120 Soccer (1) ®
Designed to help students develop and understand the skills and strategies of soccer through active participation in drills and games. (F,Sp)

PE 1130 Softball (1) ®
Designed to help students develop and understand the skills and strategies of recreational softball through active participation. (Sp)

PE 1140 Ultimate Frisbee (1) ®
Designed to enhance each student’s skills and abilities in ultimate frisbee. Emphasizes cardiovascular and muscular fitness. Course is progressive, with increase in intensity as the individual improves abilities. (F,Sp)

PE 1150 Volleyball (1) ®
Designed to help students enhance their basic volleyball skills and enjoyment of the game through active participation. Beginning, intermediate, and advanced levels are offered. (F,Sp)

PE 1200 Badminton (1) ®
Through active participation, students learn basic skills, rules, and strategies of singles and doubles badminton. (F,Sp)

PE 1210 Cycling (1) ®
Conditioning class emphasizing training. Introduction to road safety principles, various riding techniques, and cycle maintenance. Sections of road and mountain cycling offered. Beginning and intermediate classes are offered for both road and mountain cycling. (F,Sp,Su)

PE 1220 Golf (1) ®
Designed for the beginning and novice golfer. Basics of individual grip, set-up, posture, and swing. Includes putting, chipping, weight transfer, and balance. Beginning and intermediate classes are offered. (F,Sp,Su)

PE 1230 Gymnastics (1) ®
Designed to enhance current abilities and teach skills according to the individual student’s abilities. Skills taught through drill work and lecture. (F,Sp,Su)

PE 1240 Racquetball (1) ®
Designed to help students understand the general rules and strategies of racquetball, improve competitive skills, and play safely and effectively. Beginning and intermediate classes are offered. (F,Sp)

PE 1250 Tennis (1) ®
Designed for students desiring a basic understanding of tennis. Improvement of skills and strategies through active participation in drills and games. Beginning and intermediate level sections are offered. (F,Sp,Su)

PE 1260 Billiards (1) ®
Designed to develop basic knowledge and concepts for playing a variety of games. Focuses on stroke mechanics, shot selection, and strategy. Beginning and intermediate levels are offered. (F,Sp,Su)
PE 1270 Bowling (1)®
Provides students with the knowledge, skills, and strategies for successful participation and enjoyment. (F,Sp,Su)

PE 1280 Fly Fishing (1)®
Provides students with the opportunity to develop the skills, knowledge, and strategies for successful participation and enjoyment. Classes are offered in beginning and intermediate fly tying, rod building, and casting. (F,Sp,Su)

PE 1290 Handball (1)®
Provides skills and knowledge in handball. (F,Sp,Su)

PE 1300 Jog/Walk (1)®
Provides students with opportunity to achieve and maintain personal fitness through jogging and/or walking. (F,Sp,Su)

PE 1310 Conditioning (1)®
Designed to improve overall flexibility, strength, and endurance capacity of the body. (F,Sp)

PE 1320 Weight Training (1)®
Demonstration of proper weight training techniques. Helps students understand basic concepts related to weight training, in order to gain strength, improve muscle tone, and start or continue a healthy lifestyle. (F,Sp,Su)

PE 1330 Aerobics (1)®
Fitness program, primarily designed to improve cardiovascular fitness, muscular endurance, and flexibility. (F,Sp)

PE 1340 Spinning (1)®
Intense cardiovascular conditioning class performed on stationary bikes. (F,Sp)

PE 1350 Water Aerobics (1)®
Provides students with opportunity to maintain personal fitness, with an emphasis on non-weight-bearing cardiovascular activity in water. (F,Sp)

PE 1360 Yoga (1)®
Provides a simultaneous path to and discovery of ineffability, utilizing physical and mental techniques derived from and inspired by the Ati tradition of Tibet, as well as from other sources. (F,Sp,Su)

PE 1370 Self-Defense (1)®
Covers skill development in terms of defensive capability, environment assessment, situation management, and the legal ramifications of the use of force. Available to the general University student body. Class offerings include Akido, Ta’i Chi, Karate, Aerobic Kickboxing, and Rape Aggression Defense. (F,Sp,Su)

PE 1510 Fencing (1)®
Introduction to basic techniques of fencing. (F,Sp,Su)

PE 1620 Hiking (1)®
Provides skills and knowledge in hiking, with an emphasis on leave no trace techniques and safe operations in an outdoor environment. (F,Sp,Su)

PE 1630 Orienteering (1)®
Provides skills and knowledge in the fundamentals of orienteering with an emphasis on wilderness travel techniques and safety in the outdoors. (F,Sp,Su)

PE 1640 Rock Climbing: Basic (1)®
Provides skills and knowledge in basic rock climbing, teaching safe judgment and proper techniques in a climbing gym. (F,Sp,Su)

PE 1650 Outdoor Survival (1)®
Provides skills and knowledge in the fundamentals of outdoor survival and development. (F,Sp,Su)

PE 1670 Wilderness First Aid (1)®
Provides outdoor leaders with an introduction to wilderness first aid. Upon completion of course, students may receive a two-year wilderness first aid certification. (F,Sp,Su)

PE 1690 National Outdoor Leadership School Course (3-18)®
Provides students with the opportunity to earn USU credit for attending National Outdoor Leadership (NOLS) courses. (F,Sp,Su)

PE 1740 Sailing (1)®
Provides skills and knowledge in the fundamentals of sailing and water safety. (F,Sp,Su)

PE 1810 Winter Exploration (1)®
Provides skills and knowledge for safe winter camping using backpacking equipment. Assists in the development of high outdoor ethics. (F,Sp)

PE 1820 Snowshoeing (1)®
Provides skills and knowledge of snowshoeing, with an emphasis on leave no trace techniques and development of safe winter activity skills. (F,Sp)

PE 1830 Yurt Camping (1)®
Provides skills and knowledge for safe winter camping using a yurt for shelter. Assists in the development of high outdoor ethics. (F,Sp)

PE 1840 Ice Skating (1)®
Teaches basic, intermediate, conditioning, and competitive skill development. Includes sections of ice hockey and curling. (F,Sp,Su)

PE 1850 Skating (1)®
Teaches basic and intermediate skating skills, as well as conditioning and competitive skill development. Develops artistic, hockey, speed, in-line, boarding, and social skills. (F,Sp,Su)

PE 1900 Dance (1)®
Designed to help students enhance their basic skills and enjoyment of dance through the following forms: jazz, modern, ballet, balloon, social, Latin, western swing, etc. (F,Sp)

PE 2000 Personal Instruction and Conditioning (1)®
Designed for students and prospective members of varsity teams, as well as for the student/athlete requiring a personalized program. (F,Sp,Su)

PE 2010 Varsity Cross Country (1)®
Designed to meet the needs of varsity student/athletes in cross country. (F)

PE 2020 Varsity Football (1)®
Designed to meet the needs of varsity student/athletes in football. (F)

PE 2030 Varsity Soccer (1)®
Designed to meet the needs of varsity student/athletes in soccer. (F)

PE 2040 Varsity Volleyball (1)®
Designed to meet the needs of varsity student/athletes in volleyball. (F)

PE 2050 Varsity Indoor Track and Field (1)®
Designed to meet the needs of varsity student/athletes in indoor track and field. (Sp)

PE 2060 Varsity Basketball (1)®
Designed to meet the needs of varsity student/athletes in basketball. (Sp)

PE 2070 Varsity Gymnastics (1)®
Designed to meet the needs of varsity student/athletes in gymnastics. (Sp)

PE 2080 Varsity Track and Field (1)®
Designed to meet the needs of varsity student/athletes in track and field. (Sp)
Acquaints P.E. students with four areas of physical education, including: the Department of Education, Human Services; the history of physical education; the effects of sociology on physical education; and future employment opportunities in the fields of physical education. (F,Sp)

PEP 2000 Introduction and History of Physical Education (2)
Acquaints P.E. students with four areas of physical education, including: the department, with respect to the University and the College of Education and Human Services; the history of physical education; the effects of sociology on physical education; and future employment opportunities in the fields of physical education. (F,Sp)

PEP 2020 Introduction to Physical Therapy (2)
Introduces prephysical therapy students to the discipline of physical therapy and familiarizes them with its associated spectrum of opportunities and responsibilities. (F)

PEP 2050 Sport Rules and Regulations of the Utah High School Athletic Association (1)
Knowledge of the rules and mechanics of officiating all Utah high school sports. (Sp)

PEP 2100 Skills 1 (Swimming, Volleyball, Football) (1)
Provides physical education majors and minors with the knowledge, skills, practice, and understanding of swimming, volleyball, and football needed for successful participation. Exposes students to a variety of teaching methods for these three sports. (F,Sp)

PEP 2200 Skills 2 (Lifetime Activities) (1)
Provides physical education majors and minors with the knowledge, skills, practice, and understanding of lifetime activities needed for successful participation. Exposes students to a variety of teaching methods for these activities. (F,Sp,Su)

PEP 2300 Skills 3 (Softball, Basketball, Soccer) (1)
Provides physical education majors and minors with the knowledge, skills, practice, and understanding of softball, basketball, and soccer needed for successful participation. Exposes students to a variety of teaching methods for these three sports. (F,Sp)

PEP 2400 Skills 4 (Tennis, Badminton, Track and Field) (1)
Provides physical education majors and minors with the knowledge, skills, practice, and understanding of tennis, badminton, and track and field needed for successful participation. Exposes students to a variety of teaching methods for these three sports. (F,Sp)

PEP 2500 Rhythms and Movement (1)
Focuses on fundamental motor skills, mixers, aerobic, line, folk, ballroom, and square dance. Provides opportunities to practice rhythms and movement, as well as opportunities to practice teaching. Designed for physical education majors and minors. (F,Sp)

PEP 2700 PE in the Elementary School (3)
Prepares students for varsity athletes. Emphasizes strength development. (F,Sp,Su)

PEP 2800 Life Skills (1)
Life skills course designed to meet the needs of fourth and fifth year student athletes. Provides personal and career assistance. (F,Sp)

PEP 3000 Dynamic Fitness (3) ©
Designed to develop positive health practices in the areas of physical activity, diet, rest, and relaxation of living through classroom, laboratory, and activity experiences. (F,Sp,Su)

PEP 3050 Physical Education in the Elementary School (3)
Prepares students to teach elementary physical education. Focuses on developmentally appropriate activities, locomotor and manipulative skills, fitness, games, rhythms, motor learning, and lesson planning. Students will teach physical education lessons in the elementary school. (F,Sp,Su)

PEP 3100 Athletic Injuries (3)
Care and prevention of common athletic injuries and standard taping techniques. Emphasizes recognition, first aid, and referral for these injuries. Taping techniques taught in a lab setting. (F,Sp)

PEP 3200 CI Motor Learning and Skill Analysis (3)
Exploration of materials, methods, and mechanisms of learning and performing motor skills. A variety of sport skills taught in lab, using cues, demonstrations, feedback, and game-like drills. Performance of skill analysis for variety of sport skills. (F,Sp,Su)

PEP 3250 Anatomical Kinesiology (3)
Study of the anatomical bases of human movement. Laboratory provides application of principles. (F,Sp,Su)

PEP 3300 Clinical Experience I (1)
Public school clinical experience in physical education. Prerequisite: Admission into Teacher Education program. (F,Sp)

PEP 3350 Methods of Individual and Dual Sports (1)
Prepares students by providing strategies and materials for implementing a quality physical education program in individual and dual sports. Discussion of lesson and unit planning, as well as student evaluation. Prerequisites: PEP 2200, 2400. (F,Sp)

PEP 3400 Methods of Team Sports (1)
Prepares students by providing strategies and materials for implementing quality physical education program in team sports. Discussion of lesson and unit planning, as well as student evaluation. Prerequisites: PEP 2100, 2300. (F,Sp)

PEP 3500 Methods of Fitness Education (1)
Emphasizes classroom components for teaching lecture/activity fitness course. Students peer teach in a lecture environment. Discussion of strategies and materials for planning and implementing a quality physical education academic fitness course. Includes lecture planning, presentation, unit preparation, and evaluation. Prerequisites: PE 3000, PEP 3350, 3400. (F,Sp)

PEP 3600 Elementary Physical Education Practicum (3)
Prepares teachers to teach elementary physical education as a support minor. Prerequisite: PEP 3050. (Arr)

PEP 3650 Movement Exploration for Elementary Teachers (2)
Covers creative movement and international folk dance. Experiences range from classroom management and curriculum development to large open-space activities and performance. Includes art and sound activities. (F)

PEP 4000 Mental Aspects of Sports Performance (3)
Provides current knowledge of sport psychology. Applies this knowledge to teaching sports and coaching in public schools. Also taught as PSY 4000. (F,Sp,Su)
PEP 4100  Exercise Physiology and Principles of Conditioning (4)
Designed to expose students to theory and application of exercise physiology and principles of training and conditioning. Laboratory experience provides hands-on practice for concepts taught in the classroom. Prerequisites: BIOL 2000, 2010, MATH 1050. (F,Sp,Su)

PEP 4150  Advanced Care and Prevention of Athletic Injuries (3)
Final preparation and competency demonstration of knowledge and skills prior to taking the national certification exam for the Athletic Training credential. Prerequisites: PEP 3100, instructor approval, and NATABOC certification eligibility.

PEP 4200  QI  Biomechanics (4)
Understanding and application of human anatomical kinesiology and biomechanical principles fundamental to efficient human movement. In required concurrent one-hour lab, students obtain hands-on application of principles of anatomical kinesiology and biomechanics. Prerequisites: BIOL 2000, 2010; MATH 1050 or equivalent. (F,Sp)

PEP 4250  Advanced Cooperative Work Experience (1-10) ®
Cooperative education work experience offers student opportunity to work in related field work of the major. Prerequisite: Instructor approval. (F,Sp,Su)

PEP 4300  Clinical Experience II (1)
Public school clinical experience in physical education. Prerequisite: Admission into Teacher Education program. (F,Sp)

PEP 4350  Administration of Physical Education (2)
Designed to help students understand objectives of physical education and sport, and incorporate them into a philosophy to assist in developing quality programs at the secondary level. Covers all aspects of physical education and sport administration including, but not limited to, budget, personnel, facilities management, programs, and activities. (F,Sp)

PEP 4400  QI  Evaluation in Physical Education (3)
Focuses on the nature and use of a variety of tests in physical education. Practical application, interpretation, and use of test results are stressed. (F,Sp)

PEP 4500  Methods of Coaching (3)
Addresses issues associated with secondary coaching, including fund-raising, discipline, parents, booster clubs, equipment, team selection, etc. Students also get hands-on individual sports methods time with local teams. (F,Sp,Su)

PEP 4600  Methods of Coaching Football and Soccer (1)
Outlines the methods, strategies, and techniques for coaching scholastic football and soccer. Emphasizes young player skill development and high school coaches’ administration of these sports. Prerequisite: PEP 4500 (may be taken concurrently). (Arr)

PEP 4700  Methods of Coaching Volleyball, Track and Field (1)
Outlines the methods, strategies, and techniques for coaching scholastic volleyball, as well as track and field. Emphasizes young player skill development and high school coaches’ administration of these sports. Prerequisite: PEP 4500 (may be taken concurrently). (Arr)

PEP 4800  Methods of Coaching Basketball, Baseball, and Softball (1)
Outlines methods, strategies, and techniques of coaching scholastic basketball, baseball, and softball. Emphasizes young player skill development and high school coaches’ administration of these sports. Prerequisite: PEP 4500 (may be taken concurrently). (Arr)

PEP 4850  Methods of Teaching and Coaching Women’s Gymnastics (3)
Instructs students in required coaching methods for women’s gymnastics from the beginning to advanced levels. Also includes section on judging. (Arr)

PEP 4900  CI  Methods of Physical Education (3)
Designed to prepare physical education majors and minors to teach physical education in the schools. Emphasizes planning, teaching, strategies, and methods. Admission to the Teacher Education program is required. Must be taken concurrently with either PEP 3300 or 4300. Prerequisites: Two courses selected from PEP 3350, 3400, and 3500. (F,Sp)

PEP 4950H  Honors Senior Thesis (1-6)
Culminating experience within the department for honors students. Student works closely with faculty mentor in an extensive project in the student’s area of interest. (F,Sp)

PEP 5050  Psychological Aspects of Sports Performance (3)
Psychological theory and principles applied to sports. Includes motivational techniques, psychological evaluation, stress and anxiety in sports, and personality and sports performance. Also taught as PST 5050/6050. (Arr)

PEP 5070  Sport Sociology (3)
Develops understanding of the social significance of sport. Applies the sociological perspective to a variety of contemporary issues, enabling students to better understand how sport affects and reflects American culture. (Sp)

PEP 5100  Fitness Assessment and Exercise Programs (4)
Application of physiologic principles, assessment techniques, and exercise prescription for developing quality fitness programs that impact health. Students gain experience in a personal fitness program and in the use and interpretation of fitness tests. Prerequisite: PEP 4100. (Sp)

PEP 5430  CI  The History and Philosophy of Physical Education (3)
Designed to familiarize physical education majors (or nonmajors) with history of physical education and sport, as well as philosophical influences which have contributed to development of contemporary physical education and sport. Considers historical development of yesterday’s pastimes into today’s complex, institutionalized forms of sport and physical education. (F)

PEP 5500  Student Teaching Seminar (2)
Capstone seminar focused upon student teaching issues, professional development, and principles of effective instruction. Prerequisites: PEP 4900, completion of Level I and II field experiences. (F,Sp)

PEP 5560  Practicum in Improving School System Programs (1-4) ®
In-service seminar for experienced teachers, emphasizing improvement in instruction. (F,Sp,Su)

PEP 5630  Student Teaching in Secondary Schools (10)
A 13-week culminating experience in which students assume full-time teaching responsibilities under the direction of cooperating teachers in physical education. Prerequisites: PEP 4900, completion of Level I and II field experiences. (F,Sp)

PEP 5700  Special Topics in Physical Education (1-6) (d6700)
In-depth review and discussion of special topics in physical education. (F,Sp,Su)

PEP 5900  Independent Study (1-3) ®
Provides opportunity for undergraduate or graduate students to participate in independent inquiry under guidance of a professor. (F,Sp,Su)

PEP 5910  Independent Research (1-3)
Allows undergraduate students to pursue personal research interest by formalizing an independent project under the guidance of a professor. (F,Sp,Su)

PEP 6000  Administration of Athletics (3)
Prepares students to organize and administer interscholastic and intercollegiate sports at the public school or university level. Consideration is given to both the challenges and standards associated with such programs. (Arr)

PEP 6010  Leadership in Health, Physical Education, and Recreation (3)
Group approach to improvement and innovation in leadership and supervisory skills. (Sp)

PEP 6050  Psychological Aspects of Sports Performance (3)
Psychological theory and principles applied to sports. Includes motivational techniques, psychological evaluation, stress and anxiety in sports, and personality and sports performance. Also taught as PST 6050/7050. (Arr)
456  Personal Financial Planning (PFP)
Course Descriptions

PEP 6070  Sport in Society  (3)
Introduces students to complex role and social significance of sport in contemporary
society. Familiarizes students with aims, scope, and potential contributions of sport
in society. (Sp)

PEP 6250  Graduate Cooperative Work Experience  (1-10) ®
Professional level of educational work experience in a cooperative education position
for graduate students. (F,Sp,Su)

PEP 6290  Corporate Wellness Marketing  (3)
Reviews history of corporate fitness in America, as well as common organizational
and management practices. Emphasizes marketing practices promoting individual
and business involvement. (Sp)

PEP 6400  Exercise in Health, Fitness, and Sport  (4)
Emphasizes physiological and health benefits of exercise. Discusses role of exercise
disease prevention, along with medications given to treat illness and disease. (Arr)

PEP 6420  Curriculum in Physical Education  (3)
Curriculum development studied in terms of student needs in relation to present-day
society. Includes current practices and trends in the area of curriculum. (F)

PEP 6430  History and Philosophy of Physical Education and Sport  (3)
History of physical education; philosophical influences which have contributed to
contemporary physical education; and methods of educational instruction using the
primary philosophical positions. (F)

PEP 6450  Fitness Assessment and Exercise Testing  (3)
Exposure to fitness assessment in clinical and cardiac settings, as well as in corporate
wellness settings. Exercise testing and interpretations, using different testing proto-
cols in emphasized variant electrocardiograms, studied as part of the disease process.
Prerequisite: PEP 6400. (Sp)

PEP 6500  Practicum in Corporate Wellness  (1-10) ®
Experiences designed for the practical implementation of coursework. Involves ran-
dom populist rehabilitation, as well as executive and industry, senior citizen centers,
and rest homes. (F,Sp,Su)

PEP 6540  Wellness Programming  (3)
Emphasizes exercise prescription writing and exercise prescription implementation.
Students test prescriptions in laboratory setting. Prerequisites: PEP 6400, 6450. (Sp)

PEP 6690  Analysis of Teaching Physical Education  (3)
Designed to provide graduate students with practicum experiences in the analysis of
physical education, via micro teaching and observation of physical education classes.
(Arr)

PEP 6700  Special Topics in Physical Education  (1-6) ®
(d5700)
In-depth review and discussion of special topics in physical education. (F,Sp,Su)

PEP 6730  Worksite Guidance and Counseling  (3)
Provides cardiac rehabilitation/corporate wellness graduate students with basic under-
standing of exercise and health psychology. (F)

PEP 6800  Biomechanics and Ergonomics of Health, Industry, and Sport  (3)
Understanding and application of biomechanical and ergonomic principles funda-
mental to efficient human movement in health, industry, and sport. Prerequisite: PEP
4200. (Sp)

PEP 6810  Research Methods in Health Sciences  (3)
Explores basic to advanced concepts contained in research and statistical design, as
applicable to health sciences. (F)

PEP 6820  Wellness Certification and Technology  (2)
Provides instruction and experience in wellness technology and wellness certification.
Students learn use of current technology in the fitness industry and obtain cer-
tain wellness certifications. (Sp)

PEP 6830  Motor Learning  (3)
Comprehensive review and analysis of research in the area of motor skills which
bears upon the teaching of physical education activities. (Sp)

PEP 6900  Independent Study  (1-3) ®
Student conducts independent projects under direction of one or more professors.
Provides student with opportunity for individualized study. (F,Sp,Su)

PEP 6910  Independent Research  (1-3)
Allows graduate students to pursue personal research interests by formalizing an in-
dependent project under the guidance of a graduate professor. (F,Sp,Su)

PEP 6960  Master’s Project  (3)
Allows students opportunity to develop creative and applicable educational project.
(F,Sp,Su)

PEP 6970  Thesis  (1-9) ®
(F,Sp,Su)

PEP 6990  Continuing Graduate Advisement  (1-9) ®
Provides graduate students with continued support and advisement. Usually taken
following completion of all coursework required for the degree. (F,Sp,Su)

PEP 7550  Practicum in the Evaluation of Instruction  (1-6) ®
Field-based experience involving supervision of student teachers in Department of
Health, Physical Education and Recreation. (F,Sp,Su)

1Parenthetical numbers preceded by d indicate a dual listing.
® Repeatable for credit. Check with major department for limitations on number of
credits that can be counted for graduation.

Personal Financial Planning (PFP)
See School of Accountancy, pages 119-122

PFP 1050  Introduction to Personal Financial Planning  (1-3)
Introduction to concepts of financial planning for individuals. Taught only as a spe-
cial extension course as requested.

PFP 5060  Personal Financial Planning and Advising  (3) 2
(d6060)2
Fundamental concepts and principles of personal financial planning for individuals.
(F)

PFP 5070  Retirement Planning  (3) 2
(d6070)
Concepts and principles of retirement planning, including retirement and benefit
plans, deferred compensation, and investments. (Sp)

PFP 5080  Estate Planning  (3) 2
(d6080)
Concepts and principles of estate planning for individuals, including goal identifica-
tion, data gathering, forms of property ownership, documents, probate, and transfer
taxes. (Sp)

PFP 5090  Personal Financial Plans  (3) 2
(d6090)
Capstone course in personal financial planning. Knowledge from other financial
planning courses used to prepare comprehensive personal financial plans. Prerequi-
sites (may be taken concurrently): ACCT 3410; BA 3460 or 4460; PFP 5060/6060,
5070/6070, 5080/6080.

PFP 6060  Personal Financial Planning and Advising  (3)
(d5060)
Fundamental concepts and principles of personal financial planning for individuals.
(F)

PFP 6070  Retirement Planning  (3)
(d5070)
Philosophy (PHIL) Course Descriptions

PHIL 3150 CI Kant and His Successors (3)*
Philosophers and philosophical disputes in Western Europe from 1750-1900. Study of Kant, Hegel, Bentham, Mill, Marx, Schopenhauer, and Nietzsche. Examination of critical idealism, philosophy of history, utilitarianism, communism, and origins of existentialism. (Sp)

PHIL 3160 CI Contemporary Philosophy (3)**
Twentieth century philosophical thought, including existentialism, logical positivism, analytic philosophy, and postmodernism, as expressed in the works of Heidegger, Husserl, Wittgenstein, Carnap, Russell, Quine, Sartre, Derrida, and others. (F)

PHIL 3180 DHA Contemporary European Philosophy (3)*
Study of twentieth-century philosophical movements originating and developing on the European continent. Movements to be considered may include: existentialism, phenomenology, hermeneutics, and post-metaphysical philosophy. (F)

PHIL 3500 Medical Ethics (3)
Key issues in medicine, including: consent, competency, confidentiality, euthanasia, abortion, and the justification of health care. (F)

PHIL 3510 DHA Environmental Ethics (3)
Key issues in the treatment of nature, such as: the value of wilderness, animal rights, comparative views of nature, and moral issues in economic approaches to the wilderness. (F,Sp)

PHIL 3520 DHA Business Ethics (3)
Key issues in business, including: foreign bribery, corporate responsibility, corporate culture, ethical theories, justice, and preferential treatment. (Sp)

PHIL 3700 Philosophy of Religion (3)
Problems in defining “religion” and the existence of God; the problem of evil; the immortality of the soul; religious experience; faith; alternatives to theism; religious language. (F)

PHIL 3710 Philosophies of East Asia (3)*
Study of three Asian philosophies: Confucianism, Taoism, and Buddhism. Focus on appreciating the merits of each system of thought. Emphasis on class discussion and participation. (F)

PHIL 3720 Philosophical Theology After Kant (3)*
Explores attempts to reconstruct the reasonable basis of religion in the two centuries after the Enlightenment. (F)

PHIL 3730 CI Philosophy of the New Testament (3)*
Historical and intellectual context of the development of the New Testament. Character, ideas, and historical setting of the various documents. (Sp)

PHIL 3750 Religion and Science in the Modern World (3)*
Study of problems addressing the relation of religion to science in the modern world (e.g., evolution, Big Bang, origin of life). (Sp)

PHIL 3800 DHA Philosophy in Literature (3)**
Study of philosophical concepts, problems, and issues as they have been presented and dramatized in works of literature and cinema. Discussion of issues concerning ethics, epistemology, ontology, and logic. Students read or view works from a variety of media, including novels, short stories, and films. (F)

PHIL 3810 DHA Aesthetics (3)
Analysis of traditional theories of aesthetics and art criticism. Theories are applied to illustrative examples, including music, painting, photography, sculpture, dance, literature, and cinema. (Sp)

PHIL 4300 DHA Epistemology (3)*
Study of foundations of knowledge and belief systems, and related topics in epistemology, including perception, certainty, and skepticism. (F)

PHIL 4310 DHA Philosophy of Science (3)
Study of different views of the nature of science: the classical traditions of Hempel and Popper, Kuhn’s subjectivism, and Feyerabend’s anarchism. Topics include con-
firmation, induction, scientific realism, reductionism, and the growth of scientific knowledge. (Sp)  

PHIL 4320 DHA History of Scientific Thought (3)**  
Examination of key episodes in the history of science and associated ideas about the nature of scientific knowledge and how this knowledge may be acquired. Also taught as HIST 4320. (Sp)  

PHIL 4400 Metaphysics (3)**  
Study of fundamental problems of existence. Topics include: mind and its relation to the body, determinism and human freedom, fatalism, idealism and realism, truth, and our knowledge of the world. (F)  

PHIL 4410 DHA Philosophy of Mind (3)  
Beginning with the context of Cartesian mind/body dualism, a thorough examination of Cartesian privacy, privileged access, and the problem of other minds is conducted. Ancillary topics may include the mind/machine controversy and animal intelligence. (F)  

PHIL 4420 Philosophy of Language (3)**  
Nature and uses of language, concepts of meaning, reference, truth, syntax, semantics, pragmatics, metaphors, ambiguity, vagueness, and definition. Application in linguistics, psychology, anthropology, and literary criticism. (Sp)  

PHIL 4500 Contemporary Ethical Theory (3)*  
Careful examination of one or more topics playing a central role in current moral philosophy. Focus on work produced in philosophical literature within last twenty years. (Sp)  

PHIL 4530 DSC Ethics and Biotechnology (3)* (d6530)  
Interdisciplinary examination of key issues such as: cloning, human genetic screening and therapy, and transgenic animals and food. (Sp)  

PHIL 4540 DHA Human Values and Information Technology (3)* (d6540)  
Philosophical investigation of relations between technological change, human values, and the good life. Emphasis on growth of computer-mediated communication and its impact on values such as autonomy and privacy. (Sp)  

PHIL 4600 Philosophy of Law (3)*  
Examines the nature of law, relations between law and morality, the obligation to obey law, ways to interpret law, the justification of legal punishment, and appropriate conditions for civil and criminal liability. (F)  

PHIL 4610 DHA Social and Political Philosophy (3)**  
Explores the nature of a just society, political obligation, and justification and proper limits of political power. (Sp)  

PHIL 4900 Special Topics (3) ®  
Detailed consideration of a particular philosopher or philosophical problem. Instructor approval required. Course may be repeated when a different topic is discussed. (F,Sp)  

PHIL 4910 Readings and Research (1-4) ®  
Independent study of a particular philosopher or philosophical topic. Consent of instructor required. Course may be repeated when a different topic is discussed. (F,Sp)  

PHIL 4920H Senior Honors Seminar (1)  
Credit for completing and presenting a senior honors thesis project. Requirement may be fulfilled by publishing the thesis in an academic journal, defending the thesis before a faculty committee, presenting the thesis at an academic conference, or presenting the thesis in the philosophy session during Scholar’s Day. (Sp)  

PHIL 4930H Senior Honors Thesis (1-4) ®  
Independent study research credits for preparation of a senior honors thesis to fulfill requirements for a degree in philosophy with departmental honors. Prerequisite: Permission of instructor prior to enrollment. (F,Sp,Su)  

PHIL 4990 Philosophy Seminar (3) ®  
Advanced study of recent work in philosophy. Topic will vary by instructor. Especially appropriate for students planning to go on to graduate or professional school. (Sp)  

PHIL 5200 Symbolic Logic (3)***  
Study of the metatheory for truth functional and predicate logic. Examination of systems employing modal, epistemic, and deontic operators. Set theory, fuzzy logic, and Gödel’s undecidability theorem may also be considered. If time permits, applied logic will be considered. Prerequisite: PHIL 2200 or instructor’s approval. (Sp)  

PHIL 5510 Ethics and the Environment (3)**  
Study and analysis of both individualistic and holistic approaches to environmental ethics, with emphasis on contemporary debates within the field and their implications for the formation of public policies. Prerequisite: PHIL 3510 or graduate standing. (F)  

PHIL 5600 Legal Ethics (3)***  
Study and analysis of major issues arising in the practice of law within the context of the American adversarial system of justice. Prerequisite: PHIL 4600, graduate standing, or permission of instructor. (F)  

PHIL 6420 Philosophy of Language (3)** (Sp)  

PHIL 6530 Ethics and Biotechnology (3)* (d4530)  
Interdisciplinary examination of key issues such as: cloning, human genetic screening and therapy, and transgenic animals and food. To receive graduate credit, extra readings and a 25-30 page paper will be required. (Sp)  

PHIL 6540 Human Values and Information Technology (3)* (d4540)  
Philosophical investigation of relations between technological change, human values, and the good life. Emphasis on growth of computer-mediated communication and its impact on values such as autonomy and privacy. To receive graduate credit, extra readings and a 25-30 page paper will be required. (Sp)  

PHIL 6890 Philosophy of Science (3) (Sp)  

PHIL 6900 Independent Study (1-4) ®  
® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.  
**Taught 2005-2006.  

Physics (PHYX)  
See Department of Physics, pages 286-290  

PHYX 1000 BPS Introductory Astronomy (3)  
Exploration of solar system and universe. Laws of motion, fundamental interactions, structure of matter, electromagnetic radiation, and conceptual models of celestial motions. Conceptual and quantitative homework problems and exams, along with writing assignments and observation reports, are required. Facility with high school mathematics is expected.  

PHYX 1020 BPS Energy (3)  
Study of energy resources, utilization, conversion, and conservation, including energy balance and flow in biological and geological systems. Social impacts of energy resource development, including public policy and planning. Prerequisites: At least one university-level mathematics or statistics course, and completion of University Studies Computer and Information Literacy (CIL) examination.  

PHYX 1030 BPS Intelligent Life in the Universe (3)  
Study of the likelihood of extraterrestrial intelligence and its probable locations. Nature and evolution of life on Earth, as well as stellar evolution and planetary environments. Discussion of psychology of UFO phenomena. Prerequisites: At least one
university-level mathematics or statistics course, and completion of University Studies Computer and Information Literacy (CIL) examination.

PHYX 1040 From Atoms to Ants (3)
Examines structure and organization of matter, from the small to the large, and inquires into how such seemingly nonphysical phenomena as living, social, and mental activity may be related to the behavior of the atom. Extensive use of computer simulations to explore aspects of the material. Knowledge of programming not required. Cannot be taken for University Studies credit. Prerequisites: At least one university-level mathematics or statistics course, and completion of Computer and Information Literacy (CIL) examination.

PHYX 1100 BPS Great Ideas in Physics (3)
Descriptive introduction to the principles underlying contemporary physics. Great ideas will include relativity and quantum mechanics and such consequences and applications as the twin paradox, black holes, nuclear energy, magnetic imaging, lasers, superconductivity, and the paradox of Schrodinger’s cat. Facility with high school algebra is expected.

PHYX 1200 BPS Introduction to Physics by Hands-on Exploration (4)
Explores structure of matter, electricity and magnetism, light, and sound through hands-on, inquiry-based activities. Facility with high school algebra is required. Required laboratory.

PHYX 1800 BPS Physics of Technology (4)
Overview of the classical physics on which industrial technology is based. Elements of kinematics, forces, energy, momentum, thermodynamics, electric and magnetic fields, waves, and optics. Required laboratory. Prerequisites: MATH 1050 and 1060.

PHYX 2110 The Physics of Living Systems I (4)
Study of kinematics and dynamics of particles and systems of particles. Introduction to Newton’s Laws of motion, momentum and energy conservation, rotations, and thermodynamics, with applications in biology and biotechnology. Required recitation and lab. Prerequisite: MATH 1100 or 1210.

PHYX 2120 BPS The Physics of Living Systems II (4)
Introduction to electromagnetism, optics, and quantum phenomena—including the microscopic structure of matter, with applications in biology and biotechnology. Required recitation and lab. Prerequisite: MATH 1100 or 1210, PHYX 2110.

PHYX 2200 Elements of Mechanics (2)
Calculus-based introduction to particle mechanics. Kinematics, Newton’s laws of motion, momentum, work and energy, and angular momentum. Required recitation and lab. Prerequisite: MATH 1210.

PHYX 2210 QI General Physics—Science and Engineering I (4)
Calculus-based introduction to Newton’s Laws of motion, momentum and energy conservation, rotations, oscillations, and thermodynamics, with applications in the physical sciences and technology. Required recitation and lab. Prerequisite: MATH 1210.

PHYX 2220 QI General Physics—Science and Engineering II (4)
Calculus-based introduction to electromagnetism, waves, optics, and modern physics, with applications in the physical sciences and technology. Required recitation and lab. Prerequisites: MATH 1210; PHYX 2220 or 2210, or a minimum score of 4 on the AP B exam, or a minimum score of 3 on the AP C (mechanics) exam.

PHYX 2400 Introductory Topics in Physics (Topic) (1-3) ©
Explores issues in contemporary physics at an introductory level. Prerequisite: Approval of instructor.

PHYX 2500 Introduction to Computer Methods in Physics (2)
Introduction to computer assistance in physics. Topics include: (1) use of numerical, graphical, and symbolic manipulation software to solve physics problems; and (2) interfacing computers to instrumentation for control and data acquisition. Prerequisite: PHYX 2110 or 2210 or 2220.

PHYX 2710 Introductory Modern Physics (3)
Overview of modern physics at the intermediate level. Focuses on principles and applications of relativity and quantum mechanics, including a discussion of atomic, solid state, and particle physics. Prerequisites: MATH 1220, PHYX 2120 or 2210.

PHYX 3010 DSC Space Exploration from Earth to the Solar System (3) QI
Comparative introduction to the Earth and other planets in our solar system, including geological structure and atmosphere. Emphasis on space exploration methods, including spacecraft and detection instrumentation. Examines latest results of Mars missions, Jupiter and Saturn exploration, etc. Prerequisites: Completion of University Studies Quantitative Literacy (QL) and Breadth Physical Sciences (BPS) requirements.

PHYX 3020 DSC Great Scientists (3)
Lives and work of men and women responsible for scientific revolution: Maxwell (loved children), Einstein (despised authority), Curie (suffered discrimination against women), Schrodinger (fled from Hitler), Watson and Crick (the DNA story), Feynman (lock picker), Rubin (as a young girl built her own telescope), and others. Prerequisite: Fulfillment of University Studies Breadth Physical Sciences (BPS) or Breadth Life Sciences (BLS) requirement. (F)

PHYX 3030 DSC The Universe (3) QI
Study of properties and origin of the universe, based on Einstein’s theory of gravity. Topics include curved space-time; black holes, white holes, and worm holes; the big bang; multiple universes; and the births of stars, galaxies, heavy atoms, and planets. Prerequisite: Completion of University Studies Quantitative Literacy (QL) requirement and PHYX 1000.

PHYX 3040 QI Space Weather—Dangers to the High-Tech World (3)
Space weather can be as destructive to high technology as ordinary weather is to property and crops. Examines increasing vulnerability of society to events in space resulting from changes on the Sun and from human activity. Explores how we learn about space weather with satellites, radars, lidars, and numerical models. Prerequisites: Completion of University Studies Quantitative Literacy (QL) and Breadth Physical Sciences (BPS) requirements.

PHYX 3500 Topics in Physics (Topic) (1-3) ©
Introduces and explores issues in contemporary physics at an intermediate undergraduate level. Focuses on phenomena and experimental methods. Prerequisite: PHYX 2710 and approval of instructor.

PHYX 3550 Intermediate Classical Mechanics (3)
Newton’s laws of motion, accelerated reference frames, work and energy, systems of particles, rigid body rotation, central force problem, and harmonic oscillations. Prerequisites: PHYX 2710, MATH 2210; MATH 2250 (may be taken concurrently).

PHYX 3600 Intermediate Electromagnetism (3)
Electrostatics, electric potential, current, magnetostatics, induction, AC circuits, Maxwell’s equations, and electromagnetic waves. Prerequisites: PHYX 2710, MATH 2210; MATH 2250 (may be taken concurrently).

PHYX 3650 Optics (3)
Geometric optics, interference, diffraction, aberration, polarization, and topics in contemporary optics. Prerequisite: PHYX 2710.

PHYX 3700 Thermal Physics (3)
Rigorous treatment of laws of thermodynamics and statistical mechanics. Concepts of work, temperature, heat, energy, and entropy; and their application to reversible and irreversible processes. Criteria for equilibrium. Prerequisite: PHYX 2710.

PHYX 3750 Foundations of Wave Phenomena (3)
Survey of wave phenomena in physics, with emphasis on application of mathematiccal techniques to the wave equation, Schrodinger equation, and Maxwell equations. Prerequisites: PHYX 2710, MATH 2210; MATH 2250 (may be taken concurrently).

PHYX 3870 CI Intermediate Laboratory I (2)
Modern experimental techniques, data and error analysis, experimental design, and communication skills. Exercises complement upper-level theory courses, and include some experiments of historical importance. Prerequisite: PHYX 2500.

PHYX 3880 CI Intermediate Laboratory II (2)
Continuation of PHYX 3870. Prerequisite: PHYX 3870.
source structures with fractals. Practical benefits of understanding and controlling er-
complexity. Importance of describing physical, geological, biological, and natural re-
sources. Introduction to principles and applications of new sciences of fractals, chaos, and
PHYX 4010 DSC Chaos Under Control (3)
QI
Introduction to principles and applications of new sciences of fractals, chaos, and complexity. Importance of describing physical, geological, biological, and natural resource structures with fractals. Practical benefits of understanding and controlling erratic behavior in physical and living systems. Technological consequences of self-organized, adaptive behavior. Prerequisites: Completion of University Studies Quantitative Literacy (QL) and Breadth Physical Sciences (BPS) requirements.

PHYX 4020 DSC Science, Art, and Music (3)
QI
Explores how science constrains production and appreciation of visual and auditory art. Relevance to art of: physics of sound and light, perspective and observer in relativity and quantum mechanics, symmetry, fractals, chaos, complex adaptive behavior, and self-organization. Prerequisites: Completion of University Studies Computer Literacy (CIL) examination, Quantitative Literacy (QL), and Physical or Life Sciences breadth (BPS or BLS) requirements. (Sp)

PHYX 4250 CI Cooperative Work Experience (1-6) ®
Planned work experience in industry or national laboratories. A detailed plan and the purpose of the experience must have prior approval. A written report is required. Prerequisite: PHYX 2710.

PHYX 4550 Advanced Classical Mechanics (3)
Lagrange’s equations, Liouville’s theorem, continua, Euler’s equations, small vibrations, and special relativity. Prerequisites: PHYX 3550, 3750.

PHYX 4600 Advanced Electromagnetism (3)
Potential formulations of electrodynamics, energy and momentum, waves and boundary conditions, waves in dielectrics and conductors, guided waves, dipole radiation, and relativistic electrodynamics. Prerequisites: PHYX 3600, 4550.

PHYX 4700 Quantum Mechanics I (3)
Principles of quantum mechanics, operators in Hilbert space, matrix mechanics, angular momentum, spin, perturbation theory, and applications. Prerequisites: PHYX 3550, 3600, 3750.

PHYX 4710 Quantum Mechanics II (3)
Continuation of PHYX 4700. Prerequisite: PHYX 4700.

PHYX 4900 CI Research in Physics (1-3) ®
Research experience pursued with faculty mentor. Prior to registration, student must make arrangements with the Physics Department’s undergraduate research advisor. Prerequisite: PHYX 2710.

PHYX 5050 Biophysics of Radiological Health (3)
Brings together sciences relating to nuclear biophysics. Prepares students to be aware of radiological hazards, to safely use radioactive materials, and to comply with relevant laws. Prerequisites: BIOL 1210, 1220, CHEM 1210, 1220, a physics course, and senior standing. Also taught as BIOL 5050.

PHYX 5340 Methods of Theoretical Physics I (3)
Physics applications of vector calculus and differential geometry, group theory, infinite series, complex analysis, differential equations, Sturm-Liouville theory, orthogonal functions, integral equations, and the calculus of variations.

PHYX 5350 Methods of Theoretical Physics II (3)
Continuation of PHYX 5340. Prerequisite: PHYX 5340.

PHYX 5500 Intermediate Topics in Physics (Topic) (1-3) ®
Explores issues in contemporary physics at the advanced undergraduate and beginning graduate level.

PHYX 5800 Physics Colloquium (1) ®
A series of invited lectures on specialized topics in physics and related subjects.

PHYX 5870 CI Advanced Laboratory (3)
Experimental experience with such modern techniques as scanning tunneling microscopy, LEED, Auger spectroscopy, and Fourier transform infrared spectroscopy. Prerequisite: PHYX 2710.

PHYX 6010 Classical Mechanics I (3)
Continuation of PHYX 6010. Prerequisite: PHYX 6010.

PHYX 6110 Electrodynamics I (3)
Fundamental laws of electrostatics and magnetostatics; dielectric media, Maxwell’s equations, time varying fields, and electromagnetic waves. Waveguides and radiation by moving charges. Prerequisite: PHYX 4600 or equivalent.

PHYX 6210 Quantum Mechanics I (3)
Continuation of PHYX 6210. Prerequisite: PHYX 6210.

PHYX 6220 Quantum Mechanics II (3)
Continuation of PHYX 6220. Prerequisite: PHYX 6220.

PHYX 6240 Space Environment and Engineering (3)
Study of space environment and models used for engineering analysis. Topics include considerations for engineering in the space environment such as plasma interactions, debris, chemical reactions, radiation effects, and thermal issues. Also taught as ECE 6240. (F)

PHYX 6250 CI Cooperative Work Experience (1-6) ®
Allows students to register for credit when working in a physics-related position. Prerequisite: Permission of department head prior to enrollment. (F,Sp,Su)

PHYX 6310 Solar-terrestrial Physics I (3)
Study of solar-terrestrial physics, including planetary magnetic fields, the interaction of the sun with planetary properties (magnetic fields and atmospheres), and an overview of ionospheric measurement techniques. Study of the upper atmosphere and the physics occurring in each of the layers and zones, including the equatorial and polar ionosphere. Prerequisite: PHYX 4600 or equivalent.

PHYX 6320 Solar-terrestrial Physics II (3)
Continuation of PHYX 6310. Prerequisite: PHYX 6310.

PHYX 6330 Plasma Physics I (3)
Characteristics of the plasma state and plasma generation; velocity distribution functions, collisions and Boltzmann’s equation; wave modes in a plasma; transport theory; plasma devices. Prerequisite: PHYX 4600 or equivalent.

PHYX 6340 Plasma Physics II (3)
Continuation of PHYX 6330. Prerequisite: PHYX 6330.

PHYX 6410 Statistical Mechanics I (3)

PHYX 6420 Statistical Mechanics II (3)
Continuation of PHYX 6410. Prerequisite: PHYX 6410.

PHYX 6530 Solid State Physics I (3)
Development of the modern theory of the solid state. Emphasis placed on understanding the bulk properties of the solids, including crystal structure, cohesive properties, electronic structure, and lattice dynamics. Explores response to added stimuli,
such as electric, magnetic, and optical fields. Prerequisites: PHYX 4600 and 4710; PHYX 6410 (can be taken concurrently).

**PHYX 6540** Solid State Physics II (3)
Continuation of PHYX 6530. Prerequisite: PHYX 6530.

**PHYX 6550** Physics of Materials (3)
Application of microscopic (quantum) and macroscopic (classical) physics to study materials properties (e.g., bonding, structure, atomic dynamics, electrical, magnetic, thermal, optical), characterization methods, and a survey of materials. Prerequisites: PHYX 3700, 4710.

**PHYX 6560** Physics of Materials II (3)
Continuation of PHYX 6550. Prerequisite: PHYX 6550. (Sp)

**PHYX 6910** Relativity I (3)
Foundations of spacetime physics. Survey of the basics of special and general relativity, including kinematics, mechanics, and electrodynamics in flat spacetime, the description of curved spacetime, and the Einstein equations. Exact solutions, applications, tests, and the mathematical techniques of general relativity. Prerequisites: PHYX 6020, 6120.

**PHYX 6920** Relativity II (3)
Continuation of PHYX 6910. Prerequisite: PHYX 6910.

**PHYX 6930** Quantum Field Theory I (3)
Detailed study of the relativistic quantum description of scalar, spinor, and vector fields in spacetime. Topics include gauge theories, canonical and path integral quantization, and interactions.

**PHYX 6940** Quantum Field Theory II (3)
Continuation of PHYX 6930. Prerequisite: PHYX 6930.

**PHYX 6970** Thesis Research (1-10) ®
Advanced research under guidance of one or more faculty members.

**PHYX 6990** Continuing Graduate Advisement (1-3) ®

**PHYX 7210** Spacecraft Instrumentation (3)*
Theory, engineering, and data reduction techniques of spacecraft instrumentation for space science and spacecraft systems. Also taught as ECE 7210. (Sp)

**PHYX 7500** Advanced Topics in Physics (Topic) (3) ®
Explores issues in contemporary physics at the advanced graduate level.

**PHYX 7510** Seminar (1-3) ®

**PHYX 7970** Dissertation Research (1-15) ®

**PHYX 7990** Continuing Graduate Advisement (1-9) ®

® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.
*Taught during even-numbered years, beginning with Spring 2006.

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**Plant Science (PLSC)**

*See Department of Plants, Soils, and Biometeorology, pages 291-295*

**PLSC 2100** BLS Introduction to Horticulture (3)
Introduction to production of nursery, greenhouse, fruit, and vegetable crops. Explores residential and commercial landscape construction and management. Students also learn about interior plants, arboriculture, turf science, landscape plant materials, and home gardening. (F)

**PLSC 2200** Pest Management Principles and Practices (3)
Overview of pest control considerations, procedures, and principles. Topics include integrated pest management, organic and chemical pest control, environmental considerations, safety, life cycles of pests, and commercial pesticide licensing. (Sp)

**PLSC 2250** Occupational Experience in Agronomy and Horticulture (1-4) ®
Provides credit for on-the-job training in jobs related to plants or soils. (F,Sp,Su)

**PLSC 2600** Annual and Perennial Plant Materials (1.5)
Identification, culture, and utilization of herbaceous ornamental plants in the landscape, including annual and perennial flowering plants, herbaceous ground covers, ornamental grasses, and herbs. (F)

**PLSC 2610** Indoor Plants and Interiorscaping (1.5)
Identification, culture, use, and maintenance of indoor foliage and flowering plants used in the interior plantscaping industry. (F)

**PLSC 2620** Woody Plant Materials: Trees and Shrubs for the Landscape (3)
Identification, culture, and utilization of woody ornamental plants in the landscape, including shade trees, flowering trees and shrubs, hedge plants, and vines. Review of native plants commonly used in the landscape. (F)

**PLSC 2650** Identification and Selection of Plants in Production Agriculture (1)
Identification of plants important in horticulture/agronomy and the morphological features making them useful for various agricultural purposes. (F)

**PLSC 2900** Special Problems in Plant Science (1-4) ®
Student-selected practical problems in horticulture and/or agronomy. (F,Sp,Su)

**PLSC 3010** Basic Flower Arranging (2)
Principles of basic flower design using fresh, dried, and artificial flowers. Proper care of cut flowers and foliage. Basic plant physiology behind such principles. Lab fee required. (F)

**PLSC 3020** Floral Crops Judging and Contemporary Design (2)
Judging of potted ornamental plants and cut flowers for quality. Contemporary floral design and floral art. Prerequisite: PLSC 3010 or professional design experience. Lab fee required. (Sp)

**PLSC 3050** Greenhouse Management and Crop Production (4)
Design and management of commercial greenhouse facilities. Production requirements of primary greenhouse crops. (Sp)

**PLSC 3300** Residential Landscapes (3)
Functional and aesthetic relationships of plants and structures in the landscape in connection with installation considerations. Use of imaging and CAD software in initial computer design layout. Prerequisite: PLSC 2620. Recommended: PLSC 2600. (Sp)

**PLSC 3400** Managing for Sustainable Landscapes (3)
Interaction of expectations, maintenance needs, cost/benefit analysis, physiology, and ecology in managing landscapes on a sustainable basis. Prerequisites: PLSC 2600, 2620. (F)

**PLSC 3500** The Structure and Function of Economic Crop Plants (3)
Environmental effects on plant structure and function. Control of plant development for enhanced production of marketable goods. Introduction to principles using examples from horticulture and agronomy. Applications in these fields emphasized. Prerequisites: Integrated Science or comparable breadth course, BIOL 1010 or 1210. (Sp)

**PLSC 3700** Plant Propagation (4)
Propagation of plants by sexual and asexual means. Covers fundamental physiology of propagation, as well as cultural practices and techniques used in crop production. Recommended: BIOL 1210. (F)

**PLSC 3800** Turfgrass Management (3)
Fundamentals of turfgrass science: species adaptation, identification, and cultural requirements; turfgrass growth and development; establishment; primary cultural practices (fertilization, irrigation, mowing); secondary cultural practices; pest
management; integrated management planning for turfgrass systems. Prerequisite: BIOL 1010 or 1210. (F)

PLSC 4280 Field Crops (3)
Economic importance, use, distribution, origin, history, classification, identification, botanical nature, marketing, processing, storage, certification, grading, diseases, insects, commercial production, and improvement of cereal, root, and oilseed crops. Two lectures, one lab per week. (F)

PLSC 4300 World Food Crops and Cropping Systems: The Plants That Feed Us (3)
Climatic, geographic, and management requirements of the world’s plants that provide food for humans, including botanical relationships. Systems used to produce these crops and processes for turning them into food. Prerequisite: Integrated Science or comparable breadth course. (Sp)

PLSC 4320 Forage Production and Pasture Ecology (3)
Cultivation and management of legumes and grasses used throughout the world for grazing, stored feed, soil improvement, and conservation. Forage plant growth and development, nutrient and water utilization, and responses to environmental stress. Prerequisite: Integrated Science or comparable breadth course. (F)

PLSC 4400 Modern Vegetable Production (3)
Principles and practices underlying scientific vegetable culture. Discussion of production of important vegetables, focusing on the physiological processes influencing their culture. Explores crop performance in research and commercial applications. Prerequisite: BIOL 1010 or 1210. (F)

PLSC 4500 Fruit Production (4)
Cultivars, physiology, anatomy, propagation, sites, soils, climate, culture, irrigation, fertilizers, insects, diseases, integrated management, plant and fruit growth and development, harvesting, storage, pruning, orchard architecture, environmental protection, and economics for both tree and small fruits. Prerequisite: BIOL 1010 or 1210. (Sp)

PLSC 4600 DSC Cereal Science (3)**
Introduction to principles involved in cereal chemistry and processing. Covers starch chemistry, dry milling, wet milling, decortication, malting, and extrusion. Processing of all major cereals also covered. Prerequisite: MATH 1030 or STAT 1040 or completion of University Studies Quantitative Literacy (QL) requirement. (Sp)

PLSC 4800 Professional Turfgrass Management (2)
Fertilization, irrigation, and cultivation practices for managed landscapes. Construction issues, including compaction, soil modification, and specialized construction practices for golf courses and sports turf. Prerequisites: SOIL 3000, PLSC 3800. (Sp)

PLSC 5100 Landscape Irrigation Management (3)
Explores how principles of evapotranspiration, soil and plant properties, and urban landscape sprinkler irrigation systems can be combined for proper irrigation scheduling. Evaluating and analyzing landscape water demand. (Sp)

PLSC 5200 Crop Physiology (2)
The relationship between physiological processes and growth of whole plants. Energy balance and water use efficiency. Light interception and canopy geometry. Canopy photosynthesis and respiration. Carbon partitioning and source/sink relationships. Prerequisites: BIOL 4400, MATH 1050, or consent of instructor. (Sp)

PLSC 5210 Crop Physiology Laboratory (1)
Measurement and analysis of physiological processes that result in whole plant growth. Includes an individual lab project. Designed to be taken concurrently with PLSC 5200 or 6200. (Sp)

PLSC 5300 Principles of Cytogenetics (3)*
Examination and analysis of variation in chromosome structure, behavior, and number. Includes discussions of developmental and evolutionary effects of this variation, and practical applications in plant and animal genetics. Prerequisite: BIOL 3200. (Sp)

PLSC 5400 Low Water Landscaping (3)
Examines arid ecosystems, emphasizing the Intermountain West, and recreating such ecosystems in a range of amenity landscapes. Also covers procurement, propagation, establishment, and maintenance of plants appropriate for low water landscapes. Also taught as LAEP 5400/6400. (F)

PLSC 5430 Plant Nutrition (2)***
Mechanisms of nutrient acquisition, rhizosphere interactions, root morphology and distribution, short- and long-distance transport, nitrogen fixation, and biochemical function of essential and beneficial elements. (F)

PLSC 5440 Plant Molecular, Cellular, and Developmental Biology I (3)**
Examines background and recent advances. Students analyze and discuss structure, genome, molecular development, and photosynthesis topics from a research perspective. Prerequisites: BIOL 3200, 5210; CHEM 3700 or 5710. Also taught as BIOL 5440/6440. (Sp)

PLSC 5450 Plant Molecular, Cellular, and Developmental Biology II (3)**
Examines background and recent advances. Students analyze and discuss cell wall, growth regulator, and environmental response topics from a research perspective. Prerequisites: BIOL 3200, 5210, CHEM 3700 or 5710. Also taught as BIOL 5450/6450. (Sp)

PLSC 5550 Weed Biology and Control (4)
Management strategies for undesirable plant species in native and agroecosystems. Interference and allelopathy, undesirable plant invasion and spread, noxious weed eradication principles and practices, integrated plant management strategies, herbicide interactions with weeds and crops, and economics of management emphases. (F)

PLSC 5700 Principles of Plant Breeding (3)***
Principles of plant breeding. Breeding techniques for self-pollinated, cross-pollinated, and asexually reproducing crops. Real-life breeding problems solved, showing that resource identification and allocation are the critical points in developing a successful program. Prerequisite: PLSC 2000 or BIOL 3200. (Sp)

PLSC 5750 Crop Biotechnology (2)*
Genetic and cellular approaches to crop improvement. Emphasizes cell culture, transformation, markers, marker-assisted selection, mapping simple and quantitatively inherited traits, fine mapping, gene cloning, mutagenesis, and microarrays bioinformatics. Prerequisite: BIOL 3200. (Sp)

PLSC 5760 Crop Ecology (2)
Features of agroecosystems compared with natural ecosystems; input of energy and materials to manipulate agroecosystems and produce maximum, sustained quality and yield of agricultural products. Prerequisites: BIOL 4400, PLSC 5200/6200, or instructor’s consent. (Sp)

PLSC 6100 Landscape Irrigation Management (3)
Explores how principles of evapotranspiration, soil and plant properties, and urban landscape sprinkler irrigation systems can be combined for proper irrigation scheduling. Evaluating and analyzing landscape water demand. (Sp)

PLSC 6200 Crop Physiology (2)
The relationship between physiological processes and growth of whole plants. Energy balance and water use efficiency. Light interception and canopy geometry. Canopy photosynthesis and respiration. Carbon partitioning and source/sink relationships. Prerequisites: BIOL 4400, MATH 1050, or consent of instructor. (Sp)
PLSC 6210 Crop Physiology Laboratory
(d5210)
Measurement and analysis of physiological processes that result in whole plant
growth. Includes an individual lab project. Designed to be taken concurrently with
PLSC 6200 or 5200. (Sp)

PLSC 6220 Professional Experience in
Water Efficient Landscaping
(d6) Internship component of water efficient landscaping master’s program. Summer em-
ployment with water purveyors, consulting firms, and businesses involved in land-
scape irrigation. (Su)

PLSC 6230 Readings in Landscape Water Conservation
Background topics in water development and policy in the West. Current topics on
various aspects of water conservation in urban landscapes. (Su)

PLSC 6240 Water Efficient Landscaping Seminar
Students develop skills in public speaking by presenting their summer internship ex-
erience to the Plants, Soils, and Biometeorology faculty. Students also work on a
culminating academic endeavor for the program. (F)

PLSC 6400 Low Water Landscaping
(d5400) Examines arid ecosystems, emphasizing the Intermountain West, and recreating such
ecosystems in a range of amenity landscapes. Also covers procurement, propagation,
establishment, and maintenance of plants appropriate for low water landscapes. Also
taught as LAEP 6400/5400. (F)

PLSC 6430 Plant Nutrition
(d5430)*** Mechanisms of nutrient acquisition, rhizosphere interactions, root morphology and
distribution, short- and long-distance transport, nitrogen fixation, and biochemical
function of essential and beneficial elements. (F)

PLSC 6440 Plant Molecular, Cellular, and
Developmental Biology I
(d5440) (3)** Examines background and recent advances. Students analyze and discuss structure,
genome, molecular development, and photosynthesis topics from a research perspec-
tive. Prerequisites: BIOL 3200, 5210; CHEM 3700 or 5710. Also taught as BIOL 6440/5440. (Sp)

PLSC 6450 Plant Molecular, Cellular, and
Developmental Biology II
(d5450) (3)* Examines background and recent advances. Students analyze and discuss cell wall,
growth regulator, and environmental response topics from research perspective. Pre-
requisites: BIOL 3200, 5210, CHEM 3700 or 5710. Also taught as BIOL 6450/5450. (Sp)

PLSC 6550 Weed Biology and Control
(d5550) (4) Management strategies for undesirable plant species in native and agroecosystems.
Interference and allelopathy, undesirable plant invasion and spread, noxious weed
eradication principles and practices, integrated plant management strategies, herbi-
cide interactions with weeds and crops, and economics of management emphases. (F)

PLSC 6570 Herbicide Physiology and Mode of Action
(3)* Entrance, movement, and metabolism of major herbicides; and a critical study of the
physiological processes affected by them. Prerequisites: BIOL 4400, PLSC 6550/5550 or instructor’s consent. (Sp)

PLSC 6200 or 5200. (Sp)

1Parenthetical numbers preceded by d indicate a dual listing.
2 Repeatable for credit. Check with major department for limitations on number of
credits that can be counted for graduation.
**Taught 2005-2006.
***This course is taught alternating years. Check with department for
information about when course will be taught.
### Political Science (POLS)

#### Course Descriptions

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLS 3230</td>
<td>Middle Eastern Government and Politics (3)**</td>
<td>General overview of political cultures and political developments in the Middle East. (F)</td>
<td></td>
</tr>
<tr>
<td>POLS 3250</td>
<td>DSS Chinese Government and Politics (3)</td>
<td></td>
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</tr>
<tr>
<td>POLS 3270</td>
<td>DSS Latin American Government and Politics (3)</td>
<td>Survey of most of the governments and politics of Latin America, emphasizing events, policies, and governmental actions of the past decade. (F)</td>
<td></td>
</tr>
<tr>
<td>POLS 3310</td>
<td>DSS American Political Thought (3)</td>
<td>Survey of American political thought from colonial times to the present. (F)</td>
<td></td>
</tr>
<tr>
<td>POLS 3320</td>
<td>The Foundations of American Constitutionalism (3)</td>
<td>Introduces students to debate over constitutions, constitutionalism, and constitution-making which occurred during the period (roughly) from the Revolution to the election of 1800.</td>
<td></td>
</tr>
<tr>
<td>POLS 3400</td>
<td>DSS United States Foreign Policy (3)</td>
<td>Formulation, execution, and impact of United States foreign policy. (F,Sp)</td>
<td></td>
</tr>
<tr>
<td>POLS 3430</td>
<td>Political Geography (3)</td>
<td>The relationship between earth and state. World political phenomena studied from a geographic point of view, including international boundaries, territorial seas, and landlocked states. Also taught as GEOG 3430. (Sp)</td>
<td></td>
</tr>
<tr>
<td>POLS 3810</td>
<td>DSS Introduction to Public Policy (3)</td>
<td>Examines different approaches to the study of public policy and different value dimensions in the design of policies. (F)</td>
<td></td>
</tr>
<tr>
<td>POLS 4000</td>
<td>Political Analysis (3)**</td>
<td>Political data, quantitative and analytical techniques. Prerequisite for majors: POLS 3000. (F)</td>
<td></td>
</tr>
<tr>
<td>POLS 4120</td>
<td>American Constitutional Law (3)</td>
<td>Governmental powers, separation of powers, checks and balances, federalism, and due process of law. Equality and Bill of Rights protections. (F)</td>
<td></td>
</tr>
<tr>
<td>POLS 4130</td>
<td>Constitutional Theory (3)</td>
<td>Introduces students to modern constitutional theory, with particular emphasis on American Constitutional Theory. Prerequisite: POLS 1100. (Sp)</td>
<td></td>
</tr>
<tr>
<td>POLS 4140</td>
<td>Political Organizations (3)</td>
<td>Focuses on formal and informal constitutional rules, examining how different sets of rule structures impact the collective decisions of individuals in society and how individuals can influence or shape the rules structuring their lives. Prerequisite: POLS 1100. (Sp)</td>
<td></td>
</tr>
<tr>
<td>POLS 4210</td>
<td>European Union Politics (3)**</td>
<td>Explores creation and ongoing development of the European Union. Examines governing institutions, and internal and external politics of the European Union across a number of issues areas. (Sp)</td>
<td></td>
</tr>
<tr>
<td>POLS 4220</td>
<td>CI Ethnic Conflict and Cooperation (3)**</td>
<td>Examines origins of ethnic groups and the causes of ethnic conflicts, as well as different strategies for preventing or resolving such conflict. Explores conditions facilitating interethnic cooperation, the more common form of ethnic group interaction. (Sp)</td>
<td></td>
</tr>
<tr>
<td>POLS 4230</td>
<td>CI Issues in Middle East Politics (3)**</td>
<td>Contemporary Middle Eastern political movements, regional conflicts, and state-level political change. (Sp)</td>
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</tr>
<tr>
<td>POLS 4260</td>
<td>Southeast Asian Government and Politics (3)*</td>
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<tr>
<td>POLS 4280</td>
<td>Politics and War (3)*</td>
<td>Examines causes and implications of war. Study of wars from general to limited, including case studies such as the Vietnam War. (Sp)</td>
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</tr>
<tr>
<td>POLS 4310</td>
<td>History of Political Thought I (3)</td>
<td>Issues and thinkers in ancient and medieval political thought. (Sp)</td>
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</tr>
<tr>
<td>POLS 4320</td>
<td>DSS History of Political Thought II (3)*</td>
<td>Issues and thinkers in modern and contemporary political thought. (Sp)</td>
<td></td>
</tr>
<tr>
<td>POLS 4410</td>
<td>Global Negotiations (3)*</td>
<td>Creates an awareness of international issues and other cultures. Utilizes a computer simulation program in which negotiating teams of students from around the world are linked in a negotiation simulation. (Sp)</td>
<td></td>
</tr>
<tr>
<td>POLS 4450</td>
<td>CI United States and Latin America (3)</td>
<td>Study and analysis of foreign relations of Latin American nations among themselves and with the rest of the world. (Sp)</td>
<td></td>
</tr>
<tr>
<td>POLS 4460</td>
<td>National Security Policy (3)*</td>
<td>How intelligence systems function, fit within the policymaking systems of free societies, and are managed and controlled. (Sp)</td>
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</tr>
<tr>
<td>POLS 4470</td>
<td>Foreign Policy in the Pacific (3)*</td>
<td>Analysis of contemporary foreign policies of major countries surrounding the North Pacific. (Sp)</td>
<td></td>
</tr>
<tr>
<td>POLS 4480</td>
<td>International Trade Policy (3)**</td>
<td>Examines governance and politics of international trade relations, focusing in particular on cooperation, conflict, and dispute resolution in the GATT/WTO, European community, NAFTA, and Asian cooperative regimes. (Sp)</td>
<td></td>
</tr>
<tr>
<td>POLS 4810</td>
<td>Politics and Public Policy (3)</td>
<td>Explains public policies as rational expressions of political self-interest and explores the relationship between self-interest and values such as “equity” and “efficiency” in policy. (F)</td>
<td></td>
</tr>
<tr>
<td>POLS 4820</td>
<td>DSS Natural Resources and Environmental Policy: Political Economy of Environmental Quality (3)**</td>
<td>Causes of environmental and natural resources problems and evaluation of political and private responses to them. Study of economics and politics applied to the environment. Production, protection, and allocation of scarce resources by markets and political systems. (Sp)</td>
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</tr>
<tr>
<td>POLS 4890</td>
<td>Special Topics (1-5)</td>
<td>Credit arranged. Instructor’s permission required. (F,Sp)</td>
<td></td>
</tr>
<tr>
<td>POLS 4910</td>
<td>Readings and Conference (1-5)</td>
<td>Individually directed study in subjects of special interest to students. Credit arranged. Instructor permission required. (F,Sp,Su)</td>
<td></td>
</tr>
<tr>
<td>POLS 4990</td>
<td>CI Senior Research Seminar (3)</td>
<td>Introduces students to the research process by having them complete a major research project in the topic area of the particular professor. (F,Sp)</td>
<td></td>
</tr>
<tr>
<td>POLS 5110</td>
<td>Social Policy (3)**</td>
<td>Examines health, education, and welfare policies in U.S. contexts and in comparative context. (F)</td>
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<tr>
<td>POLS 5120</td>
<td>Economics of Russia and Eastern Europe, 9th Century to 21st Century (3)</td>
<td>Development of the economics of Russia and Eastern Europe from earliest times to the present, emphasizing the interaction between economic forces and policies of the state. Prerequisite: ECON 1020. Also taught as ECON 5120. (F)</td>
<td></td>
</tr>
<tr>
<td>POLS 5130</td>
<td>Law and Policy (3)</td>
<td>Analyzes the relationship between law and the formation and implementation of policy. (Sp)</td>
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</tr>
<tr>
<td>POLS 5180</td>
<td>Natural Resource Policy (3)**</td>
<td>Political and economic theory applied to the analysis of natural resource allocation conflicts and U.S. policies enacted to resolve such conflicts. (Sp)</td>
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</tr>
</tbody>
</table>
POLS 5200 Global Environment (3)*
Examines different strategies for resolving global resource and environmental problems. (F)

POLS 5210 Comparative Political Change/Development (3)*
Emphasis on approaches and theories in the field of comparative politics, with a focus on political change/development. (F)

POLS 5230 Development in the Middle East (3)*
Study of Middle Eastern regimes, political cultures, and political developments. (Sp)

POLS 5270 Latin American Politics and Development (3)*
Focuses on special contemporary issues of selected Latin American nations, such as democratization, the role of the military, and elections. (Sp)

POLS 5290 Development in Europe (3)*
Emphasizes political and economic development in Europe. (Sp)

POLS 5350 DSS Evolution, Conflict, and Cooperation (3)*
Intensively examines human cooperation as a fundamental problem of development and human conflict as the major obstacle to development. (Sp)

POLS 5440 DSS Gender and World Politics (3)**
Examines the role gender inequality plays in the construction of international relations, using a variety of feminist approaches. Central theme of gendered critique is global security, defined in terms of economic, ecological, political, and military dimensions. (Sp)

POLS 5910 Campaign Internship (2-15) ®
A semester campaign internship. Instructor approval required. (F,Sp,Su)

POLS 5920 Washington Internship (2-15) ®
A semester congressional, administrative, or legal internship in Washington, D.C. Instructor approval required. (F,Sp,Su)

POLS 5930 State Government Internship (1-15) ®
A semester legislative, lobbying, or administrative internship in the state government of Utah or those of any other state government. Instructor approval required. (F,Sp,Su)

POLS 5940 Administrative Internship (1-12) ®
A semester administrative internship at the local or state level. Instructor approval required. (F,Sp,Su)

POLS 6010 Scope and Methods of Political Science (3)
A graduate survey of the philosophy and methods of political analysis. Topics ranging from the methodology of inquiry to elementary statistical methods will be covered. (F)

POLS 6030 Political Theory, Political Economy, and Capitalism (3)*
Provides an introduction to the study of political economy by considering the connections among political theory, political economy, and capitalism. (Sp)

POLS 6040 Public Choice (3)*
Introduction to applying the microeconomic theory of markets to political processes. (F)

POLS 6100 Introduction to Public Administration (3)
Introduction to issues of public and nonprofit management. Provides overview of macro and micro forces influencing public and nonprofit management.

POLS 6110 Budgeting and Finance (3)
Surveys all major activities concerning allocation, investment, and control of public funds, as well as budgeting and revenues in context of fiscal policy making. (Alt Sp)

POLS 6120 Program Assessment and Evaluation (3)
Practical guidelines for conducting evaluation studies. Discussion of performance measurement, social indicators, quantitative and qualitative methods, and experimental and quasi-experimental designs as used in applied policy and program research. (Alt F)

POLS 6130 Law and Administration (3)
Exploration and analysis of constitutional and legal basis in which American Public Administration is set, including separation of powers, checks and balances, delegation of discretionary authority, and common law and equity. (Alt Su)

POLS 6140 Leadership in Public Organizations (3)
Analysis of leadership behavior and managerial activities. Examination of major theories of leadership and motivation, including leadership vs. management, leadership qualities and characteristics, and leadership skills. (Alt Su)

POLS 6220 International Relations Theory (3)**
Reading seminar on theory and method in the interplay of politics and economics in international relations. (F)

POLS 6810 Graduate Seminar (1-4) ®
American politics; comparative politics; political theory; international politics; public law; public administration. (F,Sp,Su)

POLS 6910 Graduate Tutorial (1-3) ®
Prerequisite: instructor’s consent. (F,Sp,Su)

POLS 6920 Internship (1-15) ®
Internship in a public administration agency. Instructor approval required. (F,Sp,Su)

POLS 6970 Thesis Research (1-9) ®
Prerequisite: admission to candidacy. (F,Sp,Su)

POLS 6990 Continuing Graduate Advisement (1-3) ®
Prerequisite: admission to candidacy. (F,Sp,Su)

 Portuguese (PORT) 465

PORT 1010 Portuguese First Year I (4)
Communicative competencies in the four language skills: speaking, listening, reading, and writing, with exposure to cultures and customs. (F)

PORT 1020 Portuguese First Year II (4)
Communicative competencies in the four language skills: speaking, listening, reading, and writing, with exposure to cultures and customs. Prerequisite: PORT 1010 or equivalent. (F,Sp)

PORT 1050 Intensive Portuguese for Spanish Speakers (4)
Communicative competencies in the four language skills: speaking, listening, reading, and writing, with exposure to cultures and customs. Intensive course for Spanish speakers. (Sp)

PORT 2010 Portuguese Second Year I (4)
Continued development of communicative competencies in the four language skills: speaking, listening, reading, and writing, with exposure to cultures and customs. Prerequisite: PORT 2010 or equivalent. (F)

PORT 2020 Portuguese Second Year II (4)
Continued development of communicative competencies in the four language skills: speaking, listening, reading, and writing, with exposure to cultures and customs. Pre-requisite: PORT 2010 or equivalent. (Sp)
PORT 2880 Individual Readings (1-4) ®
Individual study of selected readings in Portuguese. Instructor’s permission required. (F,Sp)

PORT 3040 CI Advanced Portuguese Grammar and Composition (3)
Review of the more complex Portuguese grammatical points and development of writing skills through composition. Prerequisite: PORT 2020 or equivalent. (F,Sp)

PORT 4880 Individual Readings (1-4) ®
Readings in Brazilian and/or Portuguese literature. Prerequisite: Instructor’s permission. (F,Sp)

PORT 4920 Portuguese Language Tutoring (1) ®
Allows students to develop tutoring skills by assisting professors in lower-division courses or fulfilling instructional duties for a comparable amount of time in the language laboratory, public schools, or similar activities with departmental approval. May be repeated to a maximum of 3 credits. (F,Sp,Su)

® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

Parks and Recreation Professional (PRP)
See Department of Health, Physical Education and Recreation, pages 217-220

PRP 1000 Introduction to Parks and Recreation (2)
Introduces the role of leisure recreation and parks in society. Discusses history, trends, issues, and values in society. Describes public and private agencies providing recreation. (F,Sp)

PRP 1500 Social Recreation Leadership (3)
Information and practical experience in the organization and management of social recreation activities. Planning, programming, and evaluation techniques given for a variety of age groups. (Sp)

PRP 2250 Introductory Cooperative Work Experience (1-6) ®
An introductory-level educational work experience in a cooperative education or business position as approved by the department. Repeatable for up to 6 credits. (F,Sp,Su)

PRP 2500 Outdoor Recreation Management (3)
Explores philosophy, meaning, and value of outdoor recreation in society. Gives management agency overview. Emphasizes organizing and leading outdoor recreation pursuits. (Sp)

PRP 3000 Recreation Programming (3)
Studies recreation programming, including methods, models, and classification. Also includes analysis of activities, organizational structures, and evaluation techniques. (Sp)

PRP 3100 Leisure and Aging (2)
Examines relevance of leisure as a means of enhancing the quality of life for the aging person. Topics include retirement; physical, social, psychological, and emotional changes; and leisure programming considerations. (Sp)

PRP 3500 CI Community Recreation Administration (3)
Examines community recreation organization with emphasis on administrative skills and functions, including budgeting, personnel management, and grantmanship. Prerequisites: PRP 1000 and 3000. (F)

PRP 3750 Commercial Recreation and Tourism (3)
Examines history, organization, and management of commercial recreation and tourism enterprises. Studies entrepreneurship, feasibility, marketing, and management of projects. (F)

PRP 3900 Introduction of Therapeutic Recreation for Diverse Populations (4)
Explores characteristics, behaviors, and programming techniques used to meet recreational needs of varied population groups and all degrees of disabilities. (F)

PRP 4000 Therapeutic Recreation (3)
Examines special population groups served by recreation, including institutional procedures, clinical application, and activity programming. Prerequisite: PRP 3900. (Sp)

PRP 4200 Advanced Therapeutic Recreation (3)
Examines current trends and issues in therapeutic recreation and how they affect the therapeutic recreation profession. Instruction in licensing requirements for eligibility for TRT and TRS licensure and certification. Prerequisite: PRP 4000. (F)

PRP 4250 Advanced Cooperative Work Experience (1-12) ®
Cooperative education work experience with increased levels of complexity, wherein students gain a more professional level of experience as they advance toward completion of the program. (F,Sp,Su)

PRP 4300 Legal Aspects of Recreation and Leisure (3)
Focuses on legal aspects of recreation and park programs, management, and administration. Provides basic knowledge and understanding of risk management process, legal terms, and their application. Prerequisites: PRP 1000, 2250, 3000. (F)

PRP 4400 Recreation Park and Facility Management (3)
Studies recreation park and facility management, including examination of supply, demand, population, maintenance, and safety in developing appropriate areas and facilities for parks. (F)

PRP 4700 Internship Seminar (1)
In preparation for PRP 4750, students identify internships and prepare written materials and objectives for internship assignment. (F,Sp)

PRP 4750 Recreation Internship (9)
Practical, off-campus management experience with cooperating parks and recreation agency. Prerequisites: PRP 1000, 2250, 3000, 4700, and 500 hours of documented work experience. (F,Sp,Su)

PRP 4970H Honors Senior Thesis (1-6)
Culminating experience within the department for honors students. Student works closely with faculty mentor in an extensive project in the student’s area of interest. (F,Sp,Su)

PRP 5000 CI Seminar in Recreation (3)
Student analysis, papers, and presentations of current issues and problems in recreation. Includes discussions with professionals and development of resume. Prerequisites: PRP 1000, 2500, 3500, 3750, 3900, 4000, 4400. (F,Sp)

PRP 5900 Independent Study (1-3) ®
Students work on special projects and research out of the classroom, with approval and guidance of instructor. (F,Sp,Su)

PRP 5910 Independent Research (1-3) ®
® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.
**Plants, Soils, and Biometeorology (PSB)**

See Department of Plants, Soils, and Biometeorology, pages 291-295

**PSB 1050 Plants, Soils, and Biometeorology Orientation (1-2)**
Orientation to the teaching, research, and extension programs of the department, and to career opportunities. Optional orientation to a specific major: Horticulture, Crop Science, or Environmental Soil/Water Science. (F)

**PSB 2040 Introduction to Biotechnology (1)**
Introduces freshmen to the emerging field of biotechnology and the impact this technology has on society. Also taught as ADVS 2040, BIOL 2040, and NFS 2040. (Sp)

**PSB 4250 Internship in Plants, Soils, and/or Biometeorology (1-4)**
Professional internship in crop science, horticulture, environmental soil/water science, and/or biometeorology. (F, Sp, Su)

**PSB 4800 Teaching Practicum for Undergraduate Students (1-3)**
Offers undergraduate students an opportunity for guided teaching and methods for student evaluation in a variety of Plants, Soils, and Biometeorology courses. (F, Sp)

**PSB 4890 CI Senior Seminar (1)**
Student preparation for careers. Familiarization with placement processes. Discussion of role in society and career opportunities for graduates. Experiences in team building. Opportunities for oral presentations of solutions to current issues and scientific information. Must take during both fall and spring semesters. (F, Sp, Su)

**PSB 4900 Special Problems (1-4)**
Special topics and problems in crop science, horticulture, environmental soil/water science, and/or biometeorology. Subject, time, and credit arranged individually as needed. Department approval required. (F, Sp, Su)

**PSB 5160 Methods in Biotechnology: Cell Culture (3)**
Techniques and fundamental knowledge for culturing mammalian and insect cells. Students will learn maintenance, growing, genetic engineering of cells, cytotoxicity, hybridoma creation, cloning, etc. Extensive laboratory experience is provided. Also taught as ADVS 5160, BIOL 5160, CHEM 5160, and NFS 5160. (Sp)

**PSB 5200 Site-Specific Agriculture and Landscape/Horticultural Management (3)**
Integration of site-specific management technology, such as computers, GPS, yield monitors, variable rate controllers, mechanized samplers, and postharvest processing controllers with planning, tillage, planting, chemical applications, and harvesting to optimize off-site inputs and environmental/economical sustainability in crop or landscape management. (Sp)

**PSB 5240 Methods in Biotechnology: Protein Purification Techniques (3)**
Reviews basic methods of protein purification, including scaled-up use of 100L fermenter, large-scale centrifugation, diafiltration, chromatography, and use of BioCAD. Prerequisite: CHEM 3700. Also taught as ADVS 5240, BIOL 5240, CHEM 5240, and NFS 5240. (Sp)

**PSB 5260 Methods in Biotechnology: Molecular Cloning (3)**
Laboratory-oriented course designed to teach molecular biology techniques such as DNA cloning, genetic probes, polymerase chain reaction, and DNA sequencing. Prerequisite: CHEM 3700 or 5710; or BIOL 3200; or permission of instructor. Also taught as ADVS 5260, BIOL 5260, CHEM 5260, and NFS 5260. (F)

**PSB 5370 Molecular Methods in Nutrition Science (2)**
Theory of modern techniques used to study macromolecules and ions. Prerequisite: CHEM 3700. Also taught as ADVS/BIOL/NFS 5370/6370. (Sp)

**PSB 6800 Graduate Student Teaching Practicum (1-3)**
Offers graduate students an opportunity for guided teaching and methods for student evaluation in a variety of Plants, Soils, and Biometeorology courses. (F, Sp)

**PSB 6890 Plants, Soils, and Biometeorology Graduate Seminar (1)**
Review and critique of presentations. Communication practice in extemporaneous, extension, research, poster, and lecture presentations. PSB graduate students must enroll during both fall and spring semesters. (F, Sp)

**PSB 6900 Special Problems in Plants, Soils, and/or Biometeorology (1-8)**
(F, Sp, Su)

**PSB 6970 Research and Thesis (1-18)**
(F, Sp, Su)

**PSB 6990 Continuing Graduate Advisement (1-12)**
(F, Sp, Su)

**PSB 7800 Graduate Student Teaching Practicum (1-3)**
Offers graduate students an opportunity for guided teaching and methods for student evaluation in a variety of Plants, Soils, and Biometeorology courses. (F, Sp)

**PSB 7890 Plants, Soils, and Biometeorology Graduate Seminar (1)**
Review and critique of presentations. Communication practice in extemporaneous, extension, research, poster, and lecture presentations. PSB graduate students must enroll during both fall and spring semesters. (F, Sp)

**PSB 7900 Special Problems in Plants, Soils, and/or Biometeorology (1-8)**
(F, Sp, Su)

**PSB 7970 Research and Thesis (1-18)**
(F, Sp, Su)

**PSB 7990 Continuing Graduate Advisement (1-12)**
(F, Sp, Su)

Note: Prerequisites for Psychology courses are strictly enforced. In the course listings below, prerequisites are indicated at the end of course descriptions. See page 301 for important contingencies for Psychology courses.

**PSY 1010 BSS General Psychology (3)**
Explores basic areas of psychology, and how each explains human thought and behavior at the individual, familial, and cultural levels. (F, Sp, Su)

**PSY 1100 Developmental Psychology: Infancy and Childhood (3)**
Introduction to psychological development with emphasis on perceptual, language, cognitive, and social development in children. Prerequisite: PSY 1010. (F, Sp)

**PSY 1210 Psychology of Human Adjustment (3)**
Examination of life situations affecting human adjustment to everyday living, with emphasis on practical applications. Prerequisite: PSY 1010. (F, Sp)

**PSY 1220 Career and Life Planning (3)**
Students assess and clarify their interests, values, skills, and temperaments. Emphasizes discovering relationships between these personal characteristics and the realities of educational and employment opportunities. Explores setting goals, creating action plans, and coping with change. (F, Sp)

**PSY 1400 Analysis of Behavior: Basic Principles (3)**
A laboratory course about the scientific methods used in the study of animal and human behavior. Prerequisite: PSY 1010. (F, Sp, Su)
PSY 1410 Analysis of Behavior: Basic Principles Lab (1)
Laboratory experience accompanying PSY 1400. Prerequisite: PSY 1010. (F,Sp,Su)

PSY 1730 Strategies for Academic Success (1-3)
Orients students to the systems, tools, and resources unique to higher education that are needed to maximize academic success (e.g., library, computer lab use, etc.). Also helps students develop critical thinking, study, and learning strategies necessary for college success. (F,Sp)

PSY 1750 Comprehension Strategies for College Reading (1)
Practical course emphasizing application of strategies and development of critical thinking skills needed to comprehend and distill meaning from college-level texts. (F,Sp)

PSY 2100 Developmental Psychology: Adolescence (3)**
Characteristics of adolescents and their psychological, educational, and adjustment problems are discussed in detail. Prerequisite: PSY 1010. (Sp)

PSY 2250 Introductory Cooperative Work Experience (1-6) ®
Educators and employers cooperate to provide opportunities for students to apply classroom theory and principles in job environments, thereby gaining practical experience in their field. Prerequisite: Approval of Psychology Department cooperative education coordinator. (F,Sp,Su)

PSY 2800 QI Psychological Statistics (3)
Elementary study of statistical procedures in handling test scores and other data, and of the concepts needed for each current type of educational and psychological literature. Prerequisite: STAT 1040. (F,Sp)

PSY 3110 Health Psychology (3)***
Introduction to “biopsychosocial model” of health and well-being. Focuses on reciprocal interactions among biological, psychological, and social factors in human functioning and disease. Explores cultural approaches to health, illness, and treatment. Prerequisite PSY 1010. (Sp)

PSY 3120 DSS Abuse, Neglect, and the Psychological Dimensions of Intimate Violence (3) ©
Overview of child maltreatment, animal abuse, dating, courtship, domestic violence, and abuse of the elderly. Stresses the psychological factors related to the causes, consequences, and treatment of abuse and neglect. Presents multidisciplinary perspectives, including historical, legal, medical, psychiatric, and psychological approaches. Prerequisite: PSY 1100. (F,Sp,Su)

PSY 3210 DSS Abnormal Psychology (3) ©
Introduction to “abnormal” human behavior. Covers characteristics, etiology, and treatment of a variety of psychological disorders. Prerequisite: PSY 1010. (F,Sp)

PSY 3400 DSS Analysis of Behavior: Advanced (4)
In-depth examination of principles introduced in PSY 1400. Considers principles governing more complex human and animal behavior, as well as emotional and motivational factors in behavior. Lab included as part of credit. Prerequisites: PSY 1400 and 1410. (F,Sp)

PSY 3450 Perception and Psychophysics (3)
Analysis of how sensory processes and principles help determine behavior. Introduction to methods used to measure sensory-determined behavior. Methods, results, and principles of sensory communication. Lab required as part of 3 credits. Prerequisite: PSY 1010. (F)

PSY 3460 Physiological Psychology (3)
Introductory course examining relationship between central system anatomy and physiology, and behavior and emotional functioning. Also considers neural and biochemical substrates of behavior. Lab required as part of 3 credits. Prerequisite: PSY 1010. (Sp)

PSY 3500 DSS Scientific Thinking and Methods in Psychology (3)
Social science research is commonly reported by the media, and by political and governmental interests. Students learn how to legitimately interpret such research through a study of accepted research methods and analysis procedures, and through critical study of the common interpretive mistakes made by media writers. Prerequisites: PSY 1010 and 2800. (F,Sp)

PSY 3510 DSS Social Psychology (3)
Study of the individual in society; problems, theories, and methods of social psychology; will relate reading assignments to current social issues. Prerequisite: PSY 1010. (F,Sp)

PSY 3660 Educational Psychology for Teachers (2)
Principles and practices for development of conditions for effective learning. Lab required. Prerequisite: PSY 1100 or 2100. (F,Sp)

PSY 3720 Behavior Modification (3)
Approaches to behavior modification in a variety of settings. Students required to complete an individual project. Prerequisites: PSY 1010, 1400, 1410, 3400. (Sp)

PSY 4000 Mental Aspects of Sports Performance (3)***
Provides an understanding of theory and applications in the specialty area of sports psychology, including enhancement of motivation and performance, stress, anxiety, aggression and time management, and the relation of these issues to physical development and coaching styles. Also taught as PEP 4000. (F,Sp,Su)

PSY 4210 DSS Personality Theory (3) ©
Explanatory study of various personality theories, their origin, and approaches to the understanding of human behavior. Prerequisites: PSY 1010 and 2800. (Sp)

PSY 4230 DSS Psychology of Gender (3)***
Critical analysis of evidence for sex differences, gender roles, the effect of gender on traditional psychology, and other topics, including parenthood, cultural influence, and sexual orientation. (Sp)

PSY 4240 DSS Multicultural Psychology (3)
Explores cultural influences on basic psychological processes, including perception, cognition, language, emotion, intelligence, attitudes, values, and intergroup relations. Prerequisite: PSY 1010. (F)

PSY 4250 Advanced Cooperative Work Experience (1-12) ®
Cooperative education work experience position; increased level of complexity and a more professional level of experience as student advances toward completion of the program. Prerequisite: Approval of Psychology Department cooperative education coordinator. (F,Sp,Su)

PSY 4420 DSS Cognitive Psychology (3)
In-depth study of basic concepts, methods, and theories involved in perception, memory, and thinking. Lab required. Prerequisite: PSY 1010. (Sp)

PSY 4430 Cognitive Psychology Laboratory (1)
Required laboratory, designed to accompany Psy 4420. Focuses on conducting cognitive experiments via computer simulations and sampling data collection. Designed to increase skills in designing data collection and interpreting experimental data. (Sp)

PSY 4510 CI Effective Social Skills Interventions (3)
Examination of theory and practice of social skills training with children, adolescents, and adults. Prerequisites: PSY 1010, 1100, and either PSY 3210 or 3510. (Sp)

PSY 4790 Psychological Principles and Individuals (d6790) who are Deaf and Hard of Hearing (3)
Psychological theories and research used to describe the deaf and hard of hearing. Exploration of principles that can be used in helping these individuals achieve emotional well-being. Also taught as COMD 4790/6790. (Sp)

PSY 4910 Undergraduate Research Creative Opportunity (1-3) ®
A cooperative process of discovery, investigation, research, or creativity between faculty and one or more students. Prerequisite: Approval of Psychology Department URCO coordinator. (F,Sp,Su)

PSY 4920 Practicum (1-3) ®
Field work in applied psychological setting at BS level. (F,Sp,Su)

PSY 5020 Multicultural Issues in Psychology (3)
(d6020)1
Examines role of culture in human development, with emphasis on understanding relationships between culture, ethnicity, and identity and how images of “cultural selves” and “cultural others” are produced and “naturalized.” (F)

PSY 5040 Cognitive Psychology (3)
PSY 5050 Psychological Aspects of Sports Performance (3)
Psychological theory and principles applied to sports. Includes motivational techniques, psychological evaluation, stress and anxiety in sports, personality and sports performance. Also taught as PEP 5050/6050. (Sp)

PSY 5100 History and Systems of Psychology (3)
Theoretical and historical developments in psychology with primary emphasis on nineteenth and twentieth century developments, although earlier precursors are also considered. Prerequisite: PSY 1010. (Sp)

PSY 5200 CI Introduction to Interviewing and Counseling (3)
Theory, models, and practice in basic principles of interviewing and counseling, including listening skills, facilitation of verbal interaction, gathering information, attending to nonverbal behavior, interpersonal dynamics, and promoting helping relationships. Prerequisites: Psychology major or minor, matriculation in master’s program requiring PSY 5200, or consent of instructor. (F)

PSY 5330 Psychometrics (3)
Overview of measurement development principles and statistics. Evaluation, interpretation, and uses of standardized tests of aptitude, intelligence, achievement, personality, and adjustment. Prerequisites: PSY 1010, 2800. (F)

PSY 5500 Interdisciplinary Workshop (1-3) ®
(F,Sp,Su)

PSY 5720 Behavior Analysis Practicum (3)
Students receive supervised training in applying behavior analysis principles in community, school, and institutional settings. Either SPED 5050 or PSY/SPED 5720 fulfill part of practicum requirement for Behavior Analysis track. Prerequisite: Permission of instructor. Also taught as SPED 5720. (F)

PSY 5900 Independent Study (1-3) ®
Individual discussion and intensive study of a particular problem or area. Prerequisite: Instructor’s consent. (F,Sp,Su)

PSY 5910 Independent Research (1-3) ®
Experiments and demonstration projects are conducted and reported. Prerequisite: Instructor’s consent. (F,Sp,Su)

PSY 5930 Instructional Apprenticeship in Psychology (1-3) ®
Didactic and applied experience in course preparation and instructional techniques applicable to the teaching of psychology. Intended for students planning careers as instructors at the secondary and postsecondary levels. Prerequisite: Instructor’s consent. (F,Sp,Su)

PSY 5950 CI Undergraduate Apprenticeship I (3)
Orientation to profession of psychology. Students clarify career goals, identify steps necessary to achieve goals, prepare a vita, plan and begin executing their apprenticeship experience with faculty member(s) or approved agency, and present progress reports to diverse audiences. Prerequisites: Psychology major, junior standing, and consent of on-campus USU Psychology Advising Office. (F,Sp)

PSY 5960 CI Undergraduate Apprenticeship II (3)
Under supervision of departmentally approved agency and/or faculty member(s), students complete their pre-approved apprenticeship, which involves conducting research and/or providing community service. Students prepare a report of this experience and present it to diverse audiences. Prerequisites: PSY 5950, Psychology major, senior standing, and consent of on-campus USU Psychology Advising Office. (F,Sp)

PSY 6010 Introduction to Program Evaluation: Evaluation Models and Practical Guidelines (3)
Alternative approaches and practical guidelines for conducting evaluation studies. Through case studies and simulations, addresses impact of social, political, and ethical issues on evaluation. Also taught as EDUC 6010. (F,Sp)

PSY 6020 Multicultural Issues in Psychology (3)
Examines role of culture in human development, with emphasis on understanding relationships between culture, ethnicity, and identity and how images of “cultural selves” and “cultural others” are produced and “naturalized.” (F)

PSY 6050 Psychological Aspects of Sports Performance (3)
Psychological theory and principles applied to sports. Includes motivational techniques, psychological evaluation, stress and anxiety in sports, personality and sports performance. Also taught as PEP 6050/5050. (Sp)

PSY 6100 History and Systems of Psychology (3)
Theoretical and historical developments in psychology with primary emphasis on nineteenth and twentieth century developments, although earlier precursors are also considered. Prerequisite: PSY 1010. (Sp)

PSY 6150 Behavioral Assessment and Treatment of Childhood Psychological Disorders (3)
Introduction to single-subject treatment designs and basic principles of applied behavior analysis. Behaviorally-oriented treatment approaches for psychological disorders of childhood. Should be taken concurrently with a clinical practicum or assistantship. (Sp)

PSY 6220 Group Counseling (3)
Introduction to theory of group counseling with illustrative experiences to show how theory may be applied. Prerequisite: PSY 6350. (F)

PSY 6240 Introduction to School Counseling and Guidance (3)
Introduction to role and function of school counselors. Overview of history of school guidance and counseling, and role of counselors in comprehensive guidance program. (F)

PSY 6250 Internship in School Counseling and Guidance (1-10) ®
Internship in approved school system involving comprehensive guidance activities, under supervision of certified school counselor. (F,Sp,Su)

PSY 6260 Career Development: Theory and Practice (3)
Consideration of career patterns and factors influencing career development and career effectiveness. (Sp)

PSY 6270 Child Psychopathology (3)
Focuses on issues relevant to the understanding of child emotional and behavioral disorders. Discussion of symptom characteristics, assessment, and treatment protocols, as well as research pertaining to the major mental health problems found in children and adolescents. Prerequisite: Admission to graduate program in psychology or permission of instructor. (F)

PSY 6290 Diversity Issues in Treatment and Assessment (3)
Introduction to diversity issues in counseling and psychological/educational assessment, including culture, gender, language, and related issues. Training in models for providing effective psychological services to clients, taking into account their unique background. Prerequisite: PSY 6350 or instructor’s consent. (Sp)

PSY 6310 Intellectual Assessment (3)
Training and supervised experience in administering and interpreting individual intellectual ability tests, such as the Wechsler and Stanford-Binet scales. Prerequisite: Matriculation into School Psychology program or Combined Psychology program. (F)

PSY 6320 Objective Assessment of Personality and Affect (3)
Research bases and clinical applications of objective psychological assessment instruments and techniques, designed to measure adolescent and adult personality, affect, and psychotherapy. Prerequisite: Psy 6310. (Sp)

PSY 6330 Psychometrics (3)
Overview of measurement development principles and statistics. Evaluation, interpretation, and uses of standardized tests of aptitude, intelligence, achievement, personality, and adjustment. Prerequisites: PSY 1010, 2800. (F)

PSY 6340 Psychological and Educational Consultation (3)
Overview of theory and practice of consultation as provided by counselors, psychol-
ogists, and other mental health education professionals. Consultation with teachers, parents, medical professionals, and organizations, emphasizing applications in educational settings. (F)

**PSY 6350 Introduction to Theory and Practicum in Counseling (3)**
Introduction to basic theories and techniques of counseling, with applied practice in role-playing, interviewing, and actual counseling sessions with practice subjects. Prerequisite: Matriculation in School Counseling, School Psychology, or Combined Psychology program. (F)

**PSY 6360 Practicum in Counseling and Psychotherapy (3)**
Supervised practicum in counseling and psychotherapy conducted within Psychology Community Clinic. Closely supervised practice in assessment, counseling, psychotherapy, and consultation with individuals, couples, and families. Prerequisite: PSY 6350. (Sp, Su)

**PSY 6370 Practicum in School Counseling (3)**
Supervised practicum in public school setting, under direction of certified school counselor. Taken by students in School Counseling master’s program. (F, Sp, Su)

**PSY 6380 Practicum in School Psychology (3)**
Supervised practicum in school psychology in public school or closely related setting. Taken by second-year students in School Psychology master’s program. (F, Sp, Su)

**PSY 6410 Psychoeducational Assessment (3)**
Training and supervised experience in assessment of school-age and preschool-age children. Administration and interpretation of cognitive, developmental, and academic achievement measures, along with other psychoeducational assessment instruments and methods. (Sp)

**PSY 6450 Introduction to School Psychology (1)**
Introductory overview of field of school psychology. Role and function of school psychologist, historical context of school psychology, and trends and new developments in service provision. Prerequisite: Matriculation into School Psychology master’s program or Combined Psychology doctoral program. (F)

**PSY 6460 Professional Issues in School Counseling and School Psychology (3)**
Legal, ethical, and professional issues relevant to school counselors and school psychologists. Issues and practices in providing counseling and psychological services to "at-risk" students. Prerequisite: Graduate standing in psychology or instructor’s consent. (Su)

**PSY 6470 Health Psychology (3)**
Explores psychological and behavioral principles relating to health and illness. Focuses on development and maintenance of health behaviors. Emphasizes integration of research findings with clinical intervention. Prerequisite: Graduate standing in Psychology, or graduate standing in Health, Physical Education and Recreation. (F)

**PSY 6500 Interdisciplinary Workshop (1-2)**
Series of self-instructional modules and videos and a variety of elective training. Module topics include developmental disabilities, legal aspects and issues, assessment, intervention, assistive technology, transition, and prevention/intervention for aggression and violence. (F, Sp, Su)

**PSY 6510 Social Psychology (3)**
Provides all graduate students with common knowledge base in social psychology. Emphasizes overview of recent developments, while also discussing social psychology principles as a guide in executing evaluation research and helping clients. Understanding of both emphasizes breadth as psychologists. Prerequisite: PSY 3510. (Sp)

**PSY 6530 Developmental Psychology (3)**
Advanced survey course in general developmental psychology. Theory and research in human development across the lifespan, with particular emphasis on child and adolescent development. (F)

**PSY 6570 Introduction to Educational and Psychological Research (3)**
Provides introduction to research methods, including identification of research problems, review and evaluation of research literature, and design and implementation of research project. Prerequisite: PSY 2800. Also taught as EDUC 6570. (F, Sp, Su)

**PSY 6600 Measurement, Design, and Analysis I (3)**
Research design, measurement, and statistical concepts for research in education and psychology, with emphasis on selection and interpretation of statistical analyses. Prerequisites: PSY 2800, EDUC/PSY 6570. Also taught as EDUC 6600. (F, Sp, Su)

**PSY 6650 Theories of Learning: The Behavioral Perspective (3)**
In-depth examination of the major behavioral theories of learning, including classical and operant conditioning. (F)

**PSY 6660 Cognition and Instruction (3)**
Survey of theory and principles in cognitive psychology, with special emphasis on applying these principles in instructional settings. (Sp)

**PSY 6750 Empirically Validated Treatments (3)**
Emphasizes development of knowledge regarding criteria for determining if a treatment is empirically supported. Explains methods for indentifying specific empirically supported treatments. Develops skills for applying these treatments to psychological disorders and for understanding how to evaluate the efficacy of treatments. (Sp)

**PSY 6790 Psychological Principles and Individuals who are Deaf and Hard of Hearing (3)**
Psychological theories and research used to describe the deaf and hard of hearing. Exploration of principles that can be used in helping these individuals achieve emotional well-being. Also taught as COMD 6790/4790. (Sp)

**PSY 6810 Seminar (1-3)**
Special topics designed to help students develop in-depth knowledge of emerging research, theory, and practice in psychology. Taught in seminar format by USU faculty or visiting scholars. (F, Sp, Su)

**PSY 6820 Clinical Applications of Biofeedback (3)**
Training in clinical applications of biofeedback for treating common health, psychological, and stress related problems. Practical experience provided in use of different modalities of biofeedback (e.g., neurofeedback, skin temperature training, and electrodermal training). Stresses importance of integrating biofeedback into other appropriate treatments. Prerequisite: Graduate standing in psychology or instructor’s consent. (F)

**PSY 6850 Introduction to the Combined Doctoral Program (1)**
This seminar is designed to orient beginning PhD students to the combined program and to the School of Graduate Studies. Opportunity provided for students to meet and talk with all faculty members concerning their research. Students also begin their own research and become acquainted with required paperwork for their program. (F)

**PSY 6880 Transcultural Assessment Lab (1)**
Psychoeducational assessment laboratory experience to be taken by students in the School Psychology and Combined Psychology programs in conjunction with PSY 6290. (Sp)

**PSY 6890 Assessment of Child and Adolescent Psychopathology and Personality (3)**
Theoretical foundations and applied training in methods of assessing and classifying behavioral, social, and emotional problems of children and adolescents. Prerequisite: Matriculation into Combined Psychology doctoral program or School Psychology master’s program. (Su)

**PSY 6900 Independent Study (1-3)**
Individual discussion and intensive study of a particular problem or area. Prerequisite: Instructor’s consent. (F, Sp, Su)

**PSY 6910 Independent Research (1-3)**
Experiments and demonstration projects are conducted and reported. Prerequisite: Instructor’s consent. (F, Sp, Su)

**PSY 6930 University Teaching Apprenticeship (1-3)**
Prepares graduate students for college teaching. Students learn to prepare study guides, examinations, and lectures, and learn to use audio-visual aids. Students also
examine various current methods of instruction and course evaluation schemes. (F,Sp,Su)

**PSY 6950 Internship in School Psychology** (3) ★
Internship in approved school system involving assessment, counseling, consultation, and program development, under the supervision of a certified school psychologist. Prerequisite: Matriculation into School Psychology master’s program or Combined Psychology doctoral program. (F,Sp,Su)

**PSY 6970 Thesis** (1-6) ★
(F,Sp,Su)

**PSY 6990 Continuing Graduate Advisement** (1-12) ★
(F,Sp,Su)

**PSY 7020 Advanced Evaluation Methodology and Techniques** (3)*
Provides advanced theory and practice in focus group interviews, on-site visit techniques, observation and anchor scales, multiple-site evaluation standards, and advanced reporting techniques. Prerequisite: PSY 6010. (Sp)

**PSY 7030 Instrument Development** (3)★★
In-depth study of factors and techniques critical for designing and developing evaluation and research instruments. (F)

**PSY 7040 Practicum in Evaluation Planning and Contracting** (3)
Provides detailed information on methods for planning program evaluations, negotiating agreements with client/sponsor, and finalizing evaluation contract. Taught every third year. Prerequisite: EDUC/PSY 6010. (Sp)

**PSY 7050 Internship in Program Evaluation** (1-9) ★
Experience in practical aspects of program evaluation through planned, supervised evaluation project participation approved by student’s supervisory committee. Prerequisite: EDUC/PSY 6010. (F,Sp,Su)

**PSY 7060 Internship in Research** (1-9) ★
Research experience gained through conducting planned, supervised research project. Prerequisites: Approval by supervisory committee and EDUC/PSY 6570. (F,Sp,Su)

**PSY 7070 Advanced Measurement Theories and Practice** (3)
Covers psychometric topics, including classical test theory, generalizability theory, item response theory, and issues concerning bias in psychological testing. Prerequisites: PSY 5330/6330, EDUC/PSY 6000. (F)

**PSY 7080 Multivariate Methods in Psychology and Education** (3)
Focuses on application of multivariate methods (factor analytic techniques, structural equation modeling, canonical correlation, multivariate analysis of variance, etc.) in research and measurement in psychology, education, and other social and behavioral sciences. Prerequisites: PSY 5330/6330, EDUC/PSY 6000, 7610. (F,Sp,Su)

**PSY 7090 Research and Evaluation Methodology Program Seminar** (1) ★
Provides opportunity for all doctoral students in the Research and Evaluation Methodology Program to meet on a regular basis to read journal articles, explore student and faculty research projects, and discuss current issues in the field. (F,Sp)

**PSY 7100 Biological Basis of Behavior** (3)★★
Explores normal and abnormal behavior from a basic neuroanatomical/neuropsychological perspective. Discusses pharmacological/nonpharmacological applications. (Sp)

**PSY 7110 Advanced Theories in Cognitive Psychology** (3)
In-depth study of theories, models, and current research in the field of cognitive psychology, including memory, perception, problem-solving, and decision making. Prerequisite: PSY 4420 or 6660. (F)

**PSY 7230 Theory and Research in Personality** (3)★★
Overview of theoretical approaches, research, and clinical applications regarding personality differences. (F)

**PSY 7250 Professional Ethics and Standards** (1-3)★★
Designed to train clinicians and researchers in the field of psychology to operate within the professional ethics and standards of the field. (F)

**PSY 7270 Psychopathology** (3)★★
Summarizes research on risk, epidemiologic factors, and etiological perspectives regarding emotional and behavioral disorders of adolescents and adults. Models of classification of disorders are outlined, emphasizing the DSM system. Focuses on anxiety, mood, somatoform, dissociative, personality, and psychosexual disorders, as well as schizophrenia, drug/alcohol dependence, violence, and psychological factors affecting physical illness. (F)

**PSY 7320 Advanced Personality Assessment** (2)
Theory and clinical training in personality assessment, with additional techniques than those covered in PSY 6320. Focuses on the comprehensive scoring system of Rorschach. Prerequisite: PSY 6320 or instructor’s consent. (F,Sp)

**PSY 7350 Practicum in School Psychology** (3) ★
Doctoral-level practicum in a school or closely related setting. Supervised experience in developmental, learning, and school-related problems. Appropriate assessment and consultation with teachers, administrators, parents, and other related individuals. Prerequisite: Permission of program chair. (F,Sp,Su)

**PSY 7360 Practicum in Counseling Psychology** (3) ★
Doctoral-level practicum in a counseling setting. Supervised experience in individual, group, and family counseling. Appropriate assessment and consultation. Prerequisite: Permission of program chair. (F,Sp,Su)

**PSY 7370 Practicum in Clinical Psychology** (3) ★
Doctoral-level practicum in a clinical setting. Supervised experience in individual, group, and family psychotherapy. Includes psychological assessment and consultation. Prerequisite: Permission of program chair. (F,Sp,Su)

**PSY 7610 Measurement, Design, and Analysis II** (3)
Advanced treatment of measurement, research design, and statistical analysis concepts and issues in educational and psychological research. Prerequisite: EDUC/PSY 6600. Also taught as EDUC 7610. (Sp,Su)

**PSY 7670 Literature Reviews in Education and Psychology** (1)
Advanced concepts in designing, writing, and critiquing literature reviews. Prerequisites: PSY/EDUC 6600 and consent of instructor. Taught alternate semesters. Also taught as EDUC 7670. (Sp, Su)

**PSY 7700 Grant Writing** (3)★★
Students learn to identify funding sources, select strategies for seeking resources, and write proposals for research, development, training, and service activities in education, psychology, and related fields. Prerequisite: PSY/EDUC 6570. (Sp)

**PSY 7810 Seminar** (1-3) ★
Special topics designed to help students develop in-depth knowledge of emerging research, theory, and practice in psychology. Taught in seminar format by USU faculty or visiting scholars. (F,Sp,Su)

**PSY 7820 Neuropsychological Assessment Workshop** (2)
Discussion and presentation of neurological syndromes and the various techniques of diagnosis and assessment. (Su)

**PSY 7840 Psychopharmacology** (1)★★
Provides psychology graduate students with basic working knowledge of the field of psychopharmacology and the medical use of psychotropic drugs. Prerequisite: PSY 6320. (Sp, Su)

**PSY 7900 Independent Study** (1-3) ★
Individual discussion and intensive study of a particular problem or area. Prerequisite: Instructor’s consent. (F,Sp,Su)

**PSY 7910 Independent Research** (1-3) ★
Experiments and demonstration projects are conducted and reported. Prerequisite: Instructor’s consent. (F,Sp,Su)
Comprehensive study of communicable diseases, including etiological agents, mechanisms of transmission, control, and prevention. (F)

PUBH 5020 Fundamentals of Epidemiology (3) ©
Introduction to the study of the distribution and causes of communicable and non-communicable diseases of humans and other animals. Prerequisites: A course in statistics and PUBH 5010. (Sp)

PUBH 5300 Industrial Hygiene Seminar (1) ®
Participant seminar on current developments in industrial hygiene. (F,Sp)

PUBH 5310 Industrial Hygiene Chemical and Physical Hazards (4)
Covers anticipation and recognition of chemical health hazards at work, personal protective equipment, and all aspects of physical health hazards, especially occupational noise. Prerequisite: PUBH 5310 (may be taken concurrently). (F)

PUBH 5320 Industrial Hygiene Chemical Hazard Evaluation (3)
Survey of principles and methods used to evaluate industrial chemical health hazards. Practical application in a field sampling project. Prerequisite: PUBH 5310. (Sp)

PUBH 5330 Q1 Industrial Hygiene Chemical Hazard Control (3)
Covers methods to control chemical occupational health hazards, with an emphasis on the function, design, and management of local exhaust ventilation. Prerequisites: PUBH 5310, MATH 1210. (F)

PUBH 5350 Accident and Emergency Management (3-6) ®
Field experience in the practice of industrial hygiene. Participation in an active program serving employees in either the private or public sector. Prerequisites: PUBH 5310 and 5320. (F,Sp,Su)

PUBH 5500 CI Public Health Management (2)
Presentation of basic organizational and financial management tools, which students will utilize in written and oral reports on an educational, environmental, or occupational health problem of their choice. Prerequisite: Senior status in public health or consent of instructor. (Sp)

PUBH 5670 Hazardous Chemicals Handling and Safety (2)
Provides students with necessary skills and knowledge for working safely in areas associated with hazardous chemicals. Topics covered include: regulations, exposure routes, toxicology, chemical and physical hazards, personal protective equipment, sampling, monitoring, decontamination, and emergency response procedures. Prerequisite: CHEM 1210. Also taught as CEE 5670. (F)

PUBH 5730 Analysis and Fate of Environmental Contaminants (3) (d5730)
Provides students with understanding of methods used in analysis of environmental samples for organic contaminants. Examines various properties and processes determining the fate of organic contaminants in the environment. Taught first half of spring semester. Prerequisites: CHEM 1210, 2300. Also taught as CEE 5730/6730. (Sp)

PUBH 5790 Accident and Emergency Management (3)
Introduction to fundamentals of accident, hazard, and emergency management. Topics include legislation; chemical safety fundamentals; fire, explosion, and spill fundamentals; contaminant air transport fundamentals; hazard and risk assessment; dispersion applications; and hazard and risk management applications. Prerequisite: CHEM 1220. Also taught as CEE 5790. (Sp)

PUBH 6730 Analysis and Fate of Environmental Contaminants (3) (d5730)
Provides students with understanding of methods used in analysis of environmental samples for organic contaminants. Examines various properties and processes determining the fate of organic contaminants in the environment. Taught first half of spring semester. Prerequisites: CHEM 1210, 2300. Also taught as CEE 6730/5730. (Sp)
**Rehabilitation Counseling (REH)**

See Department of Special Education and Rehabilitation, pages 319-322

**REH 1010 BSS Disability in the American Experience** (3)
Discussion of definitions and types of disabilities, ethical issues, society’s prejudice and discrimination against people with disabilities, and the individual’s adjustment to the disability experience. Disability as a natural part of life. Also taught as SPED 1010.

**REH 6100 Introduction to Rehabilitation Counseling** (3)
Overview of history, philosophy, and legal basis of rehabilitation programs, both public and private. Independent living programs. Roles of the rehabilitation counselor and the process of rehabilitation. Skill development including literature use, writing, and professional organizations. (F)

**REH 6110 Medical Aspects of Disability** (3)
Overview of basic medical issues affecting employment and independent living for persons with disabilities. Explores basic anatomy and systems, as well as disorders and diseases of these systems. Covers medical terminology applicable to rehabilitation counseling. (F)

**REH 6120 Psychosocial Aspects of Disability** (3)
Explores psychological and sociological aspects of disabilities, including adjustment factors in living with disabilities (i.e., individual, family, sexuality, other service providers, etc.). Examines societal attitudes, women’s issues, and deaf culture issues. Includes group counseling applications for persons with disabilities. (Su)

**REH 6130 Rehabilitation Counseling Skill Development** (2)
Utilizes role playing of simulated interviews and rehabilitation counseling sessions to develop the basic skills necessary to function as a human service helper. Must be taken concurrently with REH 6140. Prerequisite: Permission of instructor. (Su)

**REH 6140 Practicum in Rehabilitation** (2) ®
Under faculty supervision, students receive minimum of 100 hours of firsthand experience working with persons with disabilities in rehabilitation agency or facility. Must be taken the first time concurrently with REH 6130. With faculty approval, may be repeated for credit. Prerequisite: Permission of instructor. (F,Sp,Su)

**REH 6150 Case Studies in Rehabilitation** (3)
Coordination of community resources, individual assessment information, ethical issues, eligibility determination, and development of individualized rehabilitation programs and independent living plans. Time, fiscal, and caseload management skills for rehabilitation professionals. Emphasizes client choice in rehabilitation planning. (Sp)

**REH 6160 Job Analysis, Development, and Placement for Persons with Disabilities** (3)
Applies career development theories to job placement. Presents job placement factors resulting in employment for persons with disabilities, including job analysis, job development and retention, advocacy, assistive technology, ADA, occupational information systems, and labor market analysis. (Sp)

**REH 6170 Internship in Rehabilitation** (4-12) ®
Direct supervised provision of rehabilitation services to persons with disabilities in a community facility or agency. Total of 300 hours of direct service required for each 6 semester credits. Repeatable for up to 12 credits. Prerequisite: Permission of instructor. (F,Sp,Su)

**REH 6180 Rehabilitation of Persons with Severe Mental Illness, Substance Abuse, and Severe Learning Disabilities** (3)
Overview of rehabilitation of persons with severe mental illness, including psychopharmacology, housing, case management, job placement, diagnosis (DSM IV), and social learning programs. Includes information on rehabilitation of persons experiencing substance abuse, dual diagnoses, and learning disorders. (Sp)

**REH 6190 Vocational Assessment for Persons with Disabilities** (3)
Addresses vocational assessment for persons with disabilities. Includes overview of traditional vocational assessment, but focuses on contemporary methodology developed for individuals with severe disabilities. Discussion of functional assessment, including client choice and ecological assessment issues. (F)

**REH 6200 Theories of Counseling Applied to Persons with Disabilities** (3)
Introduction to established counseling theories and their implications for providing services to persons with disabilities. Discussion of individual and group counseling paradigms. Emphasizes development of students’ individual counseling philosophies. (F)

**REH 6210 Vocational Evaluation Principles and Systems** (2)
Introduction to vocational evaluation principles and their application in using commercially available vocational evaluation systems. Actual practice with the systems (including integrated report writing) in the rehabilitation services clinic. (Su)

**REH 6220 Culturally Valid Rehabilitation Practices** (2)
Analysis of the effect of cultural/ethnic/racial/linguistic background in the rehabilitation counseling setting, including acceptance/perception of disability, and successful application, process, and rehabilitation outcome. Practice applications include provision of culturally sensitive counseling, vocational evaluation, and job placement. (Su)

**REH 6230 Introduction to Rehabilitation Research** (3)
Provides introduction to research methods in rehabilitation and disability studies, including the various types of research designs and the use of statistical methods. Introduces students to empirical research journals in rehabilitation. (Sp)

**REH 6560 Special Topics in Rehabilitation** (1-4) ®
Opportunity to provide specialized training in topics unique to rehabilitation. Topics cover many disability, employment, and independent-living issues. (F,Sp,Su)

**REH 6900 Independent Study** (1-3) ®
Prerequisite: Permission of instructor. (F,Sp,Su)

**REH 6910 Independent Research** (1-3) ®
Prerequisite: Permission of instructor. (F,Sp,Su)

**REH 6990 Continuing Graduate Advisement** (1-3) ®
(F,Sp,Su)

® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

**Russian (RUSS)**

See Department of Languages, Philosophy, and Speech Communication, pages 244-248

**RUSS 1010 Russian First Year I** (4)
Communicative competencies in the four language skills: speaking, listening, reading, and writing, with exposure to cultures and customs. Not open to those with more than one year high school Russian or equivalent. (F)

**RUSS 1020 Russian First Year II** (4)
Communicative competencies in the four language skills: speaking, listening, reading, and writing, with exposure to cultures and customs. Prerequisite: RUSS 1010, or not more than three years of high school Russian. (Sp)

**RUSS 2010 Russian Second Year I** (4)
Further development of first-year competencies with emphasis on language structure, vocabulary expansion, reading, writing, and conversation in the context of culture. Prerequisite: RUSS 1020 or two or more years of high school Russian. (F)

**RUSS 2020 Russian Second Year II** (4)
Further development of first-year competencies with emphasis on language structure, vocabulary expansion, reading, writing, and conversation in the context of culture. Prerequisite: RUSS 2010 or three or more years of high school Russian. (Sp)

**RUSS 2880 Individual Readings** (1-4) ®
Individual study of selected readings in Russian. Prerequisite: Instructor’s permission. (F,Sp)

**RUSS 3040 Advanced Russian Grammar and Composition** (3)

**RUSS 3050 Advanced Russian Grammar and Composition** (3)
Detailed presentation of Russian grammar. Class discussions and work on oral and written assignments. Prerequisite: RUSS 2020 or equivalent. (F) (Sp)

RUSS 3300 Contemporary Russian Language and Culture (3)
Reading and discussion of contemporary popular, literary, and scientific materials in Russian. Also cultural and historical considerations of today's Russia. Prerequisite: RUSS 2020 or equivalent. (F)

RUSS 3510 CI Business Russian (3)*
Study of current Russian business and commercial terminology and practices. Development of communication skills for international Russian business purposes. Prerequisite: RUSS 2020 or equivalent. (F)

RUSS 3540 Russian Translation for Science, Business, and Culture (3)
Familiarization with approaches to translation, special grammatical structures, specialized vocabulary, and reference materials and aids. Practical exercises. Prerequisite: RUSS 2020 or equivalent. (F,Sp)

RUSS 4880 Individual Readings (1-4) ®
Readings in technical, scientific, or literary Russian. Prerequisite: Instructor's permission. (F,Sp)

RUSS 4920 Russian Language Tutoring (1) ®
Allows students to develop tutoring skills by assisting professors in lower-division courses or fulfilling instructional duties for a comparable amount of time in the language laboratory, public schools, or similar activities with departmental approval. May be repeated to a maximum of 3 credits. (F,Sp,Su)

® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.


Secondary Education (SCED)

See Department of Secondary Education, pages 305-308

SCED 1000 Volunteer Experience (1)
Optional course providing orientation to agencies coordinating volunteer experiences in the community; such experiences are part of standards for admission to secondary teacher education. (F,Sp,Su)

SCED 3100 Motivation and Classroom Management (3)
Designed to lead pre-service secondary school teachers to address two questions: (1) What diverse traits, talents, attitudes, and experiences do pre-adolescent and adolescent students bring to the middle school, junior high school, and high school environment? and (2) In light of these diverse traits, values, attitudes, and experiences, how should teachers work with students to build cooperative classroom communities where students are motivated to engage in productive learning activities? (F,Sp)

SCED 3210 DSS Educational and Multicultural Foundations (3)
Provides preservice teachers with the opportunity to critically examine the political, economic, and educational policies influencing students’ access to equitable educational experiences. Examines historical and philosophical foundations influencing the nature of multicultural education in our Democratic society, how personal biases can influence instructional practices, and development of multicultural curriculum relevant to specific content areas. (F,Sp)

SCED 3300 Clinical Experience I (1)
First clinical practicum (40 hours minimum) in middle and secondary schools, arranged by special methods instructors in department. Required at level 1. Prerequisite: Program admission. (F,Sp)

SCED 3400 Teaching Science I (3)
Laboratory practicum focused on design, practice, and performance of secondary science demonstrations and investigative lab activities. Must be taken at Level 1. Prerequisite: Program admission. (F,Sp)

SCED 3500 Teaching Social Studies (3)
Methods course focused on social studies curriculum and instruction for preservice secondary teachers with teaching majors or minors in history or any of the social sciences. Should be taken at Level 1. Prerequisite: Program admission. (F,Sp)

SCED 3600 Teaching English (3)
Methods course focused on English curriculum and instruction for preservice secondary teachers with teaching majors or minors in English. May be taken at either Level 1 or Level 2. Prerequisite: Program admission. (F,Sp)

SCED 4200 CI Reading, Writing, and Technology (3)
Performance-based class focused on a wide range of academic skills related to reading, writing, and advanced technology access. Prerequisite: Program admission and completion of Level 1. (F,Sp)

SCED 4210 Cognition and Evaluation of Student Learning (3)
Designed to lead the preservice secondary school teacher to address two questions: (1) How do students construct concepts; discover relationships; and develop knowledge-level skills, comprehension and communication skills, and problem-solving abilities? (2) How do teachers monitor students’ progress, evaluate and communicate their achievement, and interpret the results of system-wide and standardized test results to students and their parents? (F,Sp)

SCED 4300 Clinical Experience II (1)
Second clinical practicum (40 hours minimum) in middle and secondary schools, arranged by special methods instructors in department. Required at level 2. Prerequisite: Program admission and completion of Level 1. (F,Sp)

SCED 4400 Teaching Science II (3)
Methods course focused on science curriculum and instruction for preservice secondary teachers with teaching majors in any of the science areas. Must be taken at Level 2. Prerequisite: Program admission, completion of Level 1, and SCED 3400. (F,Sp)

SCED 4600 Philosophy and Organization of the Middle Level School (3)
Focuses on characteristics of young adolescents and how middle level schools can be organized to meet those characteristics through interdisciplinary teaming, advisory programs, and exploratory mini-courses. Also taught as ELED 4600/6600. (F,Sp)

SCED 4610 Curriculum, Methods, and Assessment of Learning appropriate for grades 5-9. Also taught as ELED 4610/6610. (Sp)

SCED 4610 Curriculum, Methods, and Assessment for the Middle Grades (3)
Integrates current approaches to curriculum design with instructional models and assessment of learning appropriate for grades 5-9. Also taught as ELED 4610/6610. (Sp)

SCED 4620 Service Learning Applications for the Middle Grades (3)
Examines literature related to service learning for the middle grades. Application of service learning in curriculum. Also taught as ELED 4620/6620. (Su)

SCED 4710 Diversity in Education (3)
Provides educators with background and techniques for more effectively addressing the needs of students in a culturally and linguistically diverse society. Diversity topics also include religion, socioeconomic class, ability differences, gender, and sexual orientation. Also taught as ELED 4710. (F,Sp)

SCED 4760 ESOL Instructional Strategies (3)
Includes principles and techniques for promoting oral language, reading, and writing development for K-12 English language learners. Explores language acquisition theory, classroom organization, teaching strategies, and parental involvement for effective English language instruction. Also taught as ELED 4760/6760. (F,Sp)

SCED 4770 ESOL Instructional Strategies in the Content Areas (3)
Focuses on strategies which help language-minority students in content-area classrooms to increase academic learning. Includes methods for increased integration of language learners into the larger school community. Discussion of parental involvement. Also taught as ELED 4770/6770. (Su)

SCED 4780 Assessment for Language Learners (3)
Explores principles and techniques for developing, analyzing, and interpreting assessment measures for language learners, including oral, written, reading, and con-
tent-area assessment. Examines assessment requirements for public schools, intensive language programs, and higher education. Also taught as ELED 4780/6780. (Su)

SCED 4900H Senior Thesis (1-6) Student-initiated research project under faculty supervision. Requires prior approval of department head, honors committee, and instructor. Prerequisite: Approval of department head. (F,Sp)

SCED 5000 Practicum in Improvement of Instruction (1-6) ® (d6000) Open topics course focusing upon effective teaching methods, teaching performance, curriculum decision-making, and characteristics of learners. Also taught as ELED 5000/6000. (F,Sp,Su)

SCED 5300 Clinical Experience III (1) Third clinical practicum in middle and secondary schools. Arranged by Office of Field Experiences for 5 weeks before student teaching (40 hours minimum). Required of all students at Level 3. Prerequisites: Level 1 and Level 2 completion, and student teaching placement. (F,Sp)

SCED 5400 Laboratory Practicum (3) Laboratory practicum for inservice teachers, focused on design, practice, and performance of secondary science demonstrations and investigative laboratory activities. (F,Sp)

SCED 5500 Student Teaching Seminar (2) Ten-week capstone seminar focused upon student teaching issues, professional development, and principles of effective instruction, emphasizing reflective teaching. Prerequisites: Level 1 and Level 2 completion, and student teaching placement. (F,Sp)

SCED 5630 Student Teaching in Secondary Schools (10) Thirteen-week culminating practicum in which students assume full-time teaching responsibilities under direction of cooperating teachers in major and minor fields. Prerequisites: Level 1 and Level 2 completion, and student teaching placement. (F,Sp)

SCED 5700 Modified Student Teaching (2-4) Culinating practicum experience for students seeking dual licensure, earning half of their student teaching credit in a secondary school setting. Prerequisite: Program admission and completion of Level 1 and Level 2. (F,Sp)

SCED 5800 Secondary School Internship (2-6) Advanced practical teaching experience under combined public school and University supervision. Offered only by arrangement with Director of Field Experiences. Prerequisites: Level 1 and Level 2 completion, and special recommendation. (F,Sp)

SCED 5900 Independent Study (1-3) ® Prerequisite: Instructor approval. (F,Sp)

SCED 6000 Practicum in Improvement of Instruction (1-6) ® (d5000) Open topics course focusing upon effective teaching methods, teaching performance, curriculum decision-making, and characteristics of learners. Also taught as ELED 6000/5000. (F,Sp,Su)

SCED 6040 Designing and Interpreting Measurements for Assessing Student Learning (3) Teachers and instructional supervisors develop their talents for (a) designing and interpreting measurements for monitoring students’ learning and (b) interpreting scores from standardized and government-mandated tests. Also taught as ELED 6040. (F,Sp)

SCED 6100 Motivation and Management in Inclusive Settings (3) Leads in-service teachers to develop classroom management strategies for gaining and maintaining students’ cooperation. Also taught as ELED 6100. (Sp,Su)

SCED 6150 Foundations of Curriculum (3) Examination of theories, principles, and foundations of curriculum, emphasizing program planning and current curriculum trends. Also taught as ELED 6150. (F,Sp)

SCED 6190 Theories of Teaching and Learning (3) Demonstration, analysis, and evaluation of various models of teaching, emphasizing research-based principles of learning. Also taught as ELED 6190. (Sp,Su)

SCED 6250 Mathematics Curriculum and Instruction (2) Examination of current curriculum standards, trends, and effective methods of instruction for mathematics in middle and secondary schools. (Su)

SCED 6300 English Curriculum and Instruction (2) Examination of current curriculum standards, trends, and effective methods of instruction for English/languages arts in middle and secondary schools. (Su)

SCED 6310 Content Area Reading and Writing (3) Practical approaches for teaching reading/writing and learning skills to elementary, middle, and high school students, in all content areas. Also taught as ELED 6310. (Su)

SCED 6320 Literacy and Cognition (3) (d7320) Examination of cognitive and sociocultural research related to K-12 students’ acquisition and use of reading, writing, and learning strategies. Explores implications for school policies and classroom instruction. Also taught as ELED 6320/7320. (Sp)

SCED 6330 Utah Writing Project (1-6) Workshop, seminar, and institute experiences in the Utah Writing Project, focusing on writing process, principles, and research-based strategies for improving writing instruction in grades K-12. Also taught as ELD 6330. (Su)

SCED 6340 Issues and Trends in Literacy (2) ® Exploration of current issues and instructional trends in the teaching of reading and writing. Emphasis on reading widely and critically in the professional literature. Prerequisites: ELED 3100, 4040; or teaching experience in elementary or middle school. Also taught as ELD 6340.

SCED 6350 Reading Assessment and Intervention (3) Covers the correlates and diagnosis of reading problems, as well as methods and materials for remedial reading instruction. Prerequisites: ELED 3100, 4040; or teaching experience in elementary or middle school. Also taught as ELD 6350. (Sp)

SCED 6360 Research in Reading (3) Covers classical, historical, and contemporary research studies in reading, with an emphasis upon understanding and translating findings into classroom practices. Prerequisites: ELED 3100, 4040; or teaching experience in elementary or middle school. Also taught as ELD 6360. (Su)

SCED 6370 Supervised Internship in Reading and Writing (1-3) Individual practicum experience designed to allow graduate students to implement and focus on one or more aspects of reading and writing instruction in a classroom or clinical setting. Prerequisite: Consent of instructor. Also taught as ELED 6370. (F,Sp,Su)

SCED 6390 Teaching with Tradebooks in the Elementary and Middle Level Classroom (3) Explores the use of trade books in the elementary and middle level classroom. Focuses on how teachers can use various genres to invite children to read and write. Prerequisites: SCED/ELED 6310 or 6360. Also taught as ELD 6390. (Su)

SCED 6392 Teaching with Tradebooks in the Middle School Classroom (3) Explores one model for embedding the teaching of creative and critical thinking in regular curricula. Includes practical application requirements. Also taught as ELED 6400. (Su)

SCED 6420 Education of Gifted and Talented Learners (2) Provides multiple cultural and historical perspectives on giftedness and talent. Explores characteristics of gifted individuals, with emphasis on identifying needs. Provides general overview of possible services for gifted learners. Must be taken concurrently with ELED/SCED 6430. Also taught as ELED 6420. (F)

SCED 6420 Practicum: Individual Case Study (1) Practicum experience in association with ELED/SCED 6420. Requires intensive su-
SCED 6440 Creativity in Education (2)
Exploration of theories, research, and strategies concerning creativity, and their application to personal creativity and to improvement of classroom practice. Also taught as ELED 6440. (Su)

SCED 6450 Science Curriculum and Instruction (2)
Examination of current curriculum standards, trends, and effective methods of instruction for science in middle and secondary schools. Emphasizes science program improvement through investigative lab activities. (Su)

SCED 6460 Identification and Evaluation in Gifted Education (2)
Provides educators with theory and models for identifying students as gifted, creative, and talented. Presents models for evaluation of programs for gifted learners. Explores instruments for use in identification and evaluation. Must be taken concurrently with ELED/SCED 6470. Also taught as ELED 6460. (Sp)

SCED 6470 Practicum: Team Consultation (1)
Practicum experience in association with ELED/SCED 6460. Requires participation, as part of a consultative team, to improve practice in an approved setting for a specific child, classroom, school, school district, or other educational entity. Must be taken concurrently with ELED/SCED 6460. Also taught as ELED 6470. (Sp)

SCED 6480 Methods and Materials in Gifted Education (2)
Explores programming and curriculum models in gifted education, with special attention to the development of instructional materials for use with students. Must be taken concurrently with ELED/SCED 6490. Also taught as ELED 6480. (F)

SCED 6490 Practicum: Classroom Applications (1)
Practicum experience in association with ELED/SCED 6480. Requires participation, as part of a consultative team, to improve practice in an approved setting for a specific child, classroom, school, school district, or other educational entity. Must be taken concurrently with ELED/SCED 6480. Also taught as ELED 6490. (F)

SCED 6500 Science Curriculum and Instruction (2)
Examination of current curriculum standards, trends, and effective methods of instruction for science in middle and secondary schools. Emphasizes science program improvement through investigative lab activities. (Su)

SCED 6550 Social Studies Curriculum and Instruction (3)
Examination of current curriculum standards, trends, and effective methods of instruction for social studies in middle and secondary schools. (Su)

SCED 6560 ESOL Instructional Strategies in the Content Areas (3)
Explores principles and techniques for developing, analyzing, and interpreting assessment measures for language learners, including oral, writing, reading, and content-area assessment. Examines assessment requirements for public schools, intensive language programs, and higher education. Also taught as ELED 6780/4780. (Su)

SCED 6570 Advanced Comprehension (3)
Designed to enhance teachers’ understanding of research and practice related to teaching vocabulary and reading comprehension and fostering motivation for reading. Prerequisite: ELED/SCED 6310 or 6360. Also taught as ELED 6570. (All years)

SCED 6580 Character and Values Education (2)
Overview of research, theory, and practical approaches to values education, emphasizing processes of moral development and socialization. Also taught as ELED 6580. (Su)

SCED 6590 Supervising School Reading Program (2)
Examines strategies for improving school reading programs. Emphasizes simulations, guided practice, and small group discussions. Prerequisites: ELED/SCED 6350 and 6360. Also taught as ELED 6590. (Sp)

SCED 6600 Philosophy and Organization of the Middle Level School (3)
Focuses on characteristics of young adolescents and how middle level schools can be organized to meet those characteristics through interdisciplinary teaming, advisory programs, and exploratory mini-courses. Also taught as ELED 6600/4600. (F,Sp)

SCED 6610 Curriculum, Methods, and Assessment for the Middle Grades (3)
Integrates current approaches to curriculum design with instructional models and assessment of learning appropriate for grades 5-9. To receive credit for 6610, graduate students design and implement an action research project related to curricular or pedagogical interests, then share their findings in class. Project will include review of literature related to student’s interest. Prerequisite: ELED/SCED 6600. Also taught as ELED 6610/4610. (Sp, Su)

SCED 6620 Service Learning Applications for the Middle Grades (3)
Examines literature related to service learning for the middle grades. Application of service learning in curriculum. Also taught as ELED 6620/4620. (Su)

SCED 6670 ESOL Instructional Strategies (3)
Includes principles and techniques for promoting oral language, reading, and writing development for K-12 English language learners. Explores language acquisition theory, classroom organization, teaching strategies, and parental involvement for effective English language instruction. Also taught as ELED 6760/4760. (F,Sp)

SCED 6677 ESOL Instructional Strategies in the Content Areas (3)
Focuses on strategies which help language-minority students in content-area classrooms to increase academic learning. Includes methods for increased integration of language learners into the larger school community. Discussion of parental involvement. Also taught as ELED 6770/4770. (Su)

SCED 6680 Workshop: Intermountain Conference on Education of the Gifted and Talented (1-2) ®
Provides instruction by leading national authorities in gifted and talented education, as well as networking with educators of the gifted from throughout the Intermountain West. Also taught as ELED 6680. (Su)

SCED 6690/4690 Independent Study (1-3) ®
Individually directed readings and conference. Departmental permission required before registration. Prerequisite: Instructor’s approval. (F,Sp,Su)

SCED 6691 Independent Research (1-3) ®
Individually directed research projects. Departmental permission required before registration. Prerequisite: Instructor’s approval. (F,Sp,Su)

SCED 6694 Supervision and Administration Internship (3)
Individually directed internship experiences in secondary school settings for development of supervisory and administrative skills. Prerequisite: Instructor’s approval. (F,Sp,Su)

SCED 6695 Creative Project (3)
Individually directed creative project, with a focus closely related to coursework or to area of teaching specialization. Only students pursuing the Plan B MEd option should enroll in this course. Prerequisite: Instructor’s approval. (F,Sp,Su)

SCED 6696 Master’s Thesis (3-6) ®
Individually directed work in thesis writing, with guidance from committee chair. Designed for use on MA and MS degrees only. Prerequisite: Instructor’s approval. (F,Sp,Su)

SCED 6698 Portfolio Project (3)
Individually directed portfolio for students in the MEd Plan B degree, only to be taken at the end of student’s program of study. Designed for students to integrate and apply concepts learned in the master’s program. Prerequisite: Instructor’s approval. (F,Sp,Su)

SCED 6699 Continuing Graduate Advisement (1-9) ®
Individually directed work in thesis writing, with guidance from committee chair. Designed for use on MA and MS degrees only. Prerequisite: Instructor’s approval. (F,Sp,Su)

SCED 7000 Student Teacher Supervision (1-3)
Experiences in providing guidance for secondary student teachers in public schools. Analysis of roles and responsibilities of cooperating teachers and university supervisors. Prerequisite: Instructor’s approval. (F,Sp)
SCED 7050 Internship in Program Evaluation (1-6) Experiences in practical aspects of program evaluation through planned and supervised evaluation project participation. Must be approved by student’s graduate committee. Prerequisite: Instructor’s approval. (F,Sp,Su)

SCED 7060 Internship in Research (1-6) Experiences in conducting research through planned and supervised research project participation. Must be approved by student’s graduate committee. Prerequisite: Instructor’s approval. (F,Sp,Su)

SCED 7320 Literacy and Cognition (6(d320)) Examination of cognitive and sociocultural research related to K-12 students’ acquisition and use of reading, writing, and learning strategies. Explores implications for school policies and classroom instruction. Also taught as ELED 7320/6320. (Sp)

SCED 7330 Internship in Supervision (1-3) Directed experiences in supervision with selected public school personnel in approved settings. Experiences arranged by student’s graduate committee. Prerequisite: Instructor’s approval. (F,Sp,Su)

SCED 7350 Internship in Curriculum Development (1-3) Directed experiences in curriculum development with selected public school personnel in approved settings. Experiences arranged by student’s graduate committee. Prerequisite: Instructor’s approval. (F,Sp,Su)

SCED 7500 Interdisciplinary Workshop (1-3) © Prerequisite: Instructor’s approval. (Su)

SCED 7810 Research Seminar (1-3) © Identification of research problems and critical issues, consideration of critical issues and research methods, and application of data analysis procedures under faculty direction. (F,Sp,Su)

SCED 7900 Independent Study (1-3) © Individually directed reading and conference. Departmental permission required before registration. Prerequisite: Instructor’s approval. (F,Sp,Su)

SCED 7910 Independent Research (1-3) © Individually directed research projects. Departmental permission required before registration. Prerequisite: Instructor’s approval. (F,Sp,Su)

SCED 7970 Dissertation (1-12) © Individual work on research problems in the PhD or EdD program. Prerequisite: Instructor’s approval. (F,Sp,Su)

SCED 7990 Continuing Graduate Advisement (1-12) © Prerequisite: Approval of instructor. (F,Sp,Su)

1Parenthetical numbers preceded by d indicate a dual listing.

2Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

Science (SCI)
See College of Science, pages 117-118

SCI 4300 Science in Society (2) Investigation of interactions between current scientific topics and societal goals and concerns. Intended as a capstone course for science teaching majors. Prerequisite: Senior standing and consent of instructor. (F,Sp)

Sociology (SOC)
See Department of Sociology, Social Work and Anthropology, pages 310-318

SOC 1010 BSS Introductory Sociology (3) © Examination of social behavior of humans and social institutions. Theories and methods for studying society and social issues, along with insights from related disciplines. (F,Sp)

SOC 1020 Social Problems (3) Study of major U.S. and international social problems. Examination of how issues are defined as social problems and ways groups attempt to solve the problems. (F,Sp)

SOC 2500 Sociology of Gender (3) Examines impacts of social constructions of gender on individual and collective experience. Investigates how gender is shaped through social processes and through the effects of social institutions. Particular attention given to relation of gender to social stratification. (F)

SOC 3010 Race, Class, and Gender (3) Examines theories and research concerning how race, class, and gender intersect in the lives of societal members. (F,Sp)

SOC 3110 CI Methods of Social Research (3) Methods and techniques of analyzing social data. Examines surveys, field research, observational studies, and other social science techniques. Emphasizes analysis of data and published research. Prerequisite: Completion of 6 credits in departmental courses. (F,Sp)

SOC 3120 QI Social Statistics I (3) Examines use of statistics in social sciences. Particular focus on use of statistical analysis with surveys and census-type data. Includes parametric and nonparametric statistics utilized most in social analysis. Prerequisite: Completion of 6 credits in departmental courses and STAT 1040 or equivalent. (F,Sp)

SOC 3200 DSS Population and Society (3) Examination of interrelationships between population change and social structure in national and international context. Examines contributions of fertility, mortality, and migration to population characteristics, particularly sex, age, and ethnic composition. Stresses demographic data and analysis. (F,Sp)

SOC 3320 Sociology of Work and Organization (3) Stresses contribution of sociology to the understanding of industry as a social system. (Sp)

SOC 3330 Medical Sociology (3) In-depth analysis of major contributions of sociology to field of medicine. (F)

SOC 3410 Juvenile Delinquency (3) © Focuses on nature, extent, and causes of delinquent behavior. Examines workings of juvenile justice system and programs for delinquency prevention. (F,Sp)

SOC 3420 Criminology (3) Examines theoretical explanations for crime in the U.S. Describes characteristics of major forms of criminal behavior. (F,Sp)

SOC 3430 Social Deviance (3) Examination of sociological perspectives on deviance as they apply to lifestyles, commitment, and social control in American society. (F)

SOC 3500 Social Psychology (3) Explores interaction between the social system and the individual. Examines human behavior in terms of positions people occupy in the social structure. (F,Sp)

SOC 3600 Sociology of Urban Places (3) Provides historical and international perspective on social, cultural, and spatial characteristics of urban places. Examines changes associated with urbanization processes and the effect of urbanization on community, crime, neighborhoods, and urban space. (F)

SOC 3610 DSS Rural Sociology (3) Examines patterns and processes of social change in rural and nonmetropolitan sectors of the U.S. and other advanced industrial societies. Considers how rural social change is influenced by demographic, economic, political, and natural resource conditions at regional, national, and global scales. (F)
Course Descriptions

SOC 3750 Sociology of Aging (3)
Examination of social context in which aging occurs, the social implications of aging, and attendant social policy issues. Considers both individual and societal aging, using an historical and global approach. (F)

SOC 4010 Contemporary Sociological Theory (3)
Critical analysis of major theorists and schools of theory in sociology from the late nineteenth century through recent and current works. Emphasizes contemporary issues, insights, and uses of sociological theory. (F)

SOC 4330 Sociology of Religion (3)
Discussion of theories and research used by sociologists to understand social dimensions of religion. Includes ways in which religion influences and is influenced by other societal institutions, such as politics, the economy, and the class system. (F)

SOC 4420 CI Criminal Law and Justice (3)
Sociological analysis of relationship between law and social control and social change, especially regarding law enforcement, courts, and corrections. (Sp)

SOC 4620 DSS Sociology of the Environment and Natural Resources (3)
Social aspects associated with the environment and natural resources. Topics include: environmental attitudes and perceptions, environmentalism as a social movement, resource scarcity and land use, and social change in resource-based communities. (Sp)

SOC 4710 Asian Societies (3)
Explores history, social, economic, and political institutions; and peoples and cultures of Asian Societies. (Sp)

SOC 4730 Women in International Development (3)
Examines status of women in developing countries, and the role they play in the development process. (Sp)

SOC 4800 Seminar in Sociology (1-3) ®
Seminars in various areas of sociology: (a) theory, (b) methodology, (c) demography, (d) social organization, (e) social deviance, (f) social psychology, (g) human ecology, (h) gerontology. (F,Sp,Su)

SOC 4900 Independent Readings in Sociology (1-5) ®
Independent readings in various areas of sociology: (a) theory, (b) methodology, (c) demography, (d) social organization, (e) social deviance, (f) social psychology, (g) human ecology. Prerequisite: Permission of instructor. (F,Sp,Su)

SOC 5100 Interpreting Social Research (3)
Examines research design issues (conceptualization and measurement, sampling), modes of observation (experiments, surveys, field research, evaluation research), and interpreting social research findings (basic understanding of statistical analysis), as well as focusing on the ethics and politics of social research. (F,Su)

SOC 5650 DSS Developing Societies (3)
Reviews how sociology, cultural geography, and economic anthropology analyze processes of globalization in postcolonial societies. Examines changing livelihoods, patterns of spatial incorporation and societal evolution, and emergent policy problems associated with rapid socioeconomic change. Also taught as ANTH 5650/6650 and GEOG 5650/6650. (F)

SOC 6010 Development of Sociological Theory (3)
Examines development of social theory from early to premodern times. Special attention given to nineteenth century European influences on development of American sociological theory. (F)

SOC 6020 Modern Social Theory (3)
Examines current analytical and empirical theories from sociology as science perspective. Also explores network, exchange, conflict, functional, and interactionist approaches to, and difficulties with, scientific theorizing. (Sp)

SOC 6100 Advanced Methods of Social Research (3)
Examines philosophical bases, techniques, and political and ethical aspects of social research. (F)

SOC 6150 Social Statistics II (3)
Statistical procedures for sociological analysis; nonparametric statistics; inferential statistics, cross-tabulation, and log-linear analysis; correlation; regression; ANOVA; and other multivariable social science statistical treatments. (Sp)

SOC 6200 Social Demography (3)*
Focuses on relationships between demographic and sociological processes. Study of theoretical perspectives and empirical analyses of the determinants. Consequences of change in population size, composition, and distribution, as well as changes in demographic processes. (F)

SOC 6220 Techniques of Demographic Analysis (3)*
Provides instruction in use of rates, ratios, life tables, and related measures to describe, analyze, and estimate population. Review of measures designed to examine the three demographic processes: fertility, mortality, and migration. Utilization of analytical tools to explore population composition. Special emphasis placed on use of U.S. Census data to create population profiles. (Sp)

SOC 6250 Sociology Internship/Co-op (1-6)
Professional level of educational work experience in an internship/cooperative education position for graduate students. (F,Sp,Su)

SOC 6310 Sociology of Work and Occupations (3)*
Uses an applied and comparative cross-cultural perspective to examine work in pre-industrial (agricultural/pastoral), industrializing, industrialized, and post-industrial societies. (Sp)

SOC 6420 Gender and Social Inequality (3)*
Contemporary American gender stratification, including (1) What is the problem? (2) Why is it a problem? (3) How does it interact with other stratifiers? (4) What caused or is causing it? (5) How and why is it maintained? and (6) When does it vary and why? Comparison of different views on these issues. (Sp)

SOC 6450 Special Topics in Social Problems (3) ®
Seminars on various topics appropriate to sociological analysis of contemporary social problems. Subject matter will reflect current faculty research and interests. (F,Sp)

SOC 6460 Sociology of Health (3)*
Examination of social and cultural factors influencing health. Analysis of health behaviors as consequences of variety of diverse personal and social processes. (F)

SOC 6620 Environment, Technology, and Social Change (3)*
Focuses on human interactions with the physical environment and changes brought about by this interaction. Topics of major emphasis include: approaches to environmental sociology; environmental values and attitudes; social movements pertaining to environmental concern; and social change responses to technology and resource scarcity. (Sp)

SOC 6630 Natural Resources and Social Development (3)*
Focuses on social dimensions of natural resources use, development, scarcity, and allocations. Examines ways in which changing resource conditions impact human social organization. Emphasis on topics including: social characteristics of resource-dependent communities and areas; social organizational responses to changes in availability of, or access to, natural resources; and social impacts of natural resource development activities. (Sp)

SOC 6650 Developing Societies (3) (d5650)
Reviews how sociology, cultural geography, and economic anthropology analyze processes of globalization in postcolonial societies. Examines changing livelihoods, patterns of spatial incorporation and societal evolution, and emergent policy problems associated with rapid socioeconomic change. Also taught as ANTH 6650/5650 and GEOG 6650/5650. (F)

SOC 6700 Advanced Rural Sociology (3)*
Analysis of major developments in the study of rural society and rural communities. Emphasis on rural social changes related to economic, demographic, organizational, and technological trends at societal and global levels. (Sp)
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Description</th>
<th>Credits</th>
<th>Prerequisites / Remarks</th>
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<tbody>
<tr>
<td>SOC 6730</td>
<td>Gender and International Development</td>
<td>3*</td>
<td>(Sp)</td>
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<td></td>
<td>Examines gender issues in economic and social development. Focuses on theory and</td>
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<td>methodologies for gender analysis.</td>
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<tr>
<td>SOC 6750</td>
<td>Social Change and Development</td>
<td>3*</td>
<td>(Sp)</td>
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<td></td>
<td>Readings from both domestic and international scholarship are used to examine the</td>
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<td>important social, economic, and political forces that shape patterns of social</td>
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<td></td>
<td>change and development.</td>
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<tr>
<td>SOC 6800</td>
<td>Seminar in Sociology</td>
<td>(1-3)</td>
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<td>Seminars in various areas of sociology: (a) theory, (b) methodology, (c)</td>
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<td>demography, (d) social organization, (e) social deviance, (f) social psychology,</td>
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<td>(g) social problems, (h) international development, (i) domestic development,</td>
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<td>(j) rural sociology, (k) environmental sociology, (l) other.</td>
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<td>SOC 6900</td>
<td>Independent Readings in Sociology</td>
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<td>Independent readings in various areas of sociology: (a) theory, (b) methodology,</td>
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<td>(c) demography, (d) environmental/natural resource sociology, (e) sociology of</td>
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<td>development, (f) social problems.</td>
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<tr>
<td>SOC 6970</td>
<td>Thesis Research</td>
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<td>SOC 6990</td>
<td>Continuing Graduate Advisement</td>
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<tr>
<td>SOC 7010</td>
<td>Issues in Sociological Theory</td>
<td>3*</td>
<td>(Sp)</td>
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<td></td>
<td>Explores current philosophical discussions on theoretical approaches to understanding society. Examines feminist, post-structuralist, and post-modernist conceptualizations of power, knowledge, and identity.</td>
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<tr>
<td>SOC 7100</td>
<td>Advanced Survey Techniques</td>
<td>3*</td>
<td>(Sp)</td>
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<td></td>
<td>Examines the empirical and methodological literature regarding techniques for designing and implementing mail, telephone, and internet surveys for sociological research. Focuses on practical lessons for sampling, data collection, and survey data organization.</td>
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<tr>
<td>SOC 7110</td>
<td>Advanced Sociological Analysis</td>
<td>3*</td>
<td>(Sp)</td>
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<td>Provides review of several quantitative approaches utilized in contemporary social research. Students undertake small-scale analytical exercises in topics including, but not limited to, log-linear and structural equation modeling, logistic regression, and event history analysis.</td>
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<tr>
<td>SOC 7150</td>
<td>Advanced Qualitative Methods in Sociology</td>
<td>3*</td>
<td>(Sp)</td>
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<tr>
<td></td>
<td>Examines the empirical and methodological literature regarding techniques for designing and implementing qualitative data collection and analysis for sociological research. Emphasizes practical tools for graduate students seeking to use qualitative methods for their thesis or dissertation research.</td>
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<tr>
<td>SOC 7210</td>
<td>Teaching Sociology</td>
<td>3</td>
<td>(Sp)</td>
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<td></td>
<td>Provides a learning opportunity for graduate students who will be graduate instructors or teaching assistants. Reviews teaching strategies (meeting a class for the first time, teaching a large lecture class) and course development (constructing a syllabus, developing tests and writing assignments).</td>
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<tr>
<td>SOC 7250</td>
<td>Advanced Seminar in Social Demography</td>
<td>3*</td>
<td>(Sp)</td>
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<td>Detailed comparative and multilevel examination of substantive and methodological issues in the study of naptuality, fertility, morbidity and mortality, migration, and social mobility. Covers theories, data collection strategies, measurement issues, and analytical techniques.</td>
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<tr>
<td>SOC 7400</td>
<td>Perspectives on Inequality and Social Problems</td>
<td>3*</td>
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<td></td>
<td>Examines major theoretical and empirical approaches to the sociological analysis of inequality and social problems.</td>
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<tr>
<td>SOC 7440</td>
<td>Crime and Society</td>
<td>3*</td>
<td>(Sp)</td>
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<td>Explores the field of criminology, which is primarily concerned with describing and explaining patterns of deviance violating criminal laws. Reviews the epistemological foundations of criminology, and then addresses specific topics surrounding various legal definitions of criminal behavior.</td>
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<tr>
<td>SOC 7620</td>
<td>Sociology of Environmental Hazards and Risks</td>
<td>3*</td>
<td>(F)</td>
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<td></td>
<td>Focuses on how individuals and organizations respond to environmental hazards and risks resulting from either natural events or human technological and industrial processes.</td>
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<tr>
<td>SOC 7640</td>
<td>Population and Environment</td>
<td>3*</td>
<td>(Sp)</td>
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<td></td>
<td>In-depth exploration of relationship between human populations and their environment. Heavy emphasis placed on developing an understanding of contemporary research in this area, especially with regard to the association between environmental factors and population organization, change, and growth.</td>
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<tr>
<td>SOC 7660</td>
<td>The Environment and Social Inequality</td>
<td>3*</td>
<td>(F)</td>
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<td>Explores the intersection of social inequality and the physical environment. Examines how social structures and individual actions both perpetuate and combat various forms of inequality, including class, race, ethnicity, gender, and “expert knowledge.”</td>
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<tr>
<td>SOC 7720</td>
<td>Community Theory and Research</td>
<td>3*</td>
<td>(Sp)</td>
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<td></td>
<td>Explores theoretical and empirical sociological literature on the human community. Topics include: conceptualization and measurement of community well-being, dynamics and impacts of social and economic change on community life, and comparison of community research conducted in different settings.</td>
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<tr>
<td>SOC 7800</td>
<td>Topical Seminar in Sociology</td>
<td>3*</td>
<td>(Sp)</td>
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<td>Seminars in various areas of sociology: (a) theory, (b) methodology, (c) demography,</td>
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<td>(d) environmental/natural resource sociology, (e) sociology of development, (f) social problems.</td>
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<td>SOC 7900</td>
<td>Independent Study</td>
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<td>(Sp)</td>
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<td>Independent study in sociological areas emphasizing (a) theory, (b) methodology, (c)</td>
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<td>demography, (d) environmental/natural resource sociology, (e) sociology of development, (f) social problems.</td>
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<td>SOC 7970</td>
<td>Dissertation Research</td>
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<tr>
<td>SOC 7990</td>
<td>Continuing Graduate Advisement</td>
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1 Parenthetical numbers preceded by d indicate a dual listing.
2 This course is taught alternating years. Check with department for information about when course will be taught.
3 Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.
4 This course is also offered by online correspondence and/or CD through Continuing Education Time Enhanced Learning.

**Soil Science (SOIL)**

See Department of Plants, Soils, and Biometeorology, pages 291-295

**SOIL 2000 BPS Soils, Waters, and the Environment**

Introduction to principles of physical and biological science. Discussion of current environmental topics, focusing on soil and the waters that contact the soil. Topics include water quality, global climate change, deforestation, soil conservation, and agricultural sustainability. (Sp)

**SOIL 3000 Fundamentals of Soil Science**

Fundamentals of soil science, emphasizing physical, chemical, mineralogical, and biological properties of soils, and how these properties relate to plant growth and environmental quality. Prerequisites: CHEM 1110, MATH 1050, or equivalents. (F,Sp)

**SOIL 3100 DSC Soils and Civilization**

Lectures, readings, and discussions to explore effects of soil physical, chemical, and biological properties on civilization throughout history. Influence of soils on settlement patterns, land use/management, and civilization decline. Case studies focus on current soil and land use issues in western North America. (Sp)

**SOIL 4000 Soil and Water Conservation**

Applied soil and water conservation in an agronomic setting. Management of...
soil-water-plant-atmosphere continuum. Soil conservation techniques as they apply to actual situations. (F)

SOIL 4700 Irrigated Soils (3)
Soil salinity, soil-moisture-plant relationships, water supply and quality, irrigation water measurements, soil moisture movement, and irrigation methods. Prerequisite: SOIL 3000 or equivalent, or instructor’s consent. (Sp)

SOIL 5050 Principles of Environmental Soil Chemistry (3)
Introduction to common chemical processes occurring among solid, liquid, and gas phases in soil systems. Emphasis placed on chemistry of arid land soils. Prerequisites: CHEM 1110 or higher, MATH 1050 or higher. (Sp)

SOIL 5130 Soil Genesis, Morphology, and Classification (4)
Morphology, development, and classification of soils. Lectures and weekly field exercises emphasize soil as a natural body of the landscape: its properties, distribution, behavior, and interpretations for diverse land uses. Prerequisite: Understanding of fundamental soil science; SOIL 3000 recommended. (F)

SOIL 5310 Soil Microbiology (3)*
Ecology and diversity of microorganisms in soils. Emphasis on factors controlling microbial activity and the role of microorganisms in organic matter decomposition and nutrient cycling. Prerequisites: BIOL 1210, 1220, CHEM 2300 or 2310, SOIL 3000. Also taught as BIOL 5310. (F)

SOIL 5320 Soil Microbiology Laboratory (2)*
Techniques for measuring microbial activity and diversity in soils. Includes use of molecular and isotope methods. Prerequisite: Concurrent or prior enrollment in BIOL/SoIL 5310. Also taught as BIOL 5320. (F)

SOIL 5550 QI Soils and Plant Nutrient Bioavailability (3)
Description of forms, transformations, and movement of plant nutrients in soils. Discussion of factors affecting nutrient supply, both qualitatively and quantitatively, for nutrient elements essential for plant growth. Prerequisites: SOIL 3000; CHEM 1110 or 1210. (Sp)

SOIL 5560 Analytical Techniques for the Soil Environment (2)
Analysis of chemical and biological soil characteristics. Results interpreted for soil fertility, land use, and environmental remediation. Graduate credit requires a paper reviewing analysis of element or compound class. Prerequisite: SOIL 5050/6050 or 5550/6550 (may be taken concurrently), or instructor’s permission. (Sp)

SOIL 5600 Surface Hydrologic Field Methods (3)**
Hydrologic concepts and terminology taught through collection, analysis, and interpretation of hydrologic data. Emphasizes principles and practice of several hydrologic measurements and water sampling in natural and manmade environments. Prerequisite: SOIL 3000 or instructor’s permission. Also taught as AWER 5600/6600. (Sp)

SOIL 5620 Aquatic Chemistry (3)
Provides students with understanding of principles of aquatic chemistry, emphasizing chemical equilibria, acid-base reactions, complex formation, oxidation-reduction reactions, complex formation, and dissolution chemistry. Prerequisites: CHEM 1210, CEE 3640. Also taught as CEE 5620. (F)

SOIL 5650 Applied Soil Physics (3)
Characterization of the physical properties of soils and other porous media. Measurement, prediction, and control of processes taking place in and through soils (e.g., water flow and solute transport), including atmospheric and groundwater interactions. (F)

SOIL 6400 Spatial and Temporal Estimation Methods for Environmental Sciences (2)**
Introduction to methods for obtaining spatial information and interpolation schemes. Incorporation of uncertainty into dynamic models (temporal predictions). Methods and models for combining spatial and temporal information, with applications to monitoring and forecasting natural processes. (Sp)

SOIL 6500 Soils and Plant Nutrient Bioavailability (3)
Description of forms, transformations, and movement of plant nutrients in soils. Discussion of factors affecting nutrient supply, both qualitatively and quantitatively, for nutrient elements essential for plant growth. Prerequisites: SOIL 3000; CHEM 1110 or 1210. (Sp)

SOIL 6560 Analytical Techniques for the Soil Environment (2)
Analysis of chemical and biological soil characteristics. Results interpreted for soil fertility, land use, and environmental remediation. Graduate credit requires a paper reviewing analysis of element or compound class. Prerequisite: SOIL 6050/5050 or 6550/5550 (may be taken concurrently), or instructor’s permission. (Sp)

SOIL 6600 Surface Hydrologic Field Methods (3)**
Hydrologic concepts and terminology taught through collection, analysis, and inter-
Upper Division

Upper-division Spanish courses (3000 level and above) are available only to students who have completed SPAN 2020 or who can demonstrate equivalent proficiency through testing.

SPAN 3040 Advanced Spanish Grammar (3)
Intensive review of selected problematic areas of Spanish grammar for students with advanced language skills. Prerequisite: SPAN 2020 (or equivalent coursework) or placement in this specific class by examination. (F,Sp)

SPAN 3060 CI Advanced Spanish Conversation and Composition (3)
Development of advanced conversation and writing skills through debate and composition on contemporary controversial topics. (F)

SPAN 3510 Business Spanish (3)
Development of communication skills in Spanish for international Hispanic business purposes. (F)

SPAN 3550 DHA Spanish Culture and Civilization (3)
Historical, social, political, economic, and cultural conditions and institutions of Spain. (F)

SPAN 3570 DHA Latin American Culture and Civilization (3)
Historical, social, political, economic, and cultural conditions and institutions of Latin American countries. (Sp)

SPAN 3600 DHA Survey of Spanish Literature I (3)
Selective readings and discussions of major works and authors in Spanish literature from the eighteenth to twentieth centuries. Prerequisites: ENGL 1010 and 2010; SPAN 3040; and either SPAN 3550 or 3570. (F,Sp)

SPAN 3610 DHA Survey of Spanish Literature II (3)
Selective readings and discussions of major works and authors in Spanish literature from the eighteenth to twentieth centuries. Prerequisites: ENGL 1010 and 2010; SPAN 3040; and either SPAN 3550 or 3570. (F,Sp)

SPAN 3620 DHA Survey of Latin American Literature I (3)
Selective readings and discussions of major works and authors in Latin American literature from Pre-Columbian works through the beginnings of Modernism. Prerequisites: ENGL 1010 and 2010; SPAN 3040; and either SPAN 3550 or 3570. (F,Sp)

SPAN 3630 DHA Survey of Latin American Literature II (3)
Selective readings and discussions of major works and authors in Latin American literature from Modernism to the present. Prerequisites: ENGL 1010 and 2010; SPAN 3040; and either SPAN 3550 or 3570. (F,Sp)

SPAN 3800 Spanish III Study Abroad (1-4)®
Intensive review of selected problematic areas of Spanish grammar for students with advanced language skills. Taught only in studies overseas in Spanish program. (Su)

SPAN 4200 Applied Spanish Linguistics and Phonetics (3)
Analysis of selected phonological, morphological, syntactic, and semantic features of the Spanish language, including Spanish-English contrastive analysis. Prerequisite: SPAN 3040. (Sp)

SPAN 4800 Hispanic Culture and Civilization—Study Abroad (1-4)®
Historical, social, political, economic, and cultural conditions and institutions of Hispanic countries. Taught only in studies overseas in Spanish program. (F,Sp,Su)

SPAN 4880 Individual Readings (1-4)®
Individual readings or projects in Spanish. Prerequisite: Instructor’s permission. (F,Sp)

SPAN 4900 Topics of Spanish Literature (3)®
Repeatable for additional credit when topics vary. Prerequisites: At least two of the following: SPAN 3600, 3610, 3620, and 3630. (F,Sp)
Course Descriptions

**Speech Communication (SPCH)**

See Department of Languages, Philosophy, and Speech Communication, pages 244-248

**SPCH 1050 CI Public Speaking**

3 cr

Speaking in formal public communication situations. Development of skills in speech preparation, audience adaptation, and delivery. (F,Sp)

**SPCH 2280 Listening**

2 cr

Development of comprehension, critical, and relationship listening skills. Experience in developing listening training for kindergarten to adult education. (Sp)

**SPCH 2600 CI Interpersonal Communication**

3 cr

Examination of theories, methods, and competencies relevant to studying, establishing, and maintaining interpersonal relationships in family, intercultural, professional, and other contexts. Classroom experiences with topics such as perception, language, nonverbal behavior, conflict resolution, and listening. (F,Sp)

**SPCH 3000 Speech Communication Teaching Practicum**

1 cr

Intensive speech teaching workshop. Supervised on-campus teaching experience. Must be completed prior to student teaching experience. Repeatable to a maximum of 2 credits. (Sp)

**SPCH 3050 DSS Technical and Professional Communication**

3 cr

Skill development in oral technical reporting, interviewing, and interpersonal communication to meet the unique communication requirements of business, industry, and the professions. (Sp)

**SPCH 3250 CI Organizational Communication**

3 cr

Study of internal communication requirements of organizations. Analysis of communication problems associated with conflict, diversity, interpersonal influence, communication technology, and information flow. Development of effective communication practices. (F)

**SPCH 3300 Clinical Experience I**

1 cr

First clinical practicum in middle and secondary schools. Arranged by special methods instructor. Required at Level I. Must be taken concurrently with SPCH 5370. Prerequisites are set by the Secondary Education Department. (F)

**SPCH 3330 DSS Intercultural Communication**

3 cr

Study of how communication shapes culture and how culture, in turn, affects communication. Development of active intercultural communication in professional and personal contexts. (F)

**SPCH 3400 CI Persuasion**

3 cr

Survey of theory and research investigating the process of social influence. Topics include: compliance-gaining strategies, enactment and detection of deception, verbal and nonverbal influence, attitude change, conformity, communicator characteristics, credibility, emotional appeals, and ethics. (F)

**SPCH 3600 Communication and Conflict**

3 cr

Study of contemporary theories on conflict and communication. Analyses of the roles of culture, gender, and personal and/or organizational ethics in conflict and disputes. Discussion and application of negotiation, mediation, and facilitation skills. (F)

**SPCH 4280 Argumentation and Debate**

3 cr

Techniques of analysis, investigation, evidence, reasoning, brief making, refutation, and construction and delivery of the argumentative speech and academic debate. (F)

**SPCH 4300 Clinical Experience II**

1 cr

Second clinical practicum in middle and secondary schools. Arranged by special methods instructor. Required at Level II. Must be taken concurrently with SPCH 5370. Prerequisites are set by the Secondary Education Department. (F)

**SPCH 4800 CI Nonverbal Communication**

3 cr

Examination of theories, methods, and competencies relevant to studying, enacting, and perceiving gestures, facial expressions, body movements, touches, and other nonverbal cues. Investigation of environmental, cultural, and social influences on nonverbal communication in a variety of contexts. (F)

**SPCH 5000 Studies in Speech Communication**

1-5 cr

Study of special topics in interpersonal, small group, organizational, or intercultural communication theory and research. Prerequisite: Permission of instructor. (F,Sp)

**SPCH 5090 Small Group Theory**

3 cr

Study of theories of group processes such as decision-making, leadership, power, conflict, deviance, and the development of group structures, functions, norms, and roles. (Sp)

**SPCH 5100 CI Theories of Speech Communication**

3 cr

Social, scientific, and humanistic inquiry into the process of human communication. Multi-theoretical approach, including perspectives and research on interpersonal, persuasive, organizational, intrapersonal, group, and intercultural communication. (Sp)

**SPCH 5250 Environmental Rhetoric**

3 cr

Study of persuasive tactics and strategies as used by social advocates. Focuses on environmental issues and organizations. Analysis of environmental messages with an emphasis on the development of writing and critical thinking skills. (Sp)

**SPCH 5280 Communication Education Theory**

3 cr

Study of contemporary theories and research in communication education. Emphasis on communication competency development, communication apprehension, critical thinking, communication assessment, development of communication ethics, freedom of speech, instructional communication, and history of communication education. (Sp)

**SPCH 5370 Methods in Teaching Speech Communication**

3 cr

Development of materials and strategies for teaching secondary school speech communication. Prerequisite: Admission to teacher education. (F)

*® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

**Special Education (SPED)**

See Department of Special Education and Rehabilitation, pages 319-322

**SPED 0100 Strategies for Reading**

1-3 cr

Practical course with major emphasis on improvement of reading, writing, and comprehension skills that are essential for academic success. Remedial class not carrying USU or transfer credit. Remedial fee required. (F,Sp)

**SPED 1000 Principles of Effective Peer Teaching**

2 cr

High school peer tutors are given university credit for tutoring low readers for one hour each day. Tutors are taught a systematic tutoring and mentoring process. In addition, specific criteria are included to evaluate tutors’ instructional performance. (F,Sp)

**SPED 1010 BSS Disability in the American Experience**

3 cr

Discussion of definitions and types of disabilities, ethical issues, society’s prejudice and discrimination against people with disabilities, and the individual’s adjustment to the disability experience. Disability as a natural part of life. Also taught as REH 1010. (3 cr)
SPED 2010 Effective Behavior Management Practices for Paraeducators (1-3) ®
Teaches paraeducators to apply effective behavior management practices to individu-
als with disabilities in a variety of settings. Introduction to proactive behavior man-
agement strategies, basic concepts of behavior management, and the application of
intervention plans.

SPED 2150 Introductory Experience with Students with Disabilities (1-4) ®
Introductory seminar and practicum from which students learn basic instructional
techniques from videodisc simulations, then apply them in public schools. (F,Sp,Su)

SPED 2790 Special Topics (1-4) ®

SPED 3030 Educational and Multicultural Foundations (3)
Explores historical and cultural aspects of schooling and the inclusion of students
with disabilities and bilingual students in general education classrooms. Examines
how schooling practices change from elementary to high school and commonalities
that bind the teaching profession. (Sp)

SPED 4000 Education of Exceptional Individuals (2)
Characteristics of all types of exceptional children with emphasis on the educational
and psychological implications of these conditions to the development of the child.
(F,Sp,Su)

SPED 4790 Special Topics (1-4) ®

SPED 4910 Undergraduate Research and Creative Opportunities (1-4) ®
Individually directed study at the undergraduate level. Permission of instructor re-
quired. (F,Sp,Su)

SPED 4970H Honors Thesis (1-6) ®
Provides an opportunity for honors students in the Department of Special Education
and Rehabilitation to interact with other honors students in the College of Education
and Human Services and explore an interdisciplinary area of interest. A written paper
will be required. (F,Sp,Su)

SPED 5010 QI Applied Behavioral Analysis 1: Principles, Assessment, and Analysis (3)
Covers topics related to collecting data, using data to make decisions, analyzing data,
graphing data, and applying principles of behavior management and instruction to
children and youth. Prerequisite: Admission to special education major or permission
of instructor. (F)

SPED 5040 Foundations of Effective Assessment and Instructional Practices (3)
Principles of standardized and curriculum-based assessment. Foundations for design-
ing effective instructional programs to help students achieve mastery and profi-
ciency. Prerequisite: Admission to special education major and SPED 5010 or
permission of instructor. (F)

SPED 5050 Applied Behavioral Analysis 2: Applications (3)
Expands knowledge of basic applied behavior analysis principles. Develops skills for
remediating behavior problems using functional behavioral assessment. Prerequisite:
Admission to special education major or permission of instructor. (Sp)

SPED 5060 Consulting with Parents and Teachers (3)
Provides strategies for communicating with parents and teachers, as members of a
multidisciplinary team, to assist parents and other teachers in collaborative problem
solving. Prerequisite: Admission to special education major or permission of instruc-
tor. (Sp)

SPED 5070 Policies and Procedures in Special Education (1-3) ®
Provides an understanding of federal and state laws for persons with disabilities and
procedures for organizing a special education classroom and auxiliary staff. Preremi-
site: Admission to special education major or permission of instructor. (F)

SPED 5200 CI Student Teaching in Special Education (3-15)
Prerequisite: Admission to special education major or permission of instructor.
(F,Sp,Su)

SPED 5210 CI Student Teaching in Special Education: Dual Majors (3-15)
Undergraduate student teaching for dual majors. (F,Sp,Su)

SPED 5220 Special Education Student Teaching Seminar (3)
Weekly seminar taken concurrently with student teaching (SPED 5200 or 5210). Fo-
cusses on problems arising during student teaching and the development of a teaching
portfolio. Prerequisites: Admission to teacher education and completion of the SPED
sequence. (F,Sp,Su)

SPED 5300 Orientation to Teaching Students with Mild/Moderate Disabilities (2)
Provides preservice teachers with overview of information and resources, examples,
and practice in applying effective instructional and behavior management strategies
in their classrooms. Emphasizes things to know and do on their first day(s) and first
week of school. (Su)

SPED 5310 Teaching Reading and Language Arts to Students with Mild/Moderate Disabilities (2-4)
Curriculum, instructional methods, assessment, and data-based decision making re-
lated to teaching reading and language arts to students with mild/moderate disabili-
ties. (F)

SPED 5320 Teaching Content Areas and Transition to Students with Mild/Moderate Disabilities (3)
Students learn to teach content area material, learning strategies, and transi-
tion-related skills to students with mild/moderate disabilities. Also includes assess-
ment and decision making strategies related to these curricular areas. (Sp)

SPED 5330 Eligibility Assessment for Students with Mild/Moderate Disabilities (1)
Choosing and administering eligibility assessment tests for students who may have
mild/moderate disabilities. Interpretation of test results and applying results to deci-
sions regarding students’ eligibility for special education services.

SPED 5340 Teaching Math to Students with Mild/Moderate Disabilities (3)
Explains procedures for teaching mathematics to students with mild/moderate disabili-
ties, so that each progresses as fast as his or her capabilities will allow. Prerequi-
site: Admission to special education major or permission of instructor. (Sp)

SPED 5350 Teaching Students with Mild/Moderate Disabilities I (3)
Provides students with information and skills in the area of classroom and individual
behavior management procedures. Emphasizes research-validated strategies that stu-
dents will apply to everyday instructional situations. Prerequisite: Admission to the
Alternative Teacher Preparation Licensure Program. (F)

SPED 5360 Teaching Students with Mild/Moderate Disabilities II (3)
Provides students with instructional and management skills. Through case studies
and classroom simulations, students learn research-validated instructional and man-
agement skills. Prerequisite: Admission to the Alternative Preparation Licensure Pro-
gram. (Sp)

SPED 5400 Orientation to Teaching Students with Severe Disabilities (2)
Provides preservice teachers with overview of information, resources, examples, and
practices in applying effective instructional and behavior management strategies to
students with severe disabilities. (F)

SPED 5410 Practicum: Direct Instruction Reading and Language Arts for Students with
Mild/Moderate Disabilities (1-3)
Students learn to use Direct Instruction techniques, positive management, curricu-

dum-based assessment, and data-based decision-making to teach reading and lan-
guage arts to children with mild/moderate disabilities. Students are placed in a
classroom, where they teach a group of children daily. (F)

SPED 5420 Practicum: Teaching Mathematics to Students with Mild/Moderate Disabilities (4)
Use of effective instructional techniques, positive management, curriculum-based as-

essment, and data-based decision making to teach mathematics content to children
with mild/moderate disabilities. Students placed in a classroom, where they teach one
or more group(s) of children daily. (Sp)

SPED 5430  Field-Based Applications for Students
with Mild/Moderate Disabilities  (3)
Designed to help students acquire and consistently demonstrate effective teaching
practices to aid students with mild/moderate disabilities. Teaches students to analyze
and solve instructional and management problems. Prerequisite: Admission to the
Alternative Teacher Preparation Licensure Program. (F)

SPED 5510  Curriculum for Students with Severe Disabilities  (4)
Provides information about commercially available curricular materials, as well as
how to plan for and design functional academic curricula, for persons with severe
disabilities. Prerequisite: Admission to Special Education major or permission of in-
tstructor. (F)

SPED 5520  Curriculum for Secondary-Level Students
with Severe Disabilities  (3)
Provides information on developing and implementing secondary-level classroom,
community, domestic, leisure, and transition instructional programs. Prerequisite:
Admission to Special Education major or permission of instructor. (Sp)

SPED 5530  Assistive and Adaptive Technology
for Persons with Disabilities  (2)
Trains students to assess needs for augmentative/alternative communication devices,
and to select, program for, maintain, repair, and build adaptive devices. Prerequisite:
Admission to Special Education major or permission of instructor. (Sp)

SPED 5540  Issues in Educating Persons with Severe Disabilities  (1)
A seminar to discuss current topics and research trends affecting persons with severe
disabilities.

SPED 5550  Field-Based Applications for Students
with Severe Disabilities  (3)
Designed to help students acquire and consistently demonstrate effective teaching
practices to aid students with severe disabilities. Teaches students to analyze and
solve instructional and management problems. Prerequisite: Admission to Severe Al-
ternative Teacher Preparation Program. (Sp)

SPED 5560  Practicum in Improving School
System Programs  (1-4) ®
Practicum or seminar providing information/experience in public school instruction.
Permission of instructor required.

SPED 5570  Advanced Field-Based Applications for
Students with Severe Disabilities  (3)
Designed to help students become competent in various effective teaching practices
with students who have severe disabilities. Prerequisites: Admission to Severe Alter-
native Teacher Preparation Program and completion of SPED 5550. (F)

SPED 5600  Practicum: Introduction to Instruction
of Students with Severe Disabilities  (3)
A field-based class providing experience in observing and teaching functional aca-
demic curricula to students with severe disabilities. Prerequisite: Permission of in-
tuctor. (F)

SPED 5610  Practicum: Advanced Systematic Instruction
of Students with Severe Disabilities  (4)
Provides opportunity to assess students’ needs and to design programs for commu-
nity, domestic, leisure, and transitional skills. Prerequisite: Permission of instructor.
(Sp)

SPED 5710  Young Children with Disabilities:
Characteristics and Services  (3)
Provides information about young children with disabilities, including historical de-
velopment of services, skill areas, family involvement, teaming, and the array of ser-
vice environments. Prerequisite: Admission to Special Education major or permission of instructor. (Sp)

SPED 5720  Behavior Analysis Practicum  (3)
Students receive supervised training in applying behavior analysis principles in com-
community, school, and institutional settings. Either SPED 5050 or PSY/SPED 5720 ful-
fill part of practicum requirement for Behavior Analysis track. Prerequisite: Permission
of instructor. Also taught as PSY 5720.

SPED 5730  Intervention Strategies for Young Children
with Disabilities  (3)
Provides information on curricula, instructional strategies, service environments, and
staffing roles for teachers of young children (0-5) with disabilities. (F)

SPED 5790  Special Topics  (1-4) ®
(Sp)

SPED 5810  Seminar and Field Experiences
with Infants and Families  (4)
Participation with an infant and family in both the home and early intervention set-
ting. Seminar topics include infant medical issues, health, safety, syndromes, and low
incidence characteristics. (Sp)

SPED 5820  Preschool Practicum with Young Children
with Disabilities in Community Environments  (1-4) ®
Students participate in variety of environments serving preschoolers with disabilities,
assist in developing a family service plan, and teach other staff to implement tech-
niques. (F)

SPED 5830  Seminar Working with Peers
on Multidisciplinary Teams  (1)
Seminar for discussion of topics pertaining to how teams work with children, with and
without disabilities, in a practicum. Students are assigned to a team for planning and
problem solving throughout the semester. (F,Sp)

SPED 5840  Seminar: Preschool Practicum with
Young Children with Disabilities  (2)
Students participate in variety of environments, problem solving and teaming about
their experiences. Must be taken concurrently with SPED 5820. (F)

SPED 5900  Independent Study  (1-3) ®
Permission of instructor required. (F,Sp,Su)

SPED 5910  Independent Research  (1-3) ®
Permission of instructor required. (F,Sp,Su)

SPED 6010  Interventions for Parents and Families  (2)
Explores special challenges faced by parents and families of at-risk students and stu-
dents with disabilities. Emphasizes intervention strategies, supportive resources, and
parent programs.

SPED 6020  Design and Evaluation of Instruction  (3)
Prepresents curriculum in which diagnosis and instruction are welded as a unit into the
regular teaching procedures. (Sp)

SPED 6030  Clinical Practicum: Student Teaching  (2-12)
Supervised practicum in a clinical teaching setting. Prerequisite: Permission of in-
tuctor.

SPED 6040  Functional and Augmentative Communication
Approaches and Technology  (3)
Theory and methods of symbolic and nonsymbolic communication acquisition, espe-
cially for students with dual sensory impairments. Application of instruction and sys-
tems within natural routines. (F)

SPED 6050  Issues with the Delivery of Services
for Students with Dual Sensory Impairments  (2)
In-depth presentation of best practices for educational services for students with dual
sensory impairments. (F)

SPED 6060  Legal Issues in Special Education  (3)
Provides knowledge of a wide range of legal issues concerning the provision of spe-
cial education services to students with disabilities. (Sp)

SPED 6070  Infusing Mobility and Communication for
Students with Dual Sensory Impairments  (2)
Reviews methods for providing orientation and mobility training to students with
dual sensory impairments. Provides methods for infusing these and communication objectives into normal age-based routine activities. (Sp)

**SPED 6080** Collaboration and Management of Services for Students with Dual Sensory Impairments (2)
Reviews methods of planning and coordination of services for students with dual sensory impairments (e.g., transition, lifestyle planning, transition team coordination). Service management addressing issues of scheduling, monitoring, and training of staff and peers. (Sp)

**SPED 6090** Curriculum and Environmental Variations and Management (2)
Prepresents instructional and curricular strategies to promote utilization of residual vision or hearing skills. Overviews tactile cuing and movement-based approaches, with emphasis on integration within natural context and functional activities. Review of model delivery methods. (Sp)

**SPED 6110** Social and Psychological Implications of Visual Impairment (2)
Explores attitudes and beliefs related to visual impairment and blindness. Emphasizes impact of vision loss on the psychosocial functioning of individuals and their families. Studies self-concept, self-esteem, and strategies to enhance these areas in visually impaired children. (Su)

**SPED 6120** Ocular Disorders and Examinations: Techniques/Utilization of Low Vision (4)
Students demonstrate the ability to identify the important parts of the visual system, to understand and interpret eye reports, and to translate the information into an educational plan. Participants also conduct and supervise vision screening clinics. In addition, participants demonstrate a basic understanding of approaches and practices of low-vision services. Includes low-vision aids, optics, and environmental modifications. (F)

**SPED 6130** Literary Braille Codes and Braille Technologies (4)
Focuses on reading and writing literary braille. Includes literary braille contractions, short-form words, punctuation, and rules of usage for basic Grade 2 braille, using the Perkins Braille Writer. Emphasizes accuracy, beginning formatting, and ability to apply the rules. Using a slate and stylus, as well as computerized braille writers, students learn to write literary braille. (F)

**SPED 6140** Nemeth Braille Codes and Braille Technologies (3)
Transcription of print mathematical symbols into appropriate formats, using Nemeth Braille Code of Mathematics. Computation skills using adapted abacus for basic mathematical operation. Explores braille music, foreign language braille, computer braille, and Grade 3 braille. Emphasizes literary braille in more extended writing projects. (Sp)

**SPED 6150** Teaching Learners with Sensory Impairments and Multiple Disabilities (3)
Provides basic understanding of the needs of learners (ages 0-22) having sensory impairments with multiple disabilities. Includes role and characteristics of the transdisciplinary team, learning environments, resources, assessment procedures, and instructional strategies. Identifies inclusion procedures, transitional issues, and methods of encouraging parental involvement. (Su)

**SPED 6160** Introduction to Orientation and Mobility (2)
Introduces students to orientation and mobility, as well as basic assessment techniques. Students learn to use the results of these assessments, along with specific teaching techniques in pre-cane orientation and mobility skills, in teaching children with visual impairments. Students also become familiar with basic indoor (non-cane) mobility techniques, learn to identify and teach orientation cues in the environments, and develop lesson plans to teach concepts necessary for future cane travel. (Su)

**SPED 6170** Instructional Management for Students with Visual Impairments (0-21) (4)
Emphasizes best practices for instructional management of children with visual impairments in early intervention settings, preschool programs, and early elementary grades. Also addresses practices for older students in upper elementary through high school grades. Explores strategies for development of basic concepts, socialization skills, emergent literacy, effective braille reading and writing, daily living skills, career understanding, and recreational and leisure skills. Focuses on understanding agency and community resources, family collaboration, modification and adaptation of materials and environments, and adapted technology. (Sp)

**SPED 6180** Field Studies in Visual Impairments (1-2)
Participants work with visually impaired students in a variety of educational sites. Emphasizes use of adapted technology, implementation of teaching activities, student assessment, and modification of educational materials. (F,Sp)

**SPED 6220** Characteristics of Children with Emotional and Behavioral Disorders (3)
Explores characteristics of children and youth with emotional and behavioral disorders. Covers definitions, prevalence and incidence, classification, causal factors, and facets of disordered behavior. (3 cr)

**SPED 6230** Education of Students with Emotional and Behavioral Disorders (2)
Methods of teaching students with emotional and behavioral disorders, including educational strategies and behavioral treatments.

**SPED 6240** Intervention Strategies for Young Children with Disabilities (d5730) (3)
Provides information on curricula, instructional strategies, service environments, and staffing roles for teachers of young children (0-5) with disabilities. (F)

**SPED 6280** Instructional Leadership for At-Risk Students (3)
Examines theories and practices of instructional leadership for at-risk students. Instructs students in services and programs available for at-risk students. (Sp)

**SPED 6290** Teaching Social Skills, Self-Management, and Values (3)
Discussion of current research and practices related to teaching social skills, self-management, and values. Explores teaching procedures and curriculum programs. (Sp)

**SPED 6300** Collaboration Skills for Classroom Teachers (3)
Emphasizes knowledge, attitudes, and skills which special educators must possess to effectively collaborate with parents and professionals. (F)

**SPED 6320** Seminars in Learning Characteristics of Students with Dual Sensory Impairments (2)
Investigates characteristics of dual sensory impairment, learning styles, and environmental demands. Awareness of eye and ear anatomy. Interpretation of formal assessments. Development of instructional strategies. (Su)

**SPED 6410** Field Studies I: Analysis of Service for Students with Dual Sensory Impairments (2)
First of three field experiences for students in the DSU program. Emphasizes team-based review and analysis of services. (F)

**SPED 6420** Field Studies II: Analysis of Service for Students with Dual Sensory Impairments (2)
Practicum in integrated programs for students with dual sensory impairments within the context of the model classroom. Emphasizes transdisciplinary methods for assessment, instructional design, and planning skills.

**SPED 6430** Field Studies III: Analysis of Service for Students with Dual Sensory Impairments (2)
Advanced practicum in integrated programs for students with dual sensory impairments. Emphasizes an overall management of instructional environment and services.

**SPED 6500** Interdisciplinary Workshop (1-3) ©
Series of self-instructional modules and videos and a variety of elective training. Module topics include developmental disabilities, legal aspects and issues, assessment, intervention, assistive technology, transition, and prevention/intervention for aggression and violence. (F,Sp,Su)

**SPED 6550** Practicum in the Evaluation of Instruction (1-4) ©
Field-based research course contributing toward graduate degrees and supervisory licensure related to the assessment of an ongoing or newly proposed program of instruction. (F,Sp,Su)
SPED 6560 Improvement of Instruction (1-4) ®
Focuses on effective teaching methodologies, teaching performance, and curriculum decision making. (F,Sp,Su)

SPED 6700 Single-Subject Research Methods and Designs (3)
(d7700)
Examines single-subject research methods for applied research, including measurement, design, and analysis issues. Also taught as EDUC 6700/7700. (F,Su)

SPED 6720 Advanced Behavior Analysis in Education (3)
(d7720)
Discussion of advanced topics and issues in behavior analysis, including rule-governed behavior, stimulus control, setting events, functional analysis, and verbal behavior. Topics integrated into educational practice. Prerequisite: SPED 5050 or equivalent. (F)

SPED 6790 Special Topics (1-4 cr) ®

SPED 6810 Seminar in Special Education (1-3) ®
(F,Sp,Su)

SPED 6900 Independent Study (1-2) ®
Prerequisite: Permission of instructor. (F,Sp,Su)

SPED 6910 Independent Research (1-2) ®
Prerequisite: Permission of instructor. (F,Sp,Su)

SPED 6930 Internship in Special Education (2-10)
Professional and supervised intern experience for master’s program. Prerequisite: Permission of instructor. (F,Sp,Su)

SPED 6960 Creative Project (1-6) ®
Culminating experience of MEd program. Prerequisite: Proposal approval by supervisory committee. (F,Sp,Su)

SPED 6970 Thesis (1-9) ®
Culminating experience of MS program. Prerequisite: Proposal approval by supervisory committee. (F,Sp,Su)

SPED 6990 Continuing Graduate Advisement (1-8) ®
(F,Sp,Su)

SPED 7050 Internship in Program Evaluation (1-5) ®
Guided experience in evaluation of educational programs in schools, treatment centers, homes, and communities. Prerequisite: Permission of instructor. (F,Sp,Su)

SPED 7060 Research Internship (1-5) ®
Guided experience in conducting educational research. Prerequisite: Permission of instructor. (F,Sp,Su)

SPED 7070 Grant Writing (1-3) ®
Guided experience in preparation of grant proposals. Permission of instructor required. (F,Sp,Su)

SPED 7330 Supervision Internship (1-5) ®
Guided experience in supervising undergraduate and master’s students during practica, student teaching, and other field experiences. (F,Sp,Su)

SPED 7340 College Teaching Internship (1-3) ®
Guided experience in teaching university courses. (F,Sp,Su)

SPED 7500 Interdisciplinary Workshop (1-3) ®
Workshop on current interdisciplinary issues and topics in special education and related fields. (F,Sp,Su)

SPED 7700 Single-Subject Research Methods and Designs (3)
(d7700)
Examines single-subject research methods for applied research, including measurement, design, and analysis issues. Also taught as EDUC 7700/6700. (F,Su)

SPED 7710 Advanced Single-Subject Research Methods and Design (3)
Explores advanced methods and procedures in single-subject research methods. Builds on knowledge and skills acquired in SPED 7700 regarding scientific questions, measures, research designs, data analysis, and inference. Students analyze research and design, conduct, and report a scientific study. Prerequisite: SPED 7700. (Sp)

SPED 7720 Advanced Behavior Analysis in Education (3)
(d6720)
Discussion of advanced topics and issues in behavior analysis, including rule-governed behavior, stimulus control, setting events, functional analysis, and verbal behavior. Topics integrated into educational practice. Prerequisite: SPED 5050 or equivalent. (F)

SPED 7800 Seminar: Issues in Special Education and Rehabilitation (1-3) ®
Critical analysis of variety of special education and rehabilitation issues and trends. Empirical and theoretical information presented in a seminar format. (F,Sp,Su)

SPED 7810 Research Seminar in Special Education and Rehabilitation (1-3) ®
Identification of research problems and discussion of research strategies and methods. Applications of research, data analysis, and statistical concepts. (F,Sp,Su)

SPED 7820 Seminar: Special Topics (1-3) ®
In-depth study of special topics in special education and rehabilitation. Seminars examine historical aspects, relevant research, and theoretical positions on selected topics. (F,Sp,Su)

SPED 7830 Special Education Personnel Preparation Methods (2)
Focuses on critical issues in preparing special education teachers. Includes teaching, supervision, and overall program development. Students demonstrate supervision and teaching competencies. (Sp)

SPED 7900 Independent Study (1-3) ®
Prerequisite: Permission of instructor. (F,Sp,Su)

SPED 7910 Independent Research (1-3) ®
Prerequisite: Permission of instructor. (F,Sp,Su)

SPED 7920 Doctoral Program Professional Seminar (2)
Orients new students to doctoral program, utilizing five goals: (1) familiarize students with requirements of the program and of the Graduate School, (2) acquaint students with the faculty and the resources available, (3) initiate a career planning process, (4) teach students some fundamental concepts underlying scientific research, and (5) teach students to conduct literature reviews. (F)

SPED 7930 Internship in Special Education (1-12) ®
Professional, supervised internship experience for doctoral students. Prerequisite: Permission of instructor. (F,Sp,Su)

SPED 7940 Journal Reading Group (1-2) ®
Seminar discussion of recent empirical and theoretical journal articles in special education and related fields. (F,Sp,Su)

SPED 7970 Dissertation (1-15) ®
Variable credit for dissertation project in connection with doctoral program in special education. (F,Sp,Su)

SPED 7990 Continuing Graduate Advisement (1-9) ®
(F,Sp,Su)

Parenthetical numbers preceded by ® indicate a dual listing.
® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.
Statistics (STAT)

See Department of Mathematics and Statistics, pages 254-259

STAT 1040 QI Introduction to Statistics (3) ©
Descriptive and inferential statistical methods. Emphasis on conceptual understanding and statistical thinking. Examples presented from many different areas. Prerequisite: Math ACT score of 19 or greater, MATH 1010, or 70 percent or greater on MATH 1050 placement test. (F,Sp,Su)

STAT 2000 QI Statistical Methods (3) ©
Introduction to statistical concepts, graphical techniques, probability, distributions, estimation, one and two sample testing, chi-square tests, and simple linear regression. Prerequisite: MATH 1050. (F,Sp,Su)

STAT 2250 Internship and Cooperative Studies (1-6)
Lower-division internship/cooperative work experience in statistics. (F,Sp,Su)

STAT 2300 QL Business Statistics (4) ©
Descriptive and inferential statistics, probability, sampling, estimation, tests of hypotheses, linear regression and correlation, chi-square tests, analysis of variance, and multiple regression. Prerequisite: MATH 1100 or 1210. (F,Sp)

STAT 4250 Advanced Internship/Co-op (1-6) ©
Advanced educational work experience in statistics. Prerequisite: Approval of instructor. (F,Sp,Su)

STAT 4500 Methods of Teaching Statistics in Secondary and Middle School (3)
Teaching methods course required for all prospective mathematics and statistics composite teaching majors. (F,Sp)

STAT 4950 Directed Reading and Conference (1-3) ©
Prerequisite: Prior arrangement with specific instructor. (F,Sp,Su)

STAT 5000 QI Statistics for Scientists (3)
Introduction to statistical concepts, graphical techniques, discrete and continuous distributions, parameter estimation, hypothesis testing, and chi-square tests. Prerequisites: MATH 1100 or 1210. (F,Sp)

STAT 5100 CI Linear Regression and Time Series (3)
Methods for prediction and hypothesis testing in multiple linear regression models, including analysis of variance and covariance, logistic regression, introduction to time series, and signal processing. Prerequisite: STAT 2000 or 3000. (F)

STAT 5110 Theory of Linear Models (3)
Theory and methods of correlation, regression, and least square analysis of experimental data. Prerequisites: MATH 2210, 2250, or MATH 2210, 2270; and STAT 3000. (F)

STAT 5120 Categorical Data Analysis (3)
Analysis of categorical data, contingency tables, goodness of fit, random sampling, log-linear and logistic regression models, and sampling for proportions, as well as stratified and cluster sampling. Prerequisite: STAT 5100. (F)

STAT 5200 Design of Experiments (3)
Design, analysis, and interpretation of experiments, split plots, incomplete blocks, confounding, fractional factorials, nested designs, two- and three-way analysis of variance, covariance, and multiple regression. Prerequisite: STAT 2000 or 3000. (Sp)

STAT 5300 QI Statistical Process Control (3)
Techniques and applications of statistics in modern management of industrial processes. Control charts, acceptance sampling, design of industrial experiments, and analysis of process failures. Prerequisite: STAT 2000 or 3000. (Sp)

STAT 5600 CI Applied Multivariate Statistics (3)
Introduction to multivariate statistical procedures for data analysis. Topics include MANOVA, principal component analysis, factor analysis, clustering, and classification. Prerequisite: STAT 5100. (Sp)

STAT 5810 Topics in Statistics (1-3) ©
Prerequisite: Consent of instructor. (F) (Sp)

STAT 5850 CI Problem Solving in Statistics (3)
Capstone course for Statistics majors, applying course material covered in the undergraduate major. Prerequisite: Permission of instructor. (Sp)

STAT 5940 Directed Reading and Conference (1-3) ©
Prior arrangement with specific instructor. (F,Sp,Su)

STAT 5950H Senior Honors Project (1-4)
A senior project, required for completion of the departmental honors program and developed under the direction of a departmental faculty member. Prerequisite: Permission of instructor. (F,Sp,Su)

STAT 5970 Seminar (1-3) ©
Review of current literature and developments in the field of statistics. (F,Sp)

STAT 6120 Generalized Linear Models (3)*
Theory of generalized linear models and application to categorical data, and to regression-like and ANOVA-like data that do not meet the usual assumptions. Topics include link functions, error structures, deviance, quasi-likelihood estimation, and diagnostics. Prerequisites: MATH 5720, STAT 5110. (Sp)

STAT 6180 Time Series (3)*
The domain and frequency domain time series analysis, including Box-Jenkins methods, spectral analysis and filtering, introduction to state space methodology. Prerequisites: STAT 5100, MATH 5720. (Sp)

STAT 6200 Analysis of Unbalanced Data and Complex Experimental Designs (3)*
Contrasts; Type I, II, III, IV contrasts; sums of squares; and resulting tests. Random and mixed effects models for complex designs, such as split-plot, repeated measures, and hierarchical (nested) designs; expected mean square algorithms; and approximate F-tests. Prerequisite: STAT 5200. (F)

STAT 6250 Graduate Internship/Co-op (1-8)* ©
Educational work experience at the graduate level. Prerequisite: Permission of instructor. (F,Sp)

STAT 6510 Resampling Methods (3)*
Covers theory and applications of computer intensive resampling methods: Bootstrap, Cross-validation, and Subsampling. Applications include hypothesis testing, confidence intervals, regression, time series, multivariate analysis, and nonparametric statistics. Prerequisite: MATH 5710. (F)

STAT 6520 Nonparametric Density Estimation and Smoothing (3)*
Nonparametric density estimation and smoothing are generalizations of classical techniques that do not require such stringent distributional and functional form assumptions. This course covers theory, application, and implementation of histograms, frequency polygons, kernel-based methods, and spline-based methods. Prerequisites: MATH 5710 and recommended concurrent enrollment in MATH 5720. (Sp)

STAT 6550 Statistical Computing (3)*
Survey of algorithms and tools for modern statistical computing. Topics include simulation design and implementation, algorithms for linear regression and subset selection, smoothing algorithms, fast fourier transform, EM algorithm, numerical methods
for maximum likelihood estimation, and neural networks. Prerequisites: STAT 5110, MATH 5720, and knowledge of a programming language. (Sp)

STAT 6560  Graphical Methods (3)*
Statistical graphics and scientific visualization of one, two, and higher dimensional data. Well-chosen and designed graphics are vital in exploratory data analysis, model diagnostics, and data presentation. Includes specific methods and general principles, such as effective use of color and motion. Prerequisites: STAT 3000 and programming experience. (F)

STAT 6600  Multivariate Analysis (3)*
Statistical methods for analyzing multivariate data and the theory behind them. Topics include multivariate normal distribution and multivariate distributions derived from it, multivariate t-tests, regression, MANOVA, principal components and factor analysis, multidimensional scaling, classification, and cluster analysis. Prerequisites: MATH 5720 and concurrent enrollment in STAT 5110. (F)

STAT 6710  Mathematical Statistics I (3)
Modes of convergence of random variables, laws of large numbers, characteristic functions, and the central limit theorem. Prerequisite: MATH 5720. (F)

STAT 6720  Mathematical Statistics II (3)
Consistency, loss functions, risk, and notions of optimality of estimations. Hypothesis testing and confidence regions. Large sample theory, notions of robustness. Prerequisite: STAT 6710. (Sp)

STAT 6810  Topics in Statistics (Topic) (3)* (Sp)
Prerequisite: Permission of instructor. (F) (Sp)

STAT 6810  Topics in Statistics (Topic) (3)* (Sp)
Prerequisite: Permission of instructor. (F) (Sp)

STAT 6890  Practical Statistical Consulting (1-3)*
Introduction to statistical consulting for graduate students, for faculty in other research departments, and for business, industry, and government. Prerequisite: Permission of instructor. (F,Sp,Su)

STAT 6910  Seminar in Statistics (1-3)* (Sp)
Review of current literature and developments in statistics. Prerequisite: Permission of instructor. (F,Sp)

STAT 6950  Directed Reading and Conference (1-4)* (Sp)
Prerequisite: Prior arrangement with specific instructor. (F,Sp,Su)

STAT 6970  Thesis and Research (1-15) (Sp)
Outlining and conducting research in statistics. Thesis preparation. (F,Sp,Su)

STAT 6990  Continuing Graduate Advisement (1-9) (F)
Continued advising, supervision, and assistance for students in the latter stages of their graduate professional development. Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation. © This course is also offered by online correspondence and/or CD through Continuing Education Time Enhanced Learning. *This course will be taught as needed. For information about availability, contact the Department of Mathematics and Statistics.

Social Work (SW)
See Department of Sociology, Social Work and Anthropology, pages 310-318

SW 1050  Introduction to Social Welfare (3)
Foundation course to facilitate development of an approach to thinking about social welfare. Explores broad common base of social work professional values, knowledge, skills, social policies, and programs. (F)

SW 2400  Social Work with Diverse Populations (3)
Examines characteristics of various populations, including patterns, dynamics, and consequences of discrimination, economic deprivation, and oppression. Emphasis placed on empowerment of groups and individuals, as well as the accumulation of multicultural competence. Prerequisite: SW 1050. (Sp)

SW 2500  Human Behavior in the Social Environment (3)
Interrelatedness of social, cultural, and environmental factors that combine with biological and psychological components to mold human behavior. Relevance of these factors to generalistic social work practice. Prerequisite: SW 1050. (Sp)

SW 3050  Practice I (3)
Introduction of generalist social work framework as integrative tool, with special attention shown to strengths and empowerment perspective. Individuals as targets for change. Prerequisite: Admission to social work bachelor’s program. SW 1050, 2400, 2500. (F)

SW 3350  Child Welfare (3)
Developments in programs for meeting such needs of children as substitute parental care, adoptions, delinquency problems, mental retardation, and unmarried motherhood. Prerequisites: SW 1050, 2400, 2500. (F)

SW 3360  Adolescents: Theories, Problems, and Issues (3)
Focuses on major social problems confronting youth today: teenage pregnancy, substance abuse, unemployment, education, and mental health. Investigation of theories explaining these problems and society’s efforts to resolve these problems. Prerequisites: SW 1050, 2400, 2500. (Sp)
SW 3450 School Social Work (3)*
Overview of social work practice in an educational setting. (Sp)

SW 3550 Social Gerontology (3)*
Overview of field of aging and its connection to the practice of social work. (Sp)

SW 3650 Mental Health (3)
Services offered for the prevention and treatment of mental illness and the feasibility of social action programs on a community level. Prerequisites: SW 1050, 2400, 2500. (F)

SW 3750 Medical Social Services (3)
Introduction to role of social worker in health settings. Emphasizes definition of health and disease, patient rights, and consumer participation. Examination of basic health programs, major trends in health planning, and alternate models of health delivery. Prerequisites: SW 1050, 2400, 2500. (F)

SW 4100 Social Work Research (3)
Survey of qualitative and quantitative scientific methods of research in social work. Articulation of research with practice and policy. Prerequisites: SW 1050, 2400, 2500. (F)

SW 4150 Practice II (3)
Introduction to generalist social work practice at the micro level. Emphasizes study of skills from a strengths and empowerment perspective with individuals, families, and small groups. Special attention paid to ethical issues and working with diverse populations. Prerequisite: SW 3050. (Sp)

SW 4160 Practice III (3)
Introduction to generalist social work practice at the macro level. Emphasizes study of skills from a strengths and empowerment perspective with groups, organizations, and community systems. Special attention paid to ethical issues and working with diverse populations. Prerequisite: SW 4150. (Sp)

SW 4870 Beginning Field Practicum (6) ®
Practical experience in a social service agency. Seminar integrates field work experiences and academic knowledge. Emphasizes use of self and integration of knowledge, values, skills, and methods of practice, with special emphasis given to the code of ethics. Prerequisite: Instructor’s permission and by application. (F)

SW 4900 Topical Issue Seminar (3-6) ®
Advanced seminar, designed as a forum for students from varied social science disciplines. Seminars may include issues involved in social work values and ethics, diversity, promotion of social and economic justice, and/or populations-at-risk. The following topics are offered: school social work, crisis intervention strategies, special topics in aging, and occupational and environmental health. Prerequisites: SW 1050, 2400, 2500, and permission of instructor. (F;Sp)

SW 4950 Directed Readings (1-5) ®
Independent readings in various areas of social work: practice, policy, HBSE, research, populations-at-risk, values and ethics, social and economic justice, and diversity. Prerequisite: Instructor’s permission and a plan for study. (F;Sp)

SW 5350 CI Social Welfare Policy (3)
Introduction to policy making in social welfare. Principles of social and economic justice used to analyze selected social policies and programs within a historical and contemporary context. Attention given to differential impact on at-risk populations. Prerequisites: SW 1050, 2400, 2500. (F)

SW 5870 Advanced Field Practicum (6) ®
Supervised social work practice and projects. Provides opportunities for advanced social work students to apply classroom learning in a field setting. Minimum of 240 hours in a social service agency required. Prerequisite: Instructor’s permission and SW 4870. (Sp)

*This course is taught alternating years. Check with department for information about when course will be taught.

® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

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Theatre Arts (THEA) 489

Course Descriptions

Theatre Arts (THEA)

See Department of Theatre Arts, pages 323-326

THEA 1000 Theatre Orientation for Majors (1)
Departmental policies, procedures, requirements, and philosophy. Introduction to fundamental audition and portfolio presentation techniques. (F)

THEA 1010 BCA Understanding Theatre (3)
Survey of dramatic principles and structure, genre, and conventions for nonmajors. Functions and contributions of theatre artists and practices of the contemporary stage. (F;Sp;Su)

THEA 1020 BCA Introduction to Film (3)
Study of elements of film narrative in fictional and nonfictional movies to provide a deeper understanding of content and film form. (F)

THEA 1030 BHU Exploring Performance Through Aesthetic Texts (3)
Introduces concepts and practices of performance studies and oral language arts. Integrates interpretation, analysis, and performance of major literary genres and oral forms of communication that contain aesthetic qualities. Students learn theatre techniques to create original performance pieces. (F;Sp;Su)

THEA 1210 Introduction to Playscript Analysis (3)
Introductory course focusing on plot, character, language, and thematic analysis of varied historical and modern performance texts in the context of contemporary staging practice. Enrollment limited to theatre majors and minors only. (Sp)

THEA 1400 Beginning Acting (3)
Demonstration of skills in actor awareness (personal and group), organic acting techniques, scene study with partners, and monologue preparation. Provides understanding of theories and methodologies. Skills demonstrated in areas of body movement, diction, observation, concentration, imagination, and "action." (F;Sp;Su)

THEA 1430 Movement for Actors I (2)
Introductory, experiential course in movement styles, including Laban Movement Analysis, Alexander Technique, Feldenkrais, Grotwolski, and others. Improvisation will be emphasized to develop a creative approach to character, emotion, and action through movement. (F)

THEA 1450 Beginning Voice (3)
Training in basic vocal principles (Rodenburg, Linklater). Covers proper breath placement and support, physical alignment, projection, and resonance. Students learn basic warm-up to prepare the voice for performance. Enrollment limited to Theatre Arts majors and to students receiving departmental permission. (F)

THEA 1500 Stage and Costume Crafts (3)
Introduction to different physical theatre forms, standard stage equipment, and methods of staging plays. Basic practices in set construction, stage lighting, sound, and costume construction. Enrollment limited to Theatre Arts majors and to students receiving departmental permission. (F;Sp)

THEA 1530 Stage Makeup (2)
Emphasizes one-dimensional and three-dimensional illusionary work, focusing on knowledge and skills in “corrective” aging and period makeup, with introductions to related areas, such as hair, hands, and prosthetics. Enrollment restricted to students who are theatre arts majors or who have received departmental authorization. (F;Sp)

THEA 2410 Directing (3)
Provides instruction and practice in play selection, script analysis, research, blocking, leadership, communication skills, conduct of rehearsals, self-awareness, production organization and operation, and personal organization for stage direction. Principles apply in professional, civic, and educational settings. Prerequisite: THEA 1400. (F;Sp)

THEA 2420 Intermediate Acting: Scene Study (3)
Scene study from the modern and contemporary theatre using the principles studied in THEA 1400. Prerequisite: THEA 1400. (F;Sp)

THEA 2430 Movement for Actors II (2)
Theory and practice in physical theatre movement styles, including Grotwolski,
Mime, Commedia dell’Arte, and others. Emphasis on creative approach for projecting character, emotion, and action through use of the body. History and practical experience in advanced movement styles. Prerequisite: THEA 1430. (Sp)

THEA 2440 Introduction to Dance for Theatre: Jazz, Ballet, and Tap (2)
Offers an introduction to the three most influential styles of dance in musical theatre: jazz, ballet, and tap. Enables dancers to learn new steps quickly by utilizing the appropriate techniques. Time steps and turns are mastered. Prerequisite: THEA 1430. (F)

THEA 2470 Movement: Stage Combat (2)
Techniques in stage combat. Prerequisite: THEA 1430. (Sp)

THEA 2480 Intermediate Voice for Theatre (3)
Training in vocal technique, incorporating breath support, vocal range, power, and projection. Training in speech and articulation. Work in various vocal theories (Berry, Linklater, Hart). Instruction in the International Phonetic Alphabet. Prerequisite: THEA 1450. (Sp)

THEA 2490 Intermediate Acting: Shakespeare (3)
Exploring language and techniques of playing Shakespeare through scene study and monologues. Prerequisite: THEA 1400. (Sp)

THEA 2510 Scene Painting/Properties (2)
Instruction in scene painting techniques. Construction and alteration of stage properties. For theatrical technicians and designers. Demonstration and lab work included. Prerequisite: THEA 1500. (Sp)

THEA 2540 Lighting Design (2)
Introduction to basic elements of lighting design. Demonstration of techniques used to create and execute a lighting design. Provides basic understanding of light energy, angle, color, and technology available for designing with this medium. (F)

THEA 2550 Stage Management (2)
Provides problem-solving environment for students to acquire knowledge and skills necessary for becoming a competent stage manager. Discussion of organization, delegation, scheduling, and personnel management. Prerequisite: Permission of instructor. (F)

THEA 2560 Theatre and Studio Sound (2)
Sound recording, reinforcement, and control operation skills for theatrical production. (Sp)

THEA 2740 Performance Practicum (1) ®
Performance work in ongoing Theatre Arts Department productions, upon casting by the director. (F,Sp)

THEA 2750 Production Practicum (1) ®
Specialized crew work in ongoing Theatre Arts Department productions. Assignments made upon meeting with technical director. (F,Sp,Su)

THEA 3050 DHA Period Styles (3)
Intensive instruction in architecture, furniture, and interior design of major Western European periods from Egyptian to the present. Taught through lectures, slide presentations, and student-compiled source book with examples of major styles. (Sp)

THEA 3230 Survey of Western Theatre (3)
History of performance traditions, theatre architecture, management systems, personnel, and written drama in the West from ancient Egypt to mid-20th Century. (F)

THEA 3300 Clinical Experience in Teaching I (1)
Clinical apprenticeship consisting of teaching theatre in local schools. Includes observation, tutorial work, small group discussions, whole class instruction, and lesson/unit planning. (F,Sp)

THEA 3400 Mask Building and Performance (2)
History and practical experience in mask building and performance, including neutral mask, commedia, alternative identities, human, animal, phantasmagoric, and other mask techniques. Emphasizes expressing emotion and developing character through gesture and posture. Prerequisite: THEA 1430. (Sp)

THEA 3410 Dance for Theatre: Tap (2)
Builds on tap skills learned in the introductory course, emphasizing mastery of single and double tap sounds and ensuring a solid foundation for elementary and intermediate tap steps commonly used in theatre productions. Prerequisite: THEA 2440. (Sp)

THEA 3420 Dance for Theatre: Jazz (2)
Builds on jazz skills learned in the introductory course, incorporating contemporary jazz styles, jazz techniques, and routines used in musical theatre repertory. Prerequisite: THEA 2440. (Sp)

THEA 3430 Period Dance Styles (2)
Dances learned from different periods then “rechoreographed” for stage practice. Prerequisite: THEA 1430. (Sp)

THEA 3440 Dance for Theatre: Ballet (2)
Designed for an in-depth experience in ballet, focusing on technique and learning ballet choreography. Builds on ballet skills learned in the introductory course. Prerequisite: THEA 2440. (Sp)

THEA 3450 Dialects (3)
Review of International Phonetic Alphabet. Explores range of regional American and British dialects, as well as specific foreign language dialects. Prerequisites: THEA 1450 and 2480. (F)

THEA 3510 Scene Design (2)
Preparation for designing sets used in theatre. Development of skills in drafting, rendering, model-making, research, and portfolio development. Prerequisite: THEA 1500. (F)

THEA 3520 Stage Costume Design (2)
Theory and practice in design and selection of costumes for nonrealistic, historical, and modern plays. Study of relationship of costume to character and production. Prerequisites: THEA 1500 and 3570; or permission of instructor. (Sp)

THEA 3570 DHA Historic Costume for the Stage (3)
Historic survey of development of clothing from ancient Egyptians to the present day. (F)

THEA 4030 Storytelling (3)
Reviews background and techniques of traditional telling. Explores psychological, educational, therapeutic, historical, and folkloric aspects of storytelling. For 6030 credit, graduate students must participate in microteaching sessions in areas of expertise, with additional storytelling research or service. (F,Sp,Su)

THEA 4250 Playwriting (3)
Study of dramatic theory and sample plays, combined with practice in writing short plays. Minimum of three plays required. Prerequisite: THEA 1210. Also taught as ENGL 4250. (F)

THEA 4300 Clinical Experience in Teaching II (1)
Clinical apprenticeship of teaching theatre in local schools, including observation, tutorial work, small group discussions, whole class instruction, and lesson/unit planning. Prerequisite: THEA 3300. (F)

THEA 4330 Drama and Theatre for Youth I: Oral Language Arts (3)
Practical teaching strategies, tools, and performance techniques for integrating drama and theatre in the classroom and beyond, with special emphasis on language arts curriculum. For graduate credit, students must participate in microteaching sessions with additional research, writing, and/or service assignments. (F,Sp,Su)

THEA 4340 Drama and Theatre for Youth II: Integrating the Curriculum (3)
Practical teaching strategies, tools, and performance techniques for integrating drama and theatre in the classroom and beyond, with focus on non-language arts curriculum areas. For graduate credit, students must participate in microteaching sessions with additional research, writing, and/or service assignments. (F,Sp,Su)

THEA 4400 Company Workshop (3) ®
Company workshop of theatrical productions emphasizing process and instruction.
THEA 4450 Advanced Voice for Theatre (3)
Advanced vocal training includes units in microphone technique, radio drama, classical Greek theatre, and vocal improvisation. Prerequisites: THEA 1450 and 2480. (Sp)

THEA 4480 Theatre Leadership and Management (3) (d6480)
Explores legal and financial choices, market research and marketing plans, physical plant and season operations, consideration of union and management relationships, and various planning and budget control procedures. For 6480 credit, graduate students must participate in microteaching sessions with additional practicum, writing, or problem solving assignments. (Sp)

THEA 4510 Advanced Scene Design (2) (d6510)
Preparation for graduate school or a career in design. Advanced instruction in drafting, rendering, model-making, technical skills, research, design principles, and portfolio development. For 6510 credit, graduate students must participate in microteaching sessions with additional research or practicum assignments. Prerequisites: THEA 1500 and 3510. (Sp)

THEA 4520 Advanced Costume Design (2) (d6520)
Advanced theory and practice in the design and selection of costumes for nonrealistic, historical, and modern plays. For 6520 credit, graduate students must participate in microteaching sessions with additional research or practicum assignments. Prerequisite: THEA 3520. (F)

THEA 4540 Advanced Lighting Design (2) (d6540)
Advanced training in elements of lighting design. Exploration of advanced techniques used to create and execute a lighting design. For 6540 credit, graduate students must participate in microteaching sessions with additional research or practicum assignments. Prerequisite: THEA 2540. (Sp)

THEA 4740 Advanced Performance Practicum (1-2) ®
Advanced performance work in ongoing Theatre Arts Department productions, upon casting by the director. Director will assign credits. (F,Sp)

THEA 4750 Advanced Production Practicum (1-3) ®
Specialized practical experience in theatre production, including opportunities for advanced work in directing, design, scene and costume construction, stage management, props, sound, and lighting, under the supervision of Theatre Arts Department faculty members. (F,Sp,Su)

THEA 5240 DHA Contemporary Theatre (3) ®
History and theory of a theatre movement since the 1980s, primarily in the English-speaking world, leading to a study of the theatrical world and its practices today. For 6240 credit, graduate students must participate in microteaching sessions with additional reading or writing assignments. Prerequisite: THEA 3230. (F)

THEA 5250 Playwriting Company Workshop (3) ®
Advanced study in playwriting. Course culminates in the performance of original works. Enrollment is contingent on permission of instructor. Theatre Arts majors and students who have completed THEA/ENGL 4250 will have priority. (Sp)

THEA 5270 Performance Theory and Criticism (3) ®
Topics in dramatic theory, including traditional Aristotelian analysis, comedy, tragedy, and modern and postmodern performance theories. For 6270 credit, graduate students must participate in microteaching sessions with additional research or writing assignments. (Sp)

THEA 5290 Special Topics in Theatre History and Literature (2-3) ®
Specialized topics in theatre history, performance, and dramatic literature. Sample topics include Classical Theatre of Greece and Rome, Golden Age Spanish Theatre, Elizabethan Theatre, Musical Theatre, Asian Theatre, and others. For 6290 credit, graduate students must participate in microteaching sessions with additional research or writing assignments. Prerequisite: THEA 3230. (Sp)

THEA 5310 Theatre Mentorship and Service (1-3) ®
Clinical mentorship of teaching skills, including observation, instruction, and evaluation in specific areas of expertise. Projects may include developing and using drama and theatre practices for service in classroom or community settings. Prerequisite: Permission of instructor. (F,Sp,Su)

THEA 5390 Student Teaching Seminar (2)
Focuses on problems arising during student teaching. Includes plans, procedures, adaptive classroom strategies, and evaluation. (F,Sp)

THEA 5400 Advanced Acting: Turn of the Twentieth Century (3) ®
Scene study from turn of the century playwrights, including Ibsen, Chekhov, Shaw, and Wilde. Prerequisites: THEA 1400, 2420, and 2490. (Sp)

THEA 5410 Advanced Directing (3)
Provides instruction and practice in advanced techniques of script analysis, research outside the discipline, review of literature, awareness of thinking styles and values, and preparation for studio directing assignments. (F)

THEA 5420 Advanced Acting: Absurdists (3)*
Theatre absurdists: nontraditional acting approaches to nontraditional texts. Includes scene study from the plays of Pinter, Mamet, Brecht, and Ionesco. Prerequisites: THEA 1400, 2420, and 2490. (Sp)

THEA 5430 Advanced Acting: Acting for the Camera (3)
Acting for the camera. Prerequisites: THEA 1400, 2420, and 2490. (Sp)

THEA 5440 Advanced Acting: Musical Theatre Auditions (3)
Introduction to techniques of musical theatre. Prerequisites: THEA 1400, 2420, and 2490. (F)

THEA 5450 Advanced Acting: Restoration and Greek (3)*
Scene study from the Restoration and Greek playwrights, including Congreve, Euripides, Sophocles, and Vanbrugh. Prerequisites: THEA 1400, 2420, and 2490. (F)

THEA 5470 Advanced Acting: Modern Methods (3)
Twentieth Century acting techniques, methodologies, and theories. Prerequisites: THEA 1400, 2420, and 2490. (F)

THEA 5510 Computer-Aided Design for Theatre (3)
Computer-aided design applications for theatre. Drafting and rendering on computer set, light, and costume design. Prerequisites: THEA 2540, 3510, 3520. (F)

THEA 5590 Design Studies (3)
Actualization of a design from conception through completion with faculty supervision. Creation of all drafting, renderings, and/or models by deadlines, handling complications, overseeing properties acquisition and set dressing, and documenting design for portfolio presentation. Prerequisite: THEA 3510.

THEA 5740 Repertory Theatre Performance (2-8) ®
Rehearsal, crew, and staff assignments. Performance of four plays in repertory. Company members selected through audition, based on ability and commitment to theatre. For 6740 credit, graduate students fulfill mentoring assignments and/or additional assignments in community service. Enrollment limited and by permission of Theatre Arts Department staff. (Su)

THEA 5750 Repertory Theatre Production (2-8) ®
Rehearsal, crew, and staff assignments. Performance of four plays in repertory. For 6750 credit, graduate students work with undergraduate students in mentoring situations. (Su)

THEA 5900 Special Projects (1-4) ®
Directed individual research studies or creative projects in theatre. (F,Sp)

THEA 5910 Senior Project (2)
Culminating project and/or recital in student’s specified program. (F,Sp)
THEA 5950  Rendering and Painting for the Theatre  (2)  Hands-on experience for theatrical technicians and designers using a variety of drawing techniques commonly used in theatrical design. Primary method of instruction is demonstration and experience through lab work. Prerequisite: Permission of instructor. (F)

THEA 6010  Introduction to Graduate Study in Theatre  (2)  Bibliography, research methods, and writing. (F)

THEA 6030  Storytelling  (3)  (d44030)  Reviews background and techniques of traditional telling. Explores psychological, educational, therapeutic, historical, and folkloric aspects of storytelling. For 6030 credit, graduate students must participate in microteaching sessions in areas of expertise, with additional storytelling research or service. (F,Sp,Su)

THEA 6180  Theatre Production Portfolio  (3)  Prepares graduate students for the workplace using portfolio presentation techniques, job applications, resumes, interview techniques, and the creation of a design portfolio. (Sp)

THEA 6240  Contemporary Theatre  (3)  (d55240)  History and theory of a theatre movement since the 1980s, primarily in the English-speaking world, leading to a study of the theatrical world and its practices today. For 6240 credit, graduate students must participate in microteaching sessions with additional reading or writing assignments. Prerequisite: THEA 3230. (F)

THEA 6270  Performance Theory and Criticism  (3)  (d55270)  Topics in dramatic theory, including traditional Aristotelian analysis, comedy, tragedy, and modern performance theory. Includes preparation for review and adjudication of performance. For 6270 credit, graduate students must participate in microteaching sessions with additional research or writing assignments. (Sp)

THEA 6290  Special Topics in Theatre History and Literature  (2-3)  (d55290)  Specialized topics in theatre history, performance, and dramatic literature. Sample topics include Classical Theatre of Greece and Rome, Golden Age Spanish Theatre, Elizabethan Theatre, Musical Theatre, Asian Theatre, and others. For 6290 credit, graduate students must participate in microteaching sessions with additional research or writing assignments. Prerequisite: THEA 3230. (Sp)

THEA 6330  Drama and Theatre for Youth I: Oral Language Arts  (3)  (d45330)  Practical teaching strategies, tools, and performance techniques for integrating drama and theatre in the classroom and beyond, with special emphasis on language arts curriculum. For graduate credit, students must participate in microteaching sessions with additional research, writing, and/or service assignments. (F,Sp,Su)

THEA 6340  Drama and Theatre for Youth II: Integrating the Curriculum  (3)  (d45340)  Practical teaching strategies, tools, and performance techniques for integrating drama and theatre in the classroom and beyond, with focus on non-language arts curriculum areas. For graduate credit, students must participate in microteaching sessions with additional research, writing, and/or service assignments. (F,Sp,Su)

THEA 6480  Theatre Leadership and Management  (3)  (d4480)  Explores legal and financial choices, market research and marketing plans, physical plant and season operations, consideration of union and management relationships, and various planning and budget control procedures. For 6480 credit, graduate students must participate in microteaching sessions with additional practicum, writing, or problem solving assignments. (Sp)

THEA 6510  Advanced Scene Design  (2)  (d4510)  Preparation for graduate school or a career in design. Advanced instruction in drafting, rendering, model-making, technical skills, research, design principles, and portfolio development. For 6510 credit, graduate students must participate in microteaching sessions with additional rendering assignments. Prerequisites: THEA 1500 and 3510. (Sp)

THEA 6520  Advanced Costume Design  (2)  (d4520)  Advanced theory and practice in the design and selection of costumes for nonrealistic, historical, and modern plays. For 6520 credit, graduate students must participate in microteaching sessions with additional research or practicum assignments. Prerequisite: THEA 3520. (F)

THEA 6540  Advanced Lighting Design  (2)  (d4540)  Advanced training in elements of lighting design. Exploration of advanced techniques used to create and execute a lighting design. For 6540 credit, graduate students must participate in microteaching sessions with additional research or practicum assignments. Prerequisite: THEA 2540. (Sp)

THEA 6740  Repertory Theatre Performance  (2-8)  (d5740)  Rehearsal, crew, and staff assignments. Performance of four plays in repertory. Company members selected through audition, based on ability and commitment to theatre. For 6740 credit, graduate students fulfill mentoring assignments and/or additional assignments in community service. Enrollment limited and by permission of Theatre Arts Department staff. (Su)

THEA 6750  Repertory Theatre Production  (2-8)  (d5750)  Rehearsal, crew, and staff assignments. Performance of four plays in repertory. For 6750 credit, graduate students work with undergraduate students in mentoring situations. (Su)

THEA 6790  Seminar in Drama  (1-4)  (d4790)  Flexible service topics course covering a range of topics according to individual student need and/or visiting instructors, independent study, etc. (F,Sp)

THEA 6800  Graduate Studies in Theatre  (1-6)  (d4800)  Research and preparation for graduate practicum projects in theatre. (F,Sp)

THEA 6900  Research Studies  (1-4)  (d4900)  Directed individual research studies or creative projects in theatre. (F,Sp,Su)

THEA 6920  Graduate Projects in Theatre  (2-3)  (d4920)  Studio practicum in support of projects in stage directing, design, and technical practice. (F,Sp)

THEA 6970  Thesis  (1-4)  (d4970)  (F,Sp)

THEA 6990  Continuing Graduate Advisement  (1-2)  (d4990)  (F,Sp)

Parenthetical numbers preceded by * indicate a dual listing.
® Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.
University Studies (USU)

See USU University Studies Requirements, pages 42-49

USU 1000 Introduction to Computers and Information Literacy
Introduction to basic concepts of computers and information literacy. Preparation for USU Computer and Information Literacy (CIL) test. For students having some familiarity with computers, but needing additional instruction. Taught during the first four weeks of fall semester. Note: USU 1000 cannot be counted toward the breadth requirements. (F)

USU 1010 University Connections
Provides an environment of challenge and support to help new students make a successful transition to USU. Class curriculum and activities provide an environment wherein students become familiar with the broad academic, social, and cultural opportunities offered by USU and the surrounding community. (F,Sp)

USU 1100 First-Year Seminar
Characterized by investigation of a topic that is most likely a research, scholarly, or artistic specialty of the faculty member. Topic presented in pedagogically interesting ways. May include fieldwork or trips to enhance study of the topic. Note: USU 1100 cannot be counted toward the breadth requirements.

USU 1300 BAI U.S. Institutions
Provides basic understanding of the history, principles, form of government, and economic system of the United States. Emphasis on ideas and critical thinking, rather than dates, names, and places. (F,Sp,Su)

USU 1320 BHU Civilization: Humanities
Provides basic understanding of a broad range of themes, which cut across human history and continue to be important in contemporary society. (F,Sp,Su)

USU 1330 BCA Civilization: Creative Arts
Students will explore questions such as: What is Art? How is it judged? How does artistic expression vary across cultures? Course will cover several forms of art, and students will attend concerts, visit galleries, and attend theatrical performances. (F,Sp,Su)

USU 1340 BSS Social Systems and Issues
Examines debates in the social sciences about contexts which shape human experience. Compares experiences between life stages, individuals, groups, societies, and/or historical periods. Contrasts different social science disciplines. (F,Sp,Su)

USU 1350 BLS Integrated Life Science
Interdisciplinary course focusing on basic concepts of life science. Demonstrates role of modeling, prediction, and observation in the process of scientific discovery, which occurs within an historical and social context. (F,Sp,Su)

USU 1360 BPS Integrated Physical Science
Interdisciplinary course focusing on basic concepts of physical science, including structure of matter and magnitude and character of the forces of nature. Demonstrates role of modeling, prediction, and observation in the process of scientific discovery, which occurs within an historical and social context.

USU 3330 DHA Arts Symposium
Students attend a number of cultural events offered at USU and in the community, as well as write critiques of the events. Prerequisite: Completion of at least 30 credits. Note: USU 3330 may be applied to the depth requirements, but not to the breadth requirements. Two credits of USU 3330 are needed to fulfill the DHA requirement.

USU 4900 Undergraduate Research
Research experience pursued with a faculty mentor. Prior to registration, student must make arrangements with a faculty mentor within his or her department. Note: USU 4900 cannot be counted toward fulfillment of University Studies requirements.

USU 6900 Responsible Conduct of Research
Provides an underpinning of ethical conduct for students entering into the research enterprise while at USU. Designed for upper-level undergraduates and graduate students, with each weekly session being split between lecture and discussion activities. Subjects covered include those required of all trainees being supported on Public Health Service grants. Note: USU 6900 cannot be counted toward fulfillment of University Studies requirements.

Women and Gender Studies (WGS)

See College of Humanities, Arts and Social Sciences, pages 111-114

WGS 1010 Introduction to Women and Gender Studies
Survey course covering fundamentals of women and gender studies. Explores women’s diverse experiences, perspectives, and contributions to society and its institutions. Examines cultural beliefs and stereotypes concerning women’s roles in society. Reviews feminist theory, socialization, ideology, and history of women’s movement. (F,Sp,Su)

WGS 4900 Directed Study: Women and Gender Studies
Provides students with an in-depth opportunity to work individually with a faculty member. Contract for work to be completed must be signed by the Women and Gender Studies director, the faculty member, and the student, then filed with the Women and Gender Studies Program. (F,Sp,Su) Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

WGS 493 Directed Study: Women and Gender Studies
Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

© This course is also offered by online correspondence and/or CD through Continuing Education Time Enhanced Learning.
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<table>
<thead>
<tr>
<th>Name</th>
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<th>Dates</th>
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<tbody>
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