School of Accountancy

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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: A dual major in Accounting and Economics is available.

Graduate specializations: *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 programs).

Undergraduate minors offered: Accounting and Personal Financial Planning

Undergraduate Programs

Mission

The mission of the USU School of Accountancy is to: (1) develop effective accounting and business leaders who are committed to professional excellence and ethical conduct, (2) advance accounting knowledge through theory development and accounting practice improvement, and (3) provide leadership and service to the University and professional community.

Objectives

The objective of the School of Accountancy is to provide high-quality accounting preparation for professional careers in industry, public accounting, and other organizations. The undergraduate programs are devoted to providing basic conceptual accounting, information systems, and business knowledge, along with general education, as a well-rounded foundation for career development. 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 prepare to meet changes in social, economic, and technological development. Academic course requirements for the bachelor's degrees include University Studies coursework, as well as supporting courses in mathematics, economics, business information systems, business communications, business administration, accountancy, and information technology. The programs provide an opportunity 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 accounting.

Graduates of the accounting program find employment in a variety of industrial companies, nonbusiness and government agencies, and both large and small public accounting and business advisor firms. Graduates hold all levels of positions within organizations, including supervisors, managers, partners, controllers, financial 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 Revenue Service, provide jobs in many varied accounting functions.

Departmental Honors

See *Honors* in Business description in the College of Business section of this catalog (page 114).

Learning Objectives and Assessment

Assessment information for the School of Accountancy can be found online at: **http://www.usu.edu/cob/acct/assessment/index.cfm**

Requirements

College of Business Admission Requirements

All students majoring in accounting must satisfy the College of Business admission requirements, provided on pages 114-115. Academic advising about these requirements is available in the College of Business Career and Education Opportunities Center, Business 309. All students enrolled at USU are required to satisfy the General Education requirements and the University Studies Depth Education requirements of the University, as described on pages 49-59 of this catalog.

Matriculation Requirement and Transfer Limitation

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 College of Business credits added to previously earned transfer business credits may not exceed a combined total of 15. Furthermore, to earn a bachelor's degree in a College of Business major, at least 50 percent of the required College of Business credits must be earned from coursework taken from the Utah State University College of Business.

USU Credits and Business Credits

At least 30 of the last 60 semester credits must be taken from Utah State University, at least 20 of which must be completed in upper-division courses, of which at least 10 credits must be completed in courses required by the student's major. At least 50 percent of the College of Business credits required for a College of Business degree must be taken from the Utah State University College of Business or its departments, which include: School of Accountancy, Business Administration, Economics, Management and Human Resources, and

School of Accountancy

Management Information Systems. At least 12 credits of 3000-level or above accounting courses must be completed at the USU Logan campus.

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 30 credits in accounting and at least 90 credits in nonaccounting courses. At least 12 credits of upper-division accounting courses must be completed through the USU School of Accountancy (Logan Campus). To qualify for graduation as an accounting major, a student must have an accounting and an overall GPA of at least 2.5. All accounting majors are required to complete the General Education requirements and the University Studies Depth Education requirements (see pages 49-59), the Pre-Business course requirements, the College of Business Core, and the Required Accounting Courses.

Pre-Business Course Requirements (13 credits)

ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp) 3
MATH 1100 (QL) Calculus Techniques (F,Sp,Su) 3
STAT 2300 (QL) Business Statistics (F,Sp,Su) 4
PSY 1010 (BSS) General Psychology (F,Sp,Su) (3 cr) **or**
SOC 1010 (BSS) Introductory Sociology (F,Sp) (3 cr) 3

College of Business Core (37 credits)

ACCT 2010 Survey of Accounting I (F,Sp,Su) 3
ACCT 2020 Survey of Accounting II (F,Sp,Su) 3
BA 3400 (QI) Corporate Finance (F,Sp,Su) 3
BA 3500 Fundamentals of Marketing (F,Sp,Su) 3
BA 3700 Operations Management (F,Sp,Su) 3
BIS 2100 Principles of Management Information Systems (F,Sp,Su) ... 3
BIS 2200 (CI) Business Communication (F,Sp,Su) 3
BUS 3250 Discussions With Business Leaders (F,Sp) 1
ECON 2010 (BSS) Introduction to Microeconomics (F,Sp) 3
ECON 3400 International Economics for Business (F,Sp,Su) 3
MHR 2050 Legal and Ethical Environment of Business (F,Sp,Su) 3
MHR 3110 Managing Organizations and People (F,Sp,Su) 3
MHR 4880 (CI) Business Strategy in an Entrepreneurial Context (F,Sp) (3 cr) or
MHR 4890 (CI) Business Strategy in a Global Context (F,Sp,Su) (3 cr) 3

Required Accounting Courses (24 credits)

ACCT 3110 Intermediate Financial Accounting and Reporting I (F,Sp,Su) 3
ACCT 3120 Intermediate Financial Accounting and Reporting II (F,Sp,Su) 3
ACCT 3310 Strategic Cost Management (F,Sp,Su) 3
ACCT 3410 Income Taxation I (F,Sp,Su) 3
ACCT 4200 Advanced Accounting (F,Sp) 3
ACCT 4410 Income Taxation II (F,Sp) 3
ACCT 4500 Accounting Information Systems (F,Sp) 3
ACCT 4510 Auditing Principles and Techniques (F,Sp) 3

Four-Year Degree Plan (8 Semesters)

A four-year degree plan for the Accounting major can be found on page 135 and at:
http://www.usu.edu/cobssc/web/fouryeardegreeplans.htm

Accounting Minor (18 credits)

Students with a major in an area other than accounting may qualify for an accounting minor by completing 18 semester credits as follows:

ACCT 2010 Survey of Accounting I (F,Sp,Su) 3
ACCT 2020 Survey of Accounting II (F,Sp,Su) 3
ACCT 3110 Intermediate Financial Accounting and Reporting I (F,Sp,Su) 3
ACCT 3120 Intermediate Financial Accounting and Reporting II (F,Sp,Su) 3
ACCT 3310 Strategic Cost Management (F,Sp,Su) 3
ACCT 3410 Income Taxation I (F,Sp,Su) (3 cr) **or**
ACCT 4500 Accounting Information Systems (F,Sp) (3 cr) 3

Students seeking a minor must be approved by the School of Accountancy and must achieve a 2.5 grade point average for accounting courses taken. Courses required for this minor may *not* be taken *Pass/Fail*.

Personal Financial Planning Minor (15 credits)

Students seeking a minor in personal financial planning must be approved by the School of Accountancy and must achieve at least a 2.5 grade point average in the required courses. Courses required for this minor may not be taken pass/fail. The required courses consist of 15 semester credits as follows:

ACCT 3410 Income Taxation I (F,Sp,Su) 3
PFP 5060 Personal Financial Planning and Advising (F) 3
PFP 5070 Retirement Planning (Sp) 3
PFP 5080 Estate Planning (Sp) 3
BA 3460 Fundamentals of Personal Investing (3 cr) **or**
BA 4460 Investments (F,Sp) (3 cr) 3

The courses above are registered with the Certified Financial Planner (CFP) © Board of Standards. Students completing these courses will qualify to sit for the comprehensive CFP © Examination.

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 Managerial Economics (F,Sp) (3 cr) **or**
ECON 5010 Microeconomics (Sp) (3 cr) 3
ECON 4020 Macroeconomics for Managers (F,Sp) (3 cr) **or**
ECON 5000 Macroeconomics (F) (3 cr) 3
Upper-division Economics electives. 6

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. For further information, refer to the *Second Bachelor's Degree* text on page 62.

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.

Additional Information

For additional information about undergraduate programs and requirements in the School of Accountancy, see the major requirement sheet, which can be obtained from the School of Accountancy, or accessed at: **http://www.usu.edu/majorsheets/**

Suggested Four-year Course of Study for Accounting Major

The following curriculum is required for the BS degree in accounting. Students enrolled in the accounting major should consult with their advisor to determine which breadth, depth, and elective courses they should complete. Each student should also consult with his or her advisor to develop an individualized plan of study that is applicable to his or her own interests.

Freshman Year (30 credits)
Fall Semester (15 credits)
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles 3
MATH 1050 (QL) College Algebra 4
USU 1010 University Connections 2
OSS 1400[2] Microcomputer Applications (3 cr) **or**
Passing scores on Computer and Information Literacy (CIL) exams (0 cr) 0-3
(**Note:** Although OSS 1400 includes the CIL exams, the CIL requirement is met *only* by passing all six exams, *not* by simply passing OSS 1400.)
Breadth Creative Arts (BCA) course[1] 3
Elective course(s)[2] 0-3

Spring Semester (15 credits)
ECON 2010 (BSS) Introduction to Microeconomics 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MATH 1100 (QL) Calculus Techniques 3
PSY 1010 (BSS) General Psychology (3 cr) **or**
SOC 1010 (BSS) Introductory Sociology (3 cr) 3
Breadth Humanities (BHU) course[1] 3

Sophomore Year (31 credits)
Fall Semester (16 credits)
ACCT 2010 Survey of Accounting I 3
BIS 2100 Principles of Management Information Systems 3
MHR 2050 Legal and Ethical Environment of Business 3
STAT 2300 (QL) Business Statistics 4
Breadth Life Sciences (BLS) course[1] 3

Spring Semester (15 credits)
ACCT 2020 Survey of Accounting II 3
BA 3400 (QI) Corporate Finance 3
BIS 2200 (CI) Business Communication 3
Breadth Physical Sciences (BPS) course[1] 3
Elective course(s) 3

Junior Year (29 credits)
Fall Semester (14 credits)
ACCT 3110 Intermediate Financial Accounting and Reporting I 3
ACCT 3310 Strategic Cost Management 3
BA 3500 Fundamentals of Marketing 3
BUS 3250 Discussions With Business Leaders 1
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Elective course 1

Spring Semester (15 credits)
ACCT 3120 Intermediate Financial Accounting and Reporting II 3
ACCT 3410 Income Taxation I 3
BA 3700 Operations Management 3
ECON 3400 (DSS) International Economics for Business 3
Elective course(s) 3

Senior Year (30 credits)
Fall Semester (15 credits)
ACCT 4410 Income Taxation II 3
ACCT 4500 Accounting Information Systems 3
MHR 3110 Managing Organizations and People 3
Depth Humanities and Creative Arts (DHA) course 3
Elective course(s) 3

Spring Semester (15 credits)
ACCT 4200 Advanced Accounting 3
ACCT 4510 Auditing Principles and Techniques 3
MHR 4880 (CI) Business Strategy in an Entrepreneurial Content (3 cr) **or**
MHR 4890 (CI) Business Strategy in a Global Context (3 cr) 3
Depth Life and Physical Sciences (DSC) course 3
Elective course(s) 3

[1] At least *two* of the required Breadth Courses *must* be University Studies courses having a USU prefix.
[2] If opting out of OSS 1400, students must take an extra 3 elective credits.

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, enable students to fulfill the 150-hour education requirement for CPA certification in Utah and most U.S. jurisdictions.

School of Accountancy

Admission Requirements

See general admission requirements, pages 101-102. 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 202. 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 103.)

Students with an undergraduate degree in accounting which meets the USU undergraduate accounting 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 Graduate Accounting 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 (30 credits)

Program of Study
Students matriculated in the Master of Accounting degree must complete an approved program of study consisting of at least 30 credits. This program must include completion of 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.

MAcc Core Requirements
The core courses required for this degree include: ACCT 6200, 6410, 6510, 6610; PFP 6560; and one additional approved elective course (3 credits).

Master of Accounting Specializations
In addition to meeting the MAcc Core Requirements, students must complete requirements for one of the following specializations:

Professional Accountancy Specialization
Required courses for this specialization are: ACCT 6310, 6500, 6540, and 6600.

Taxation Specialization
Required courses for this specialization are: ACCT 6420, 6440, 6460, and one course chosen from PFP 6060, 6070, or 6080.

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 30-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 6310, plus 9 credits selected from approved finance-related courses.

Accelerated Program for Nonaccounting Undergraduate Majors

MAcc for nonaccounting undergraduate majors (54 to 68 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 Business Core, plus an additional 54 credits. The Business Core may be satisfied by taking the Accelerated Business Core (13.5 credits), which is offered during summer semester *only*. (See *Accelerated Business Core* text in the *Master of Business Administration (MBA)* section, page 202.) Students with undergraduate degrees in business subjects (other than accounting) need not take the Accelerated Business Core and therefore may earn the MAcc in 54 credits. The 54 credits include: ACCT 3110, 3120, 3310, 3410, 4200, 4410, 4500, 4510, the MAcc Core Requirements, and one of the MAcc areas of specialization.

MBA—Accounting Specialization
Students admitted to the USU MBA Program may earn an Accounting Specialization 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, 4200, 4410, 4500, 4510, 6200, 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 (see MBA program description, pages 202-203), and the following: PFP 6060, 6070, 6080; ACCT 3410; 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

George S. Eccles Chair in Capital Markets Research
Jeffrey T. Doyle, financial

ATK Thiokol Professor
Richard L. Jenson, systems

Larzette G. Hale Professor
I. Richard Johnson, financial, business combinations

Ernst & Young Professor
Clifford R. Skousen, international, managerial, financial

Arthur Andersen Executive Professor
Jay H. Price, Jr., financial, governmental, business combinations

Professors Emeritus
James W. Brackner
Frank A. Condie
Larzette G. Hale
David H. Luthy
Richard L. Ratliff

Associate Professors
Jeffrey T. Doyle, financial
Cindy Durtschi, financial, forensic
Rosemary R. Fullerton, financial, managerial
E. Vance Grange, financial planning and tax
Irvin T. Nelson, accounting education, financial, managerial

Assistant Professor
Garth F. Novack, tax

Principal Lecturer
Franklin D. Shuman, financial, managerial, governmental, business combinations

Lecturers
Ryan E. Larkin, tax and financial
Jack W. Peterson, financial
Dale G. Siler, business law and tax

Adjunct Professor
M. Kay Jeppesen, government contract accounting and administration

Course Descriptions

Accounting (ACCT), pages 555-556
Personal Financial Planning (PFP), page 689

Department of Aerospace Studies

Department Head: Lieutenant Colonel Michael A. Swift
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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

Pilot and navigator category applicants must enter undergraduate flying training prior to age 30. **AFROTC pilot and navigator candidates must be scheduled for commissioning before reaching 29 years of age.** Applicants must receive an enrollment allocation before reaching age 30. The maximum age restriction may be waived for individuals scheduled for commissioning after age 34, but prior to age 35. Public Law 88-647 prohibits commissioning or active duty entrance after age 35. By law, scholarship recipients must be under age 31, as of December 31 of the calendar year during which commissioning is scheduled. **Title 10, *United States Code*, Section 2107 does *not* provide for waivers.**

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:

Four-Year Program

First year:
AS 1010 Introduction to the Air Force Today....1
AS 1110 Leadership Laboratory I....1
AS 1020 Introduction to the Air Force Today....1
AS 1120 Leadership Laboratory I....1

Second year:
AS 2010 The Evolution of U.S. Aerospace Power....1
AS 2110 Leadership Laboratory II....1
AS 2020 The Evolution of U.S. Aerospace Power....1
AS 2120 Leadership Laboratory II....1

Third year:
AS 3400 Field Training (4 weeks)....1-4
AS 3010 Air Force Leadership and Management....3
AS 3110 Leadership Laboratory III....1
AS 3020 Air Force Leadership and Management....3
AS 3120 Leadership Laboratory III....1

Fourth year:
AS 4010 National Security Affairs/Preparation for Active Duty....3
AS 4110 Leadership Laboratory IV....1
AS 4020 National Security Affairs/Preparation for Active Duty....3
AS 4120 Leadership Laboratory IV....1

Three-Year Program

First year:
AS 1010 Introduction to the Air Force Today....1
AS 1110 Leadership Laboratory I....1
AS 2010 The Evolution of U.S. Aerospace Power....1
AS 2110 Leadership Laboratory II....1
AS 1020 Introduction to the Air Force Today....1
AS 1120 Leadership Laboratory I....1
AS 2020 The Evolution of U.S. Aerospace Power....1
AS 2120 Leadership Laboratory II....1

Second year:
AS 3400 Field Training (4 weeks)....1-4
AS 3010 Air Force Leadership and Management....3
AS 3110 Leadership Laboratory III....1
AS 3020 Air Force Leadership and Management....3
AS 3120 Leadership Laboratory III....1

Third year:
AS 4010 National Security Affairs/Preparation for Active Duty....3
AS 4110 Leadership Laboratory IV....1
AS 4020 National Security Affairs/Preparation for Active Duty....3
AS 4120 Leadership Laboratory IV....1

Two-Year Program

First year:
AS 3500 Field Training (6 weeks)....1-6
AS 3010 Air Force Leadership and Management....3
AS 3110 Leadership Laboratory III....1
AS 3020 Air Force Leadership and Management....3
AS 3120 Leadership Laboratory III....1

Second year:
AS 4010 National Security Affairs/Preparation for Active Duty....3
AS 4110 Leadership Laboratory IV....1
AS 4020 National Security Affairs/Preparation for Active Duty....3
AS 4120 Leadership Laboratory IV....1

One-Year Program

AS 3500 Field Training (6 weeks)....1-6
AS 4010 National Security Affairs/Preparation for Active Duty....3
AS 4110 Leadership Laboratory IV....1
AS 4020 National Security Affairs/Preparation for Active Duty....3
AS 4120 Leadership Laboratory IV....1

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 six weeks. Up to 6 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.

Commitment
Most officers have a four-year commitment. However, pilots have a commitment of ten years after pilot training, and navigators have a commitment of six years after their training. Air battle managers have a six-year commitment.

Future Educational Benefits
During the senior year, a cadet may request a delay to active duty to continue studies toward a graduate degree. The length of the delay depends upon the student's request and the Air Force needs.

Through a variety of Air Force programs, officers may continue their education after going on active duty. Most bases have extensive on-base graduate college programs. The Tuition Assistance Program will pay 100 percent of tuition costs. ROTC graduates may also be eligible for the Montgomery GI Bill.

The Air Force Institute of Technology provides full-time graduate study for selected officers. Some classes are taught in residence at the institute's campus at Wright-Patterson Air Force Base in Ohio, and others are taught at civilian universities.

Many officers make the Armed Forces their career, but some use the skills and training obtained in military service for civilian jobs. Most private businesses and government agencies require the same basic skills that are needed for jobs in military service. Air Force training and experience provide excellent leadership skills and can be a valuable asset in obtaining civilian employment.

Additional Information
For additional details about requirements for the Aerospace Studies program, see the major requirement sheet, which can be obtained from the department, or accessed at:
http://www.usu.edu/majorsheets/

Scholarships and Financial Aid

Scholarships
Air Force ROTC scholarships are available on a competitive basis in four-, three-, two-, and one-year awards. These scholarships provide up to full tuition, laboratory and incidental fees, plus an allowance for textbooks. Eligible USU students should apply to the Department of Aerospace Studies at USU.

The College Scholarship Program (CSP) for high school students is announced annually through the Air Force ROTC website at: **http://www.afrotc.com**. This website contains information regarding eligibility requirements and application proceedures, as well as an online application. **Generally, students *must* use the online application.** However, in the rare case that this is not possible, HQ AFROTC/DOR will work out an alternative application plan on a case-by-case basis. Students must apply by December 1 of their senior year in high school.

In addition, all students on contract (either on an Air Force ROTC scholarship or contracted in the POC) receive a tax-free stipend of $250-400 for each month during the school year.

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 Michael A. Swift

Assistant Professors
Major Walter D. "WD" Martin, Commandant of Cadets
Captain Kirstin L. Plagge, Unit Admissions Officer

Information Manager
Technical Sergeant Holly A. Huff

Personnel Specialist
Staff Sergeant Jessica L. Bruckner

Course Descriptions

Aerospace Studies (AS), pages 567-568

Department of Agricultural Systems Technology and Education

Department Head: Bruce E. Miller
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FAX: (435) 797-4002
E-mail: bruce.miller@usu.edu
WWW: http://www.aste.usu.edu

Agricultural Systems Technology, Agricultural Education, and Agricultural Machinery Technology Advisor:
Eric B. Worthen, ASTE 113, (435) 797-7091, eric.worthen@usu.edu

Family and Consumer Sciences Education Advisor:
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Degrees offered: Bachelor of Science (BS) in Agricultural Education; BS in Agricultural Communication and Journalism (offered jointly with Journalism and Communication Department); BS, Master of Science (MS) in Agricultural Systems Technology; BS in Family and Consumer Sciences Education; Associate of Applied Science (AAS) in Agricultural Machinery Technology; One-year Certificate in Agricultural Machinery Technology

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 and Postsecondary Agricultural Education

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 communication, 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.

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 16-20. 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 118). 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 49-59). In addition, students must complete the following courses in preparation for teacher licensure:

Professional Education (14 credits)
SCED 3100 Motivation and Classroom Management (F,Sp) 3
SCED 3210 (CI/DSS) Educational and Multicultural Foundations (F,Sp) 3
SCED 4200 (CI) Reading, Writing, and Technology (F,Sp) 3
SCED 4210 Cognition and Evaluation of Student Learning (F,Sp) 3
SPED 4000 Education of Exceptional Individuals (F,Sp,Su) 2

Agricultural Education (26 credits)
ASTE 2710 Orientation to Agricultural Education (F) 2
ASTE 3100 Leadership Applications in Agricultural Science, Management, and Development (Sp) 2
ASTE 3240 (CI) Teaching in Laboratory Settings (Sp) 3
ASTE 3300 Clinical Experience I in Agricultural Education (Sp) 1
ASTE 3620 Managing the FFA and SAE Programs (Sp,Su) 2
ASTE 4150 (CI) Methods of Teaching Agriculture (F) 3
ASTE 4300 Clinical Experience II in Agricultural Education (F) 1
ASTE 5500 Agricultural Education Secondary Curriculum Seminar (Sp) 2
ASTE 5630 Agricultural Education Student Teaching in Secondary Schools (Sp) 10

All students in the Agricultural Education major will complete a core of technical agricultural courses to include:

ASTE 3050 (CI) Technical and Professional Communication Principles in Agriculture (F,Sp) 3
ASTE 3080 Compact Power Units for Agricultural and Turfgrass Applications (Sp) 3
ADVS 1110 Introduction to Animal Science (F,Sp) 4
BIOL 1610 Biology I (F) 4
CHEM 1110 (BPS) General Chemistry I (F,Sp) 4
SOIL 3000 Fundamentals of Soil Science (F,Sp) 4

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.

Emphasis Areas (50-57 credits)

These emphasis areas will *not* appear on a student's transcript. They are emphasis areas approved by the Utah State Office of Education.

Production and Processing (50 credits)

ADVS 1110 Introduction to Animal Science (F,Sp)....4
ADVS 4560 (QI) Principles of Animal Breeding (F)....3
ASTE 2200 Electricity in Agricultural Systems (Sp)....3
ASTE 2830 Agribusiness Sales and Marketing (F)....3
ASTE 3030 Metal Welding Processes and Technology in Agriculture (F)....3
ASTE 3040 (QI) Fabrication Practices in Agricultural Buildings (Sp)....2
ASTE 3050 (CI) Technical and Professional Communication Principles in Agriculture (F,Sp)....3
ASTE 3080 Compact Power Units for Agricultural and Turfgrass Applications (Sp)....3
BIOL 1610 Biology I (F)....4
CHEM 1110 (BPS) General Chemistry I (F,Sp)....4
ECON 3030 (DSS) Introduction to Agribusiness Marketing (F) (3 cr) **or**
ECON 3050 (DSS) Introduction to Agribusiness Management (Sp) (3 cr)....3
PLSC 3050 Greenhouse Management and Crop Production (Sp)....4
PLSC 3700 Plant Propagation (F)....4
PLSC 4280 Field Crops (F)....3
SOIL 3000 Fundamentals of Soil Science (F,Sp)....4

Horticulture (57 credits)

ADVS 1110 Introduction to Animal Science (F.Sp)....4
ASTE 2830 Agribusiness Sales and Marketing (F)....3
ASTE 3040 (QI) Fabrication Practices in Agricultural Buildings (Sp)....2
ASTE 3050 (CI) Technical and Professional Communication Principles in Agriculture (F,Sp)....3
ASTE 3080 Compact Power Units for Agricultural and Turfgrass Applications (Sp)....3
BIOL 1610 Biology I (F)....4
CHEM 1110 (BPS) General Chemistry I (F,Sp)....4
PLSC 2200 Pest Management Principles and Practices (Sp)....3
PLSC 2600 Annual and Perennial Plant Materials (F)....1.5
PLSC 2610 Indoor Plants and Interiorscaping (F)....1.5
PLSC 2620 Woody Plant Materials: Trees and Shrubs for the Landscape (F)....3
PLSC 2650 Identification and Selection of Plants in Production Agriculture (F)....1
PLSC 3010 Basic Flower Arranging (F)....2
PLSC 3050 Greenhouse Management and Crop Production (Sp)....4
PLSC 3300 Residential Landscapes (Sp)....3
PLSC 3700 Plant Propagation (F)....4
PLSC 3800 Turfgrass Management (F)....3
PLSC 4500 Fruit Production (Sp)....4
SOIL 3000 Fundamentals of Soil Science (F,Sp)....4

Agricultural Systems (57 credits)

ADVS 1110 Introduction to Animal Science (F,Sp)....4
ASTE 1010 Introduction to Agricultural Systems Technology (F)....3
ASTE 1640 Agricultural Equipment and Parts Marketing and Communications (F)....3
ASTE 2200 Electricity in Agricultural Systems (Sp)....3
ASTE 3030 Metal Welding Processes and Technology in Agriculture (F)....3
ASTE 3040 (QI) Fabrication Practices in Agricultural Buildings (Sp)....2
ASTE 3050 (CI) Technical and Professional Communication Principles in Agriculture (F,Sp)....3
ASTE 3080 Compact Power Units for Agricultural and Turfgrass Applications (Sp)....3
ASTE 3200 Irrigation Principles and Practices (Sp)....3
ASTE 3600 (QI) Management of Agricultural Machinery Systems (Sp)....3
ASTE 4100 Agricultural Structures and Environment (Sp)....3
ASTE 5100 Electrical Controls and Motors for Agri-Industrial Applications (Sp)....3
ASTE 5260 (CI) Environmental Impacts of Agricultural Systems (F)....3
CHEM 1110 (BPS) General Chemistry I (F,Sp)....4
ECON 3030 (DSS) Introduction to Agribusiness Marketing (F) (3 cr) **or**
ECON 3050 (DSS) Introduction to Agribusiness Management (Sp) (3 cr)....3
PHYS 1200 (BPS) Introduction to Physics by Hands-on Exploration....4
PLSC 4280 Field Crops (F)....3
SOIL 3000 Fundamentals of Soil Science (F,Sp)....4

Natural Resources (55 credits)

ADVS 1110 Introduction to Animal Science (F,Sp)....4
ASTE 3040 (QI) Fabrication Practices in Agricultural Buildings (Sp)....2
ASTE 3050 (CI) Technical and Professional Communication Principles in Agriculture (F,Sp)....3
ASTE 3080 Compact Power Units for Agricultural and Turfgrass Applications (Sp)....3
ASTE 5260 (CI) Environmental Impacts of Agricultural Systems (F)....3
BIOL 1610 Biology I (F)....4
BIOL 1620 (BLS) Biology II (Sp)....4
BIOL 2220 General Ecology (F,Sp)....3
CHEM 1110 (BPS) General Chemistry I (F,Sp)....4
ENVS 2340 (BSS) Natural Resources and Society (F,Sp)....3
ENVS 3600 Living with Wildlife (Sp)....3
SOIL 3000 Fundamentals of Soil Science (F,Sp) (4 cr) **or**
SOIL 4000 Soil and Water Conservation (F) (4 cr)....4
WILD 3600 Wildland Plant Ecology and Identification (F)....4
WILD 3610 Wildland Animal Ecology and Identification (F)....4
WILD 3900 Managing Dynamic Ecological Systems (Sp)....4
WILD 4000 Principles of Rangeland Management (Sp)....3

Suggested Four-year Course of Study for Agricultural Education Major

Freshman Year (32 credits)

Fall Semester (16 credits)
ADVS 1110 Introduction to Animal Science....4
ASTE 2710 Orientation to Agricultural Education....2
ENGL 1010 (CL1) Introduction to Writing: Academic Prose....3
MATH 1050 (QL) College Algebra....4
USU 1320 (BHU) Civilization: Humanities....3

Spring Semester (16 credits)
ASTE 2200 Electricity in Agricultural Systems....3
ASTE 2900 (BSS) Humanity in the Food Web....3
CHEM 1110 (BPS) General Chemistry....4
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles....3
USU 1350 (BLS) Integrated Life Science....3

Sophomore Year (29-30 credits)

Fall Semester (16 credits)
ASTE 2830 Agribusiness Sales and Marketing....3
ASTE 3030 Metal Welding Processes and Technology in Agriculture....3
BIOL 1610 Biology I....4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode....3
USU 1330 (BCA) Civilization: Creative Arts....3

Spring Semester (13-14 credits)
ASTE 3040 (QI) Fabrication Practices in Agricultural Buildings 2
ASTE 3080 Compact Power Units for Agricultural and Turfgrass Applications 3
ASTE 3100 Leadership Applications in Agricultural Science, Management, and Development 2
PLSC 3050 Greenhouse Management and Crop Production 4
ADVS elective Production course 2-3

Junior Year (31 credits)
Fall Semester (15 credits)
ADVS 4560 (QI) Principles of Animal Breeding 3
ASTE 3050 (CI) Technical and Professional Communication Principles in Agriculture 3
ECON 3030 (DSS) Introduction to Agribusiness Marketing 3
PLSC 3700 Plant Propagation 4
USU 3330 (DHA) Arts Symposium 2

Spring Semester (Level I—16 credits)
ASTE 3240 (CI) Teaching in Laboratory Settings 3
ASTE 3300 Clinical Experience I in Agricultural Education 1
ASTE 3620 Managing the FFA and SAE Programs 2
SCED 3100 Motivation and Classroom Management 3
SCED 3210 (CI/DSS) Educational and Multicultural Foundations 3
SOIL 3000 Fundamentals of Soil Science 4

Senior Year (Level II—27 credits)
Fall Semester (15 credits)
ASTE 4150 (CI) Methods of Teaching Agriculture 3
ASTE 4300 Clinical Experience II in Agricultural Education 1
PLSC 4280 Field Crops 3
SCED 4200 (CI) Reading, Writing, and Technology 3
SCED 4210 Cognition and Evaluation of Student Learning 3
SPED 4000 Education of Exceptional Individuals 2

Spring Semester (12 credits)
ASTE 5500 Agricultural Education Secondary Curriculum Seminar 2
ASTE 5630 Agricultural Education Student Teaching in Secondary Schools 10

In addition to the courses listed above, students must complete enough elective credits to meet the University's requirement of *at least* 120 total 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.

The Bachelor of Science in Agricultural Systems Technology includes the following courses:

Technical Requirements (20 credits)
ACCT 2010 Survey of Accounting I (F,Sp,Su) 3
CHEM 1110 (BPS) General Chemistry I (F,Sp) 4
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp) 3
ECON 3030 (DSS) Introduction to Agribusiness Marketing (F) 3
ECON 3050 (DSS) Introduction to Agribusiness Management (Sp) 3
SOIL 3000 Fundamentals of Soil Science (F,Sp) 4

Communications Intensive Courses (6 credits)
ASTE 3050 (CI) Technical and Professional Communication Principles in Agriculture (F,Sp) 3
ASTE 5260 (CI) Environmental Impacts of Agricultural Systems (F) 3

Agricultural Systems Courses (minimum of 24 credits)
ASTE 1010 Introduction to Agricultural Systems Technology (F) 3
ASTE 2200 Electricity in Agricultural Systems (Sp) 3
ASTE 2830 Agribusiness Sales and Marketing (F) 3
ASTE 3030 Metal Welding Processes and Technology in Agriculture (F) 3
ASTE 3080 Compact Power Units for Agricultural and Turfgrass Applications (Sp) 3
ASTE 3090 Computer Applications in Agriculture (F) 3
ASTE 4100 Agricultural Structures and Environment (Sp) 3
ASTE 4900 Senior Project Research and Creative Opportunity (Sp) 1-6

Designated Electives (minimum of 24 credits)
Select 24 credits from the following courses. Twelve of these credits must be selected from upper-division (3000-level and above) courses.

ASTE 1610 Agricultural Machinery Engines (F) 6
ASTE 1620 Agricultural Machinery Power Trains (Sp) 6
ASTE 3040 (QI) Fabrication Practices in Agricultural Buildings (Sp) 2
ASTE 3100 Leadership Applications in Agricultural Science, Management, and Development (Sp) 2
ASTE 3200 Irrigation Principles and Practices (Sp) 3
ASTE 3600 (QI) Management of Agricultural Machinery Systems (Sp) 3
ASTE 3900 Special Problems in Agricultural Systems Technology and Education (F,Sp,Su) 1-6
ASTE 4250 Occupational Experiences in Agriculture (F,Sp,Su) 1-6
ASTE 5100 Electrical Controls and Motors for Agri-Industrial Applications (Sp) 3
ADVS courses 6-12
ACCT courses 6-12
ECON courses (Agricultural) 6-12
MHR courses 6-12
BA courses 6-12
BIS courses 6-12
PLSC courses 6-12
SOIL courses 6-12

Students will complete a minor in Business or Agribusiness. Additional requirements in Animal Science; Plant and Soil Sciences; and Wildland Resources must also be met. In addition, students must complete the University Studies Requirements (see pages 49-59). Students must complete elective credits to meet the University's requirement of at least 120 credits.

Suggested Four-year Course of Study for Agricultural Systems Technology Major

Freshman Year (32 credits)
Fall Semester (16 credits)
ASTE 1010 Introduction to Agricultural Systems Technology 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MATH 1050 (QL) College Algebra 4
PHIL 1000 (BHU) Introduction to Philosophy 3
Designated elective course[1] 3

Spring Semester (16 credits)
ASTE 2200 Electricity in Agricultural Systems 3
CHEM 1110 (BPS) General Chemistry 4
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles 3
USU 1350 (BLS) Integrated Life Science 3
Designated elective course[1] 3

Sophomore Year (29 credits)
Fall Semester (15 credits)
ASTE 2830 Agribusiness Sales and Marketing 3
ASTE 3030 Metal Welding Processes and Technology in Agriculture 3
ACCT 2010 Survey of Accounting I 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
USU 1330 (BCA) Civilization: Creative Arts 3

Spring Semester (14 credits)
ASTE 2900 (BSS) Humanity in the Food Web 3
ASTE 3040 (QI) Fabrication Practices in Agricultural Buildings 2
ASTE 3080 Compact Power Units for Agricultural and Turfgrass Applications 3
Designated elective courses[1] 6

Junior Year (31 credits)
Fall Semester (15 credits)
ASTE 3050 (CI) Technical and Professional Communication Principles in Agriculture 3
ASTE 3090 Computer Applications in Agriculture 3
ECON 3030 (DSS) Introduction to Agribusiness Marketing 3
Designated elective courses[1] 6

Spring Semester (16 credits)
ASTE 4100 Agricultural Structures and Environment 3
ECON 3050 (DSS) Introduction to Agribusiness Management 3
SOIL 3000 Fundamentals of Soil Science 4
Designated elective courses[1] 6

Senior Year (29 credits)
Fall Semester (14 credits)
ASTE 5260 (CI) Environmental Impacts of Agricultural Systems 3
USU 3330 (DHA) Arts Symposium 2
Designated elective courses[1] 9

Spring Semester (15 credits)
ASTE 4900 Senior Project Research and Creative Opportunity 3
Designated elective courses[1] 12

[1]Students must complete a minimum of 24 credits of designated elective courses in ASTE, ADVS, ACCT, ECON (Agricultural), MHR, BA, BIS, PLSC, or SOIL courses. Of these, 12 credits must be selected from upper-division (3000-level and above) courses. Students must complete enough elective credits to meet the University's requirement of *at least* 120 total credits.

Agricultural Systems Technology and Agribusiness Composite Major

Economics Courses (27 credits)

ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp) 3
ECON 2010 (BSS) Introduction to Microeconomics (F,Sp,Su) 3
ECON 3030 (DSS) Introduction to Agribusiness Marketing (F) 3
ECON 3050 (DSS) Introduction to Agribusiness Management (Sp) 3
ECON 4010 (DSS) Managerial Economics (F,Sp) 3
ECON 4030 (CI) Agribusiness Finance (F) 3
ECON 5030 Agricultural Marketing and Price Analysis (F) 3
ECON 5050 Farm and Ranch Planning and Analysis (Sp) 3
ECON 5350 (CI) Agribusiness, Cooperatives, and Management (Sp) 3

Agricultural Systems Courses (24 credits)

ASTE 1010 Introduction to Agricultural Systems Technology (F) 3
ASTE 2200 Electricity in Agricultural Systems (Sp) 3
ASTE 3030 Metal Welding Processes and Technology in Agriculture (F) (3 cr) **or**
ASTE 4100 Agricultural Structures and Environment (Sp) (3 cr) 3
ASTE 3050 (CI) Technical and Professional Communication Principles in Agriculture (F,Sp) 3
ASTE 3090 Computer Applications in Agriculture (F) 3
ASTE 3200 Irrigation Principles and Practices (Sp) (3 cr) **or**
ASTE 3080 Compact Power Units for Agricultural and Turfgrass Applications (Sp) (3 cr) 3
ASTE 3600 (QI) Management of Agricultural Machinery Systems (Sp) 3
ASTE 5260 (CI) Environmental Impacts of Agricultural Systems (F) 3

Technical Requirements (27 credits)

ACCT 2010 Survey of Accounting I (F,Sp,Su) 3
ACCT 2020 Survey of Accounting II (F,Sp,Su) 3
CHEM 1010 (BPS) Introduction to Chemistry (F,Sp) 3
MATH 1050 (QL) College Algebra (F,Sp,Su) 4
MATH 1100 (QL) Calculus Techniques (F,Sp,Su) 3
MHR 2050 Legal and Ethical Environment of Business (F,Sp,Su) 3
SOIL 4000 Soil and Water Conservation (F) 4
STAT 2300 (QL) Business Statistics (F,Sp,Su) 4

University Studies Requirements (not met as part of above requirements) (18 credits)

Communications Literacy (CL1 and CL2) courses 6
Breadth Creative Arts (BCA) course 3
Breadth Humanities (BHU) course 3
Breadth Life Sciences (BLS) course 3
Depth Humanities and Creative Arts (DHA) course 3
Computer and Information Literacy (CIL) Exam 0

General Electives (24 credits)

Total Credits for Graduation 120

Bachelor of Science in Agricultural Communication and Journalism

To develop a well-rounded agricultural communication professional, the BS degree in Agricultural Comunication and Journalism combines courses in journalism with courses in agriculture. Students take coursework in a variety of technical agricultural disciplines, including animal science, plant science, agricultural economics, textiles, and biotechnology. This training provides students with the basic knowledge to draw from as they communicate the importance of the food and fiber industry. This program is designed so that students may complete a dual major in Journalism.

University Studies—Competency

ENGL 1010 (CL1) Introduction to Writing: Academic Prose (F,Sp,Su) 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode (F,Sp,Su) 3
(**Note:** Alternatively, the CL1 and CL2 requirements may be fulfilled through testing. See page 49 for further information.)
MATH 1050 (QL) College Algebra (F,Sp,Su) 4

University Studies—Breadth

Students must complete a minimum of 18 credits in breadth courses, including one course from each of the six catagories (BAI, BCA, BHU, BLS, BPS, and BSS). At least two of these six courses must have a USU prefix. The following courses are suggested for students in the Agricultural Communication and Journalism major.

CHEM 1010 (BPS) Introduction to Chemistry (F,Sp) 3
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp) 3
JCOM 1500 (BSS) Introduction to Mass Communication (F,Sp) 3
USU 1350 (BLS) Integrated Life Science (F,Sp,Su) 3
Breadth Creative Arts (BCA) course 3
Breadth Humanities (BHU) course 3

University Studies—Depth

Two Communications Intensive (CI) courses and one Quantitative Intensive (QI) course are required. Students in the Agricultural Communication and Journalism major must also take one Depth Humanities and Creative Arts (DHA) course and one Depth Social Sciences (DSS) course. The CI requirement may be fulfilled with two of ASTE 3050, 5260, and JCOM 2610 (required for the major). ECON 3030 or JCOM 4030 (taken as part of the major) will fulfill the DSS requirement.

Technical Agriculture Courses (18 credits)

ADVS 1110 Introduction to Animal Science (F,Sp) 4
ECON 3030 (DSS) Introduction to Agribusiness Marketing (F) 3
FCSE 3030 Textile Science 4
NFS 2040 Introduction to Biotechnology (Sp) 1
PLSC 4300 World Food Crops and Cropping Systems: The Plants That Feed us 3
Upper-division College of Agriculture elective course 3

Agricultural Communication Courses (20 credits)

ASTE 1710 Introduction to Agricultural Communication (F) 3
ASTE 2830 Agribusiness Sales and Marketing (F) 3
ASTE 2900 (BSS) Humanity in the Food Web (F,Sp) 3
ASTE 3050 (CI) Technical and Professional Communication Principles in Agriculture (F,Sp) 3
ASTE 3100 Leadership Applications in Agricultural Science, Management, and Development (Sp) 2
ASTE 4900 Senior Project: Agricultural Publications (Sp) 3
ASTE 5260 (CI) Environmental Impacts of Agricultural Systems (F) 3

Journalism and Communication (15 credits)

JCOM 1130 Beginning Newswriting for the Mass Media (F,Sp,Su) 3
JCOM 1500 (BSS) Introduction to Mass Communication (F,Sp) 3
JCOM 2010 (BSS) Media Smarts: Making Sense of the Information Age (F,Sp) 3
JCOM 2160 (CI) Introduction to Online Journalism (F,Sp) 2
JCOM 4000 Senior Seminar in Mass Communication (F,Sp) 1
JCOM 4030 (DSS) Mass Media Law (F,Sp) 3

Public Relations/Corporate Communication Concentration (example)

Note: Agricultural Communication and Journalism students may elect to concentrate their coursework within one of the three Journalism major emphases (broadcast/electronic media, print journalism, or public relations/corporate communications), *or* they may construct an individually designed concentration with the approval of the Journalism and Communication Department faculty.

JCOM 2300 Introduction to Public Relations (F,Sp) 3
JCOM 2310 (CI) Writing for Public Relations (F,Sp) 3
JCOM 3300 (DSS) Strategic Research Methods in Public Relations (F,Sp) 3
JCOM 5300 (CI) Case Studies in Public Relations (F,Sp) 3
Elective skills course 3

Non-Agriculture/Communication Electives

Additional elective courses in fields *other than* agriculture and communication must be taken to complete the remainder of the minimum 120 credits required for graduation.

Suggested Four-year Course of Study for Agricultural Communication and Journalism Major

Freshman Year (32 credits)

Fall Semester (17 credits)
ASTE 1710 Introduction to Agricultural Communication 3
ADVS 1110 Introduction to Animal Science 4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MATH 1050 (QL) College Algebra 4
Non-Agriculture/Communication elective course 3

Spring Semester (15 credits)
CHEM 1010 (BPS) Introduction to Chemistry 3
JCOM 1130 Beginning Newswriting for the Mass Media 3
JCOM 1500 (BSS) Introduction to Mass Communication 3
Breadth Creative Arts (BCA) course 3
Non-Agriculture/Communication elective course 3

Sophomore Year (26 credits)

Fall Semester (15 credits)
ASTE 2830 Agribusiness Sales and Marketing 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
JCOM 2010 (BSS) Media Smarts: Beginning Newswriting for the Mass Media 3
USU 1350 (BLS) Integrated Life Science 3
Breadth Humanities (BHU) course 3

Spring Semester (11 credits)
ASTE 3100 Leadership Applications in Agricultural Science, Management, and Development 2
ECON 1500 Introduction to Economic Institutions, History, and Principles 3
JCOM 2160 (CI) Introduction to Online Journalism 2
NFS 2040 Introduction to Biotechnology 1
Quantitative Intensive (QI) course 3

Junior Year (31 credits)

Fall Semester (15 credits)
ASTE 2900 (BSS) Humanity in the Food Web 3
ECON 3030 (DSS) Introduction to Agribusiness Marketing 3
JCOM 2300 Introduction to Public Relations 3
Upper-division Agriculture elective course 3
Depth Humanities and Creative Arts (DHA) course 3

Spring Semester (16 credits)
ASTE 3050 (CI) Technical and Professional Communication Principles in Agriculture 3
FCSE 3030 Textile Science 4
JCOM 4030 (DSS) Mass Media Law 3
PLSC 4300 World Food Crops 3
Non-Agriculture/Communication elective course 3

Senior Year (25-28 credits)
Fall Semester (15 credits)
ASTE 5260 (CI) Environmental Impacts of Agricultural Systems.....3
JCOM 2310 (CI) Writing for Public Relations.....3
JCOM 3300 (DSS) Strategic Research Methods in Public Relations ...3
JCOM elective course 3
Non-Agriculture/Communication elective course 3

Spring Semester (10-13 credits)
ASTE 4900 Senior Project: Agricultural Publications 3-6
JCOM 4000 Senior Seminar in Mass Communication 1
JCOM 5300 (CI) Case Studies in Public Relations 3
Non-Agriculture/Communication elective course 3

Associate of Applied Science Degree in Agricultural Machinery Technology

The Associate of Applied Science Degree in Agricultural Machinery Technology consists of a minimum of 6 credits of University Studies courses, 45 credits in the major (Agricultural Systems Technology and Education), 9 credits in business or related elective coursework, for a total of not less than 60 credits. The suggested breakdown of coursework is listed below.

University Studies (6 credits)
Classes will be selected from a minimum of two areas for a total of 6 credits. ENGL 1010, Introduction to Writing: Academic Prose (or an equivalent writing or communications class) must be completed as one of these classes.

Core Classes (45 credits)
The following 45 credits are required:
ASTE 1010 Introduction to Agricultural Systems Technology (F).....3
ASTE 1120 Forage and Harvest Equipment (F) 3
ASTE 1130 Planting and Tillage Equipment (Sp).....3
ASTE 1610 Agricultural Machinery Engines (F).....6
ASTE 1620 Agricultural Machinery Power Trains (Sp).....6
ASTE 2200 Electricity in Agricultural Systems (AC) (Sp).....3
ASTE 3030 Metal Welding Processes and Technology in Agriculture (F).....3
ASTE 3080 Compact Power Units for Agricultural and Turfgrass Applications (Sp) 3
ASTE 3090 Computer Applications in Agriculture (F) 3
ASTE 3600 Management of Agricultural Machinery Systems (Sp).....3
ASTE 3710 Agricultural Machinery Hydraulic Systems and Diagnosis (F) 3
ASTE 3720 Agricultural DC Electrical Systems and Diagnosis (F) 3
ASTE 3730 Agricultural Machinery Auxiliary Systems and Diagnosis (Sp).....3

Business or Related Elective Classes (select 9 credits)
ADVS 1110 Introduction to Animal Science (F,Sp).....4
ASTE 2250 Occupational Experience in Agriculture (F,Sp) 5
ASTE 2830 Agribusiness Sales and Marketing (F) 3
ASTE 2900 (BSS) Humanity in the Food Web (F,Sp).....3
ASTE 2930 Individualized Projects in Agricultural Mechanics (F,Sp).1-3
ASTE 3040 Fabrication Practices in Agricultural Buildings (Sp) 2
ASTE 3050 Technical and Professional Communication Principles in Agriculture (F,Sp).....3
ASTE 3090 Computer Applications in Agriculture (F) 3
ASTE 3100 Leadership Applications in Agricultural Science, Management, and Development (Sp) 2
ASTE 3200 Irrigation Principles and Practices (Sp).....3
ASTE 3900 Special Problems in Agricultural Systems Technology and Education (F,Sp,Su) 1-6
ASTE 4100 Agricultural Structures and Environment (Sp) 3
ASTE 5100 Electrical Controls and Motors for Agri-Industrial Applications (Sp) 3
ASTE 5260 Environmental Impacts of Agricultural Systems (F) 3
BIOL 1610 Biology I (F).....4
CHEM 1110 (BPS) General Chemistry I (F,Sp).....4
MATH 1030 (QL) Quantitative Reasoning (F,Sp).....3
NR 1010 (BSS) Humans and the Changing Global Environment (F,Sp).....3
PHYS 1200 (BPS) Introduction to Physics by Hands-on Exploration ...4
PLSC 2200 Pest Management Principles and Practices (Sp) 3
PLSC 2620 Woody Plant Materials: Trees and Shrubs for the Landscape (F) 3
PLSC 2650 Identification and Selection of Plants in Production Agriculture (F).....1
PLSC 3050 Greenhouse Management and Crop Production (Sp) 4
PLSC 3300 Residential Landscapes (Sp).....3
PLSC 3400 Landscape Management Principles and Practices (F) 3
PLSC 3800 Turfgrass Management (F) 3
PLSC 5550 Weed Biology and Control (F).....4
WATS 1200 (BLS) Biodiversity: Its Conservation and Future (F,Sp) 3
WILD 4000 Principles of Rangeland Management (Sp) 3

Elective Courses
Students should select credits approved by the Agricultural Systems Technology and Education Department for flexibility in strengthening areas of insufficient background.

A total of 60 credits are required.

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 31 credits, with the following breakdown of suggested coursework:

Fall Semester
ASTE 1010 Introduction to Agricultural Systems Technology 3
ASTE 1120 Forage and Harvest Equipment 3
ASTE 1610 Agricultural Machinery Engines 6
ASTE 3090 Computer Applications in Agriculture 3
ASTE 3710 Agricultural Machinery Hydraulic Systems and Diagnosis.....3

Spring Semester
ASTE 1130 Planting and Tillage Equipment 3
ASTE 1620 Agricultural Machinery Power Trains 6
ASTE 2250 Occupational Experience in Agriculture 1-6
ASTE 3080 Compact Power Units for Agricultural and Turfgrass Applications 3

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.

Department of Agricultural Systems Technology and Education

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, 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 following courses are required for the Family and Consumer Sciences Education Major.

Required Support Courses and Prerequisites

MATH 1050 (QL) College Algebra (F,Sp,Su).....4
CHEM 1110 (BPS) General Chemistry I (F).....4
CHEM 1120 (BPS) General Chemistry II (Sp).....4

Major Required Courses (86-88 credits)

A grade of *C* or better must be earned in these courses

FCHD 1500 (BSS) Human Development Across the Lifespan (F,Sp)...3
FCHD 2400 (BSS) Marriage and Family Relationships (F,Sp).....3
FCHD 2450 (BSS) The Consumer and the Market (F,Sp).....3
FCHD 3350 (DSS/QI) Family Finance (F,Sp).....3
FCHD 4550 Preschool Methods and Curriculum (F,Sp).....3
FCSE 2040 Clothing Production Principles (F,Sp).....3
FCSE 2510 Orientation to Family and Consumer Sciences Education (Sp).....3
FCSE 3030 (DSC) Textile Science (Sp).....4
FCSE 3040 Advanced Clothing Production Principles (F).....3
FCSE 3060 (DSS/CI) Human Behavior Related to Dress (F) (3 cr) **or**
FCSE 3080 Dress and Humanity (F,Su) (3 cr).....3
FCSE 3300 Family and Consumer Sciences Education Clinical Experience I (40 hrs. minimum) (Sp).....1
FCSE 3400 Family and Consumer Sciences Education Methods I (Sp).....3
FCSE 3790 Housing and Interior Design Teaching Methods (F,Sp,Su).....3
FCSE 4250 Internship in Family and Consumer Sciences Education (F,Sp,Su).....1-3
FCSE 4300 Family and Consumer Sciences Education Clinical Experience II (40 hrs. minimum) (F).....1
FCSE 4400 Family and Consumer Sciences Education Methods II (F).....3
FCSE 5500 Student Teaching Seminar (2 weeks) (Sp).....2
FCSE 5630 Student Teaching in Secondary Schools (13 weeks, full-time) (Sp).....10
ID 1790 (BCA) Interior Design Theory (Sp).....3
INST 3500 Technology Tools for Secondary Teachers (F,Sp).....1
NFS 1020 (BLS) Science and Application of Human Nutrition (F,Sp).....3
NFS 1240 Culinary Basics (F,Su).....3
NFS 2020 Nutrition Throughout the Life Cycle (Sp).....3
NFS 3070 Science of Food Preparation (Sp).....4
SCED 3100 Motivation and Classroom Management (F,Sp).....3
SCED 3210 (DSS/CI) Educational and Multicultural Foundations (F,Sp).....3
SCED 4200 (CI) Reading, Writing, and Technology (F,Sp).....3
SCED 4210 Cognition and Evaluation of Student Learning (F,Sp).....3
SPED 4000 Education of Exceptional Individuals (F,Sp,Su) (May be taken anytime).....2

Suggested Four-year Course of Study for Family and Consumer Sciences Education Major

Freshman Year (31-34 credits)

Fall Semester (15-18 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose.....3
FCHD 1500 (BSS) Human Development Across The Lifespan.....3
FCHD 2450 (BSS) The Consumer and the Market.....3
FCSE 2040 Clothing Production Principles.....3
MATH 1010 Intermediate Algebra.....3
OSS 1400 Microcomputer Applications (3 cr) **or**
Passing scores on Computer and Information Literacy (CIL) exams (0 cr).....0-3
(**Note:** Although OSS 1400 includes the CIL exams, the CIL requirement is met *only* by passing all six exams, *not* by simply passing OSS 1400.)

Spring Semester (16 credits)
FCSE 2510 Orientation to Family and Consumer Sciences Education.....3
ID 1790 (BCA) Interior Design Theory.....3
MATH 1050 (QL) College Algebra.....4
NFS 1020 (BLS) Science and Application of Human Nutrition.....3
USU 1320 (BHU) Civilization: Humanities.....3

Sophomore Year (30 credits)

Fall Semester (16 credits)
CHEM 1110 (BPS) General Chemistry I.....4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode.....3
FCHD 2400 (BSS) Marriage and Family Relationships.....3
NFS 1240 Culinary Basics.....3
USU 1300 (BAI) U.S. Institutions.....3

Spring Semester (14 credits)
CHEM 1120 (BPS) General Chemistry II.....4
FCHD 3350 Family Finance.....3
FCSE 3030 (DSC) Textile Science.....4
NFS 2020 Nutrition Throughout the Life Cycle.....3

Junior Year (29 credits)

Fall Semester (14 credits)
FCHD 4550 Preschool Methods and Curriculum.....3
FCSE 3040 Advanced Clothing Production Principles.....3
FCSE 3060 (CI) Human Behavior Related to Dress (3 cr) **or**
FCSE 3080 Dress and Humanity (3 cr).....3
SPED 4000 Education of Exceptional Individuals.....2
Depth Humanities and Creative Arts (DHA) course.....3

Spring Semester (15 credits)
FCSE 3300 Family and Consumer Sciences Education Clinical Experience I.....1
FCSE 3400 Family and Consumer Sciences Education Methods I.....3
INST 3500 Technology Tools for Secondary Teachers.....1
NFS 3070 Science of Food Preparation.....4
SCED 3100 Motivation and Classroom Management.....3
SCED 3210 (CI) Educational and Multicultural Foundations.....3

Senior Year (26-28 credits)
Fall Semester (14-16 credits)
FCSE 3790 Housing and Interior Design Teaching Methods 3
FCSE 4250 Internship in Family and Consumer Sciences Education 1-3
FCSE 4300 Family and Consumer Sciences Education Clinical Experience II 1
FCSE 4400 Family and Consumer Sciences Education Methods II 3
SCED 4200 (CI) Reading, Writing, and Technology 3
SCED 4210 Cognition and Evaluation of Student Learning 3

Spring Semester (12 credits)
FCSE 5500 Student Teaching Seminar 2
FCSE 5630 Student Teaching in Secondary School 10

In addition to the courses listed above, students must complete enough elective credits to meet the University's requirement of *at least* 120 total credits.

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. Minimum GPA requirements for participation in departmental honors vary by department, but usually fall within the range of 3.30-3.50. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level. The campus-wide Honors Program, which is open to all qualified students regardless of major, offers a rich array of cultural and social activities, special classes, and the benefit of Honors early registration. Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@cc.usu.edu. Additional information can be found online at:
http://www.usu.edu/honors/

Additional Information

For further information about undergraduate programs and requirements in the Department of Agricultural Systems Technology and Education, see the major requirement sheets, which can be obtained from the department, or accessed online at:
http://www.usu.edu/majorsheets/

Graduate Programs

Admission Requirements

See general admission requirements, pages 101-102. Applications will be considered throughout the year. However, students who wish to be considered for financial aid must apply by February 1 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 33 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 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 37 credits. Students are also expected to select and complete an area of specialization.

In the Family and Consumer Sciences Education and Extension specialization, a Plan B option is available. This plan involves 33 credits of instruction (includes 3 thesis credits) and the development and presentation of a creative project.

The following four specializations are available for the MS in Agricultural Education:

The **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; Wildland Resources; and Instructional Technology.

The **Secondary and Postsecondary Agricultural Education** specialization is designed for persons desiring to improve their competencies as educators. This specialization provides teachers with opportunities to acquire additional knowledge in professional education and in their teaching specialties. The master's degree *does not* result in a teaching license for public schools.

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 **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.

Department of Agricultural Systems Technology and Education

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
Bruce E. Miller, agricultural systems and mechanization
Gary S. Straquadine, agricultural education/extension

Adjunct Professor
Kevin C. Kesler, 4-H and youth development programs

Professors Emeritus
Gilbert A. Long, agricultural education
Weldon S. Sleight, extension education

Associate Professors
F. Richard Beard, research and extension, agricultural engineering
Rhonda L. Miller, sustainable agriculture/agricultural systems
Rudy S. Tarpley, agricultural education, teacher preparation

Assistant Professor
Brian K. Warnick, agricultural education, teacher preparation

Instructor
Betty J. Murri, apparel and textiles

Lecturers
Royce Hatch, agricultural machinery technology
Afifa Sabir, education and outreach, Biotechnology Center
Scott Wangsgard, agricultural machinery technology
Julie P. Wheeler, family and consumer sciences education

Academic Advisor
Eric B. Worthen

Course Descriptions

Agricultural Systems Technology and Education (ASTE), pages 568-570

Family and Consumer Sciences Education (FCSE), pages 630-631

Department of 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:
Aaron L. Olsen, Veterinary Science 105, (435) 797-8141, alo@cc.usu.edu

Graduate Programs Coordinator:
Thomas D. Bunch, Agricultural Science 220, (435) 797-2148, tombunch@cc.usu.edu

Degrees offered: Bachelor of Science (BS) 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

Undergraduate Programs

Objectives

Bachelor's degree students majoring in Animal Science may choose a program from three career emphasis areas: **Science, Animal Industries**, or **Biotechnology**. Students majoring in Dairy Science may choose a program from two career emphasis areas: **Science** or **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.

Bioveterinary Science (preveterinary) 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 preveterinary bachelor's degree is considered a nonterminal degree. Preveterinary students may earn a bachelor's degree in Bioveterinary Science, or in the Science Emphasis of Animal Science or Dairy Science.

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 post-graduate 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.

Those 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 to their Bioveterinary Science or Animal Science 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, and Oregon State University. The State of Utah also provides some support for a limited number of resident students who enroll at non-WICHE veterinary schools in the continental United States. 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, except that students declaring a Biotechnology Emphasis must have a 2.25 total GPA.

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 2.25 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 Science Major

Animal Industries Emphasis Curriculum (2.25 GPA)
Freshman Year (32.5-33.5 credits)

Fall Semester (16.5-17.5 credits)
ADVS 1110 Introduction to Animal Science 4
ADVS 1910 Orientation to Animal and Dairy Science 0.5
ADVS 2130[5] Dairy Production Practices (3 cr) **or**
ADVS 2190[5] Horse Production Practices (2 cr) ..... 2 or 3
BIOL 1010 (BLS) Biology and the Citizen 3
MATH 1050 (QL) College Algebra 4
Breadth Course[1] 3

Spring Semester (16 credits)
ADVS 1250 (QI) Applied Agricultural Computations 2
ADVS 2200 Anatomy and Physiology of Animals 4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles 3
ADVS 2080[5] Beef Production Practices (2 cr) **and/or**
ADVS 2090[5] Sheep Production Practices (2 cr) **and/or**
ADVS 2120[5] Swine Production Practices (2 cr) 4

Sophomore Year (32-33 credits)
Fall Semester (16-17 credits)
CHEM 1110 (BPS) General Chemistry I 4
STAT 1040 (QL) Introduction to Statistics (3 cr) **or**
STAT 2000 (QI) Statistical Methods (3 cr) **or**
STAT 2300 (QL) Business Statistics (4 cr) ..... 3 or 4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Directed Elective 3
Breadth Course[1] 3

Spring Semester (16 credits)
ADVS 3000 Animal Health and Hygiene 3
ASTE 3050 (CI) Technical and Professional Communication Principles in Agriculture 3
CHEM 1120 (BPS) General Chemistry II 4
Directed Elective[3] 3
Breadth Course[1] 3

Junior Year (31 credits)
Fall Semester (15 credits)
ADVS 3500 Principles of Animal Nutrition 3
Directed Electives[3] 9
Free Elective 3

Spring Semester (16 credits)
ADVS 3510 (QI) Applied Animal Nutrition 3
ADVS 4200 (CI) Physiology of Reproduction and Lactation 4
ADVS 4250 Internship in Animal Industry (3 cr) **or**
ADVS 4800 Undergraduate Research or Creative Opportunity (3 cr) 3
Depth Course[2] 3
Directed Elective[3] 3

Senior Year (25.5-34.5 credits)
Fall Semester (14.5 credits)
ADVS 4560 (QI) Principles of Animal Breeding 3
ADVS 4910 Preprofessional Orientation 0.5
ADVS 4920 (CI) Undergraduate Seminar 2
ADVS 5120[4] Swine Management 3
Depth Course[2] 3
Directed Electives[3] 3-6

Spring Semester (11-20 credits)
ADVS 5080[4] Beef Cattle Management (3 cr) **and/or**
ADVS 5090[4] Sheep Management and Wool Technology (4 cr) **and/or**
ADVS 5130[4] Dairy Cattle Management (3 cr) **and/or**
ADVS 5190[4] Horse Management (3 cr) 3-7
Directed Electives[3] 8-13

[1]Must take one Breadth course from each of the following four categories: Creative Arts, Humanities, Physical Sciences, and Social Sciences. (**Note:** ECON 1500 fulfills the American Institutions Breadth Course requirement.)
[2]Must take one Depth course from each of the following two categories: Humanities and Creative Arts, and Social Sciences.
[3]Must take four courses from the following list: ACCT 2010; BUS 3400, 3500, 3700; ECON 2010, 3030, 3050, 4010, 4030, 5030; MHR 2050, 3110; and six courses from the following list: one 5000-level species management course in addition to the two courses required for the major; ADVS 3650, 5030, 5520, 5530, 5860; NFS 5020; PLSC 4320; WILD 2200, 3600, 3850, 4000; SOIL 2000 or 3000.
[4]Must take two courses selected from: ADVS 5080, 5090, 5120, 5130, and 5190.
[5]Must take any three courses selected from: ADVS 2080, 2090, 2120, 2130, and 2190.

Animal Science Major
Science Emphasis Curriculum (2.25 GPA)

Freshman Year (30.5 credits)
Fall Semester (16.5 credits)
ADVS 1110 Introduction to Animal Science 4
ADVS 1910 Orientation to Animal and Dairy Science 0.5
CHEM 1210 Principles of Chemistry I 4
CHEM 1215 Chemical Principles Laboratory I 1
MATH 1050 (QL) College Algebra 4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3

Spring Semester (14 credits)
ADVS 2200 Anatomy and Physiology of Animals 4
CHEM 1220 (BPS) Principles of Chemistry II 4
CHEM 1225 Chemical Principles Laboratory II 1
ADVS 2080[9] Beef Production Practices (2 cr) **and/or**
ADVS 2090[9] Sheep Production Practices (2 cr) **and/or**
ADVS 2120[9] Swine Production Practices (2 cr) 2-6
Breadth Course[6] 3

Sophomore Year (31-32 credits)
Fall Semester (14-15 credits)
ADVS 2130[9] Dairy Production Practices (3 cr) **or**
ADVS 2190[9] Horse Production Practices (2 cr) ..... 2 or 3
BIOL 1610 Biology I 4
CHEM 2310 Organic Chemistry I 4
CHEM 2315 Organic Chemistry Laboratory I 1
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3

Spring Semester (17 credits)
ADVS 3000 Animal Health and Hygiene 3
BIOL 1620 (BLS) Biology II 4
CHEM 2320 Organic Chemistry II 4
Breadth Courses[6] (2) 6

Junior Year (33-34 credits)
Fall Semester (16-17 credits)
ADVS 3500 Principles of Animal Nutrition 3
BIOL 3300 General Microbiology 4
MATH 1100 (QL) Calculus Techniques (3 cr) **or**
MATH 1210 (QL) Calculus I (4 cr) ..... 3 or 4
STAT 2000 (QI) Statistical Methods 3
Breadth Course[6] 3

Spring Semester (17 credits)
ADVS 3510 (QI) Applied Animal Nutrition 3
ADVS 4200 (CI) Physiology of Reproduction and Lactation 4
BIOL 3060 (QI) Principles of Genetics 4
CHEM 3700 Introductory Biochemistry 3
Elective[8] 3

Senior Year (27.5-31.5 credits)
Fall Semester (15.5 credits)
ADVS 4560 (QI) Principles of Animal Breeding 3
ADVS 4910 Preprofessional Orientation 0.5
ADVS 4920 (CI) Undergraduate Seminar 2
ADVS 5120[10] Swine Management 3
Depth Course[7] 3
Electives[8] 4-7

Spring Semester (12-16 credits)
ADVS 4250 Internship in Animal Industry (3 cr) **or**
ADVS 4800 Undergraduate Research or Creative Opportunity (3 cr) .. 3
ADVS 5080[10] Beef Cattle Management (3 cr) **and/or**
ADVS 5090[10] Sheep Management and Wool Technology (4 cr) **and/or**
ADVS 5130[10] Dairy Cattle Management (3 cr) **and/or**
ADVS 5190[10] Horse Management (3 cr) 3-7
Depth Course[7] 3
Electives[8] 3

[6]Must take one Breadth course from each of the following four categories: American Institutions, Creative Arts, Humanities, and Social Sciences.
[7]Must take one Depth course from each of the following two categories: Humanities and Creative Arts, and Social Sciences.
[8]Recommended electives include: ADVS 5160, 5240, 5260; CHEM 3710; PHYS 2110.
[9]Must choose two courses from: ADVS 2080, 2090, 2120, 2130, and 2190.
[10]Must choose two courses from: ADVS 5080, 5090, 5120, 5130, and 5190.

Animal Science Major
Biotechnology Emphasis Curriculum (2.25 GPA)

Freshman Year (32.5 credits)
Fall Semester (16.5 credits)
ADVS 1110 Introduction to Animal Science 4
ADVS 1910 Orientation to Animal and Dairy Science 0.5
CHEM 1210 Principles of Chemistry I 4
CHEM 1215 Chemical Principles Laboratory I 1
MATH 1050 (QL) College Algebra 4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3

Spring Semester (16 credits)
ADVS 2040 Introduction to Biotechnology 1
ADVS 2200 Anatomy and Physiology of Animals 4
CHEM 1220 (BPS) Principles of Chemistry II 4
CHEM 1225 Chemical Principles Laboratory II 1
STAT 1040 (QL) Introduction to Statistics (3 cr) **or**
STAT 2000 (QI) Statistical Methods (3 cr) 3
Breadth Course[11] 3

Sophomore Year (29 credits)
Fall Semester (15 credits)
BIOL 1610 Biology I 4
CHEM 2310 Organic Chemistry I 4
CHEM 2315 Organic Chemistry Laboratory I 1
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Breadth Course[11] 3

Spring Semester (14 credits)
BIOL 1620 (BLS) Biology II 4
CHEM 2320 Organic Chemistry II 4
Breadth Courses[11] (2) 6

Junior and Senior Years (58 credits)
Required Classes
ADVS 3020 Biotechnology in Agriculture (F) 3
ADVS 3200 Ethical Issues in Genetic Engineering and Biotechnology (Sp) 3
ADVS 4260 Internship in Animal Biotechnology Industry (F,Sp,Su) 3-12
ADVS 5160 Methods in Biotechnology: Cell Culture (Sp) 3
ADVS 5260 Methods in Biotechnology: Molecular Cloning (F) 3
ADVS 5280 Animal Molecular Biology (Sp) 3
BIOL 3060 (QI) Principles of Genetics (F,Sp,Su) 4
BIOL 3300 General Microbiology (F,Sp) 4
CHEM 3700 Introductory Biochemistry (Sp) 3
Two University Studies Depth Courses[12] 6

Directed Electives (14-23 credits; must include two CI classes)
ADVS 3000 Animal Health and Hygiene (Sp) 3
ADVS 3500 Principles of Animal Nutrition (F) 3
ADVS 3510 (QI) Applied Animal Nutrition (Sp) 3
ADVS 4200 (CI) Physiology of Reproduction and Lactation (Sp) 4
ADVS 4560 (QI) Principles of Animal Breeding (F) 3
ADVS 5690 Animal Histology (F) 3
ADVS 5700 (CI) General Animal Pathobiology (Sp) 3
ADVS 5820 Animal Cytogenetics and Gene Mapping (F) 3
BIOL 3065 Genetics Laboratory (F) 1
BIOL 5150 Immunology (Sp) 3
BIOL 5190 Molecular Genetics (Sp) 3
BIOL 5210 Cell Biology (F) 3
BIOL 5230 Developmental Biology (Sp) 3
BIOL 5600 Comparative Animal Physiology (F) 3
PHYS 2110 The Physics of Living Systems I 4
PHYS 2120 (BPS) The Physics of Living Systems II 4

[11]Must take one Breadth course from each of the following four categories: American Institutions, Creative Arts, Humanities, and Social Sciences.
[12]Must take one Depth course from each of the following two categories: Humanities and Creative Arts, and Social Sciences.

Dairy Science Major
Dairy Industries Emphasis Curriculum (2.25 GPA)

Freshman Year (29.5 credits)
Fall Semester (14.5 credits)
ADVS 1110 Introduction to Animal Science 4
ADVS 1910 Orientation to Animal and Dairy Science 0.5
ADVS 2130 Dairy Production Practices 3
BIOL 1010 (BLS) Biology and the Citizen 3
MATH 1050 (QL) College Algebra 4

Spring Semester (15 credits)
ADVS 1250 (QI) Applied Agricultural Computations 2
ADVS 2200 Anatomy and Physiology of Animals 4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles 3
Breadth Course[13] 3

Sophomore Year (29-31 credits)
Fall Semester (13-14 credits)
CHEM 1110 (BPS) General Chemistry I 4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
STAT 1040 (QL) Introduction to Statistics (3 cr) **or**
STAT 2000 (QI) Statistical Methods (3 cr) **or**
STAT 2300 (QL) Business Statistics (4 cr) ..... 3 or 4
Breadth Course[13] 3

Spring Semester (16-17 credits)
ADVS 3000 Animal Health and Hygiene 3
ASTE 3050 (CI) Technical and Professional Communication Principles in Agriculture 3
CHEM 1120 (BPS) General Chemistry II 4
SOIL 2000 (BPS) Soils, Waters, and the Environment (3 cr) **or**
SOIL 3000 Fundamentals of Soil Science (4 cr) ..... 3 or 4
Breadth Course[13] 3

Junior Year (30 credits)
Fall Semester (14 credits)
ADVS 3500 Principles of Animal Nutrition 3
Depth Course[14] 3
Directed Electives[15] 8

Spring Semester (16 credits)
ADVS 3510 (QI) Applied Animal Nutrition 3
ADVS 4200 (CI) Physiology of Reproduction and Lactation 4
ADVS 4250 Internship in Animal Industry (3 cr) **or**
ADVS 4800 Undergraduate Research or Creative Opportunity (3 cr) 3
Depth Course[14] 3
Directed Elective 3

Senior Year (30.5 credits)
Fall Semester (15.5 credits)
ADVS 4560 (QI) Principles of Animal Breeding 3
ADVS 4910 Preprofessional Orientation 0.5
ADVS 4920 (CI) Undergraduate Seminar 2
NFS 4900 ST: Dairy Food Processing 4
Directed Elective[15] 3
Free Elective 3

Spring Semester (15 credits)
ADVS 5130 Dairy Cattle Management 3
Directed Electives[15] 9
Free Elective 3

[13]Must take one Breadth course from each of the following four categories: Creative Arts, Humanities, Physical Sciences, and Social Sciences. (Note: ECON 1500 fulfills the American Institutions Breadth Course requirement.)

[14]Must take one Depth course from each of the following two categories: Humanities and Creative Arts, and Social Sciences.

[15]Must take four courses from the following list: ACCT 2010; BUS 3400, 3500, 3700; ECON 2010, 3030, 3050, 4010, 4030, 5030; MHR 2050, 3110; and three courses from the following list: ADVS 5030, 5520, 5530; ASTE 3600, 4100; PLSC 4320.

Dairy Science Major
Science Emphasis Curriculum (2.25 GPA)

Freshman Year (31.5-32.5 credits)
Fall Semester (16.5 credits)
ADVS 1110 Introduction to Animal Science 4
ADVS 1910 Orientation to Animal and Dairy Science 0.5
CHEM 1210 Principles of Chemistry I 4
CHEM 1215 Chemical Principles Laboratory I 1
MATH 1050 (QL) College Algebra 4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3

Spring Semester (15-16 credits)
ADVS 2200 Anatomy and Physiology of Animals 4
CHEM 1220 (BPS) Principles of Chemistry II 4
CHEM 1225 Chemical Principles Laboratory II 1
MATH 1100 (QL) Calculus Techniques (3 cr) **or**
MATH 1210 (QL) Calculus I (4 cr) ..... 3 or 4
Breadth Course[16] 3

Sophomore Year (32 credits)
Fall Semester (15 credits)
ADVS 2130 Dairy Production Practices 3
BIOL 1610 Biology I 4
CHEM 2310 Organic Chemistry I 4
CHEM 2315 Organic Chemistry Laboratory I 1
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3

Spring Semester (17 credits)
ADVS 3000 Animal Health and Hygiene 3
ASTE 3090 Computer Applications in Agriculture 3
BIOL 1620 (BLS) Biology II 4
CHEM 2320 Organic Chemistry II 4
Breadth Course[16] 3

Junior Year (30 credits)
Fall Semester (13 credits)
ADVS 3500 Principles of Animal Nutrition 3
BIOL 3300 General Microbiology 4
STAT 2000 (QI) Statistical Methods 3
Breadth Course[16] 3

Spring Semester (17 credits)
ADVS 3510 (QI) Applied Animal Nutrition 3
ADVS 4200 (CI) Physiology of Reproduction and Lactation 4
BIOL 3060 (QI) Principles of Genetics 4
CHEM 3700 Introductory Biochemistry 3
Breadth Course[16] 3

Senior Year (30.5 credits)
Fall Semester (15.5 credits)
ADVS 4560 (QI) Principles of Animal Breeding 3
ADVS 4910 Preprofessional Orientation 0.5
ADVS 4920 (CI) Undergraduate Seminar 2
Depth Course[17] 3
Electives[18] 7

Spring Semester (15 credits)
ADVS 4250 Internship in Animal Industry (3 cr) **or**
ADVS 4800 Undergraduate Research or Creative Opportunity (3 cr) .. 3
ADVS 5130 Dairy Cattle Management 3
Depth Course[17] 3
Electives[18] 6

[16]Must take one Breadth course from each of the following four categories: American Institutions, Creative Arts, Humanities, and Social Sciences.
[17]Must take one Depth course from each of the following two categories: Humanities and Creative Arts, and Social Sciences.
[18]Recommended Electives include ADVS 5160, 5240, 5260; CHEM 3710; PHYS 2110.

Bioveterinary Science (Preveterinary) Major Requirements

(120 credits) (3.0 min. total GPA) (2.5 min. total GPA if including Biotechnology Emphasis)

This is a four-year program, preparing students for application to and admittance to veterinary school or graduate school, or for finding employment in biotechnology research. Courses required for the major may not be taken pass-fail, except for ADVS 3920. In recent years, **nearly all students who have been accepted to veterinary school have had at least a 3.4 GPA**.

Advanced Standing Requirements

To attain Advanced Standing in Bioveterinary Science, students must have completed or must be currently registered for a minimum of 60 semester credits, and must have earned an overall GPA of at least 2.75 for all credits, including transfer credits, taken up to the time the petition for Advanced Standing is made. If declaring the Biotechnology Emphasis, students must have earned an overall GPA of at least 2.25.

Students' records will be checked when they reach a total of 60 semester credits. Those who do not meet advanced standing requirements will be notified to meet with their advisor.

Semester Schedule

Freshman Year (30 credits)[19]
Fall Semester (15 credits)
ADVS 1110 Introduction to Animal Science 4
ADVS 1920 Orientation to Bioveterinary Science 1
CHEM 1210[20,21] Principles of Chemistry I 4
CHEM 1215[20] Chemical Principles Laboratory I 1
MATH 1100 (QL)[20,22] Calculus Techniques 3
Electives 2

Spring Semester (15 credits)
ADVS 2200 Anatomy and Physiology of Animals 4
CHEM 1220 (BPS)[20] Principles of Chemistry II 4
CHEM 1225[20] Chemical Principles Laboratory II 1
ENGL 1010 (CL1)[20,23] Introduction to Writing: Academic Prose 3
University Studies Breadth Course[20,24] 3

Summer Semester
ADVS 3920, Internship in Veterinary Medicine, is a recommended option. Students may count up to 2 credits of ADVS 3920 as elective upper-division credits toward graduation.

Sophomore Year (30.5 credits)
Fall Semester (15 credits)
ADVS 3500 Principles of Animal Nutrition 3
BIOL 1610[20] Biology I 4
CHEM 2310[20] Organic Chemistry I 4
CHEM 2315[20] Organic Chemistry Laboratory I 1
University Studies Breadth Course[20,24] 3

Spring Semester (15.5 credits)
BIOL 1620 (BLS)[20] Biology II 4
CHEM 2320[20] Organic Chemistry II 4
ADVS 2920 Orientation to Veterinary Medicine 0.5
BIOL 3060 (QI)[20] Principles of Genetics 4
University Studies Breadth Course[20,24] 3

Junior Year (33 credits)
Fall Semester (17 credits)
BIOL 3300[20] General Microbiology 4
PHYS 2110[20] The Physics of Living Systems I 4
ENGL 2010 (CL2)[20] Intermediate Writing: Research Writing in a Persuasive Mode 3
STAT 2000 (QI) Statistical Methods 3
University Studies Breadth Course[20,24] 3

Spring Semester (16 credits)
ADVS 3000 Animal Health and Hygiene 3
PHYS 2120 (BPS) The Physics of Living Systems II 4
CHEM 3700[20] Introductory Biochemistry 3
Two Upper-division University Studies Depth Courses[25] 6

Senior Year (at least 29 credits)
Students must complete at least 120 semester credits for the BS degree, of which 40 credits must be in upper-division courses. The student must complete two courses which are communications intensive, and one course which is quantitative intensive. Students must include at least 15 credits from the following list. An additional 7

elective credits are needed to complete the 120 credits required for graduation. Other upper-division life sciences courses may be applied to this requirement if approved by a bioveterinary science advisor.

ADVS 3510 (QI) Applied Animal Nutrition (Sp) 3
ADVS 4200 (CI) Physiology of Reproduction and Lactation (Sp) 4
ADVS 4560 (QI) Principles of Animal Breeding (F)....3
ADVS 5690 Animal Histology (F) 3
ADVS 5700 (CI) General Animal Pathobiology (Sp) 3
BIOL 5150 Immunology (Sp)....3
BIOL 5210 Cell Biology (F) 3
BIOL 5230 Developmental Biology (Sp) 3
BIOL 5330 Virology (Sp) 3
BIOL 5600 Comparative Animal Physiology (F)....3
BIOL 5610 (QI) Animal Physiology Laboratory (F,Sp)....2
BIOL 5620 Medical Physiology (Sp) 3

Bioveterinary Science Major
Biotechnology Emphasis

Semester Schedule
Freshman Year (30 credits)[19]
Fall Semester (14 credits)
ADVS 1110 Introduction to Animal Science 4
ADVS 1920 Orientation to Bioveterinary Science 1
CHEM 1210[20,21] Principles of Chemistry I 4
CHEM 1215[20] Chemical Principles Laboratory I....1
MATH 1100 (QL)[20,22] Calculus Techniques....3
Elective 1

Spring Semester (16 credits)
ADVS 2040 Introduction to Biotechnology 1
ADVS 2200 Anatomy and Physiology of Animals 4
CHEM 1220 (BPS)[20,26] Principles of Chemistry II....4
CHEM 1225[20] Chemical Principles Laboratory II....1
ENGL 1010 (CL1)[20,23] Introduction to Writing: Academic Prose....3
University Studies Breadth Course[20,24] 3

Sophomore Year (32 credits)
Fall Semester (15 credits)
BIOL 1610[20] Biology I....4
CHEM 2310[20] Organic Chemistry I....4
CHEM 2315[20] Organic Chemistry Laboratory I 1
Two University Studies Breadth Courses[20,24] 6

Spring Semester (17 credits)
BIOL 1620 (BLS)[20] Biology II 4
CHEM 2320[20] Organic Chemistry II....4
CHEM 3700[20] Introductory Biochemistry....3
ENGL 2010 (CL2)[20] Intermediate Writing: Research Writing in a Persuasive Mode....3
University Studies Breadth Course[20,24] 3

Junior and Senior Years (58 credits)
Required Classes
ADVS 3020 Biotechnology in Agriculture (F) 3
ADVS 3200 Ethical Issues in Genetic Engineering and Biotechnology (Sp)....3
ADVS 4260 Internship in Animal Biotechnology Industry (F,Sp,Su)....3-12
ADVS 5160 Methods in Biotechnology: Cell Culture (Sp)....3
ADVS 5260 Methods in Biotechnology: Molecular Cloning (F)....3
ADVS 5280 Animal Molecular Biology (Sp) 3
BIOL 3060 (QI)[20] Principles of Genetics (F,Sp,Su) 4
BIOL 3300[20] General Microbiology (F,Sp)....4
STAT 2000 (QI)[20] Statistical Methods (F,Sp) 3
Two University Studies Depth Courses[25]....6

Directed Electives (14-23 credits; must include two CI classes)
ADVS 3000 Animal Health and Hygiene (Sp) 3
ADVS 3500 Principles of Animal Nutrition (F) 3
ADVS 3510 (QI) Applied Animal Nutrition (Sp) 3
ADVS 4200 (CI) Physiology of Reproduction and Lactation (Sp) 4
ADVS 4560 (QI) Principles of Animal Breeding (F)....3
ADVS 5350 Introductory Pharmacology and Pharmacokinetics (Sp) ...3
ADVS 5690 Animal Histology (F) 3
ADVS 5700 (CI) General Animal Pathobiology (Sp) 3
ADVS 5820 Animal Cytogenetics and Gene Mapping (F)....3
BIOL 3065 Genetics Laboratory (F)....1
BIOL 5150 Immunology (Sp)....3
BIOL 5190 Molecular Genetics (Sp) 3
BIOL 5210 Cell Biology (F) 3
BIOL 5230 Developmental Biology (Sp) 3
BIOL 5600 Comparative Animal Physiology (F)....3
PHYS 2110[26] The Physics of Living Systems I....4
PHYS 2120 (BPS) The Physics of Living Systems II 4

[19] If a student is unable to pass the Computer and Information Literacy (CIL) Test, USU 1000 and OSS 1400 should be taken the first year.
[20] Required for Colorado, Washington, and Oregon veterinary schools.
[21] Students with little exposure to chemistry or an ACT Math score less than 25 will need to begin with a lower-level chemistry class and/or take MATH 1050 first. (See an advisor for assistance.)
[22] Students with math ACT scores of less than 25 must start with a lower-level class.
[23] Can also be met by an AP English Language and Composition *or* Literature and Composition test score of 3 or higher, an ACT English test score of 29 or higher, a CLEP English Composition test score of 50 or higher, a CLEP Freshman College Composition test score of 53 or higher, or an SAT Verbal test score of 640 or higher.
[24] Must take one Breadth course from each of the following four categories: Humanities, Creative Arts, Social Sciences, and American Institutions. Two of these courses must be taken with a USU prefix. AP or CLEP tests may be used to fulfill some Breadth requirements.
[25] Two approved Depth courses are required: one in Humanities and Creative Arts and one in Social Sciences (3000 level or higher). It is recommended that one of these courses be a Communications Intensive (CI) course.
[26] PHYS 2110 must be taken if the student plans to apply to veterinary school in Colorado, Washington, or Oregon.

Dairy Herdsman Program

The Program
The Dairy Herdsman Program is a one-year course of study in practical dairy knowledge and skills. Through lectures, laboratory exercises, and actual on-the-farm experiences, students are taught to be dairy herdsmen, with highly employable skills. A high school education is highly recommended, but is not a requirement to be admitted to the program.

The classroom and laboratory experiences are directed by Utah State University staff members, extension personnel, and specially qualified guest speakers. Coursework covers such areas as nutrition and feeding, management, physiology, milk production, breeding and selection, and buildings and equipment. Students also gain practical experience and know-how by working with a commercial dairyman in Cache Valley. Many students are now selecting the new degree option, which allows students to take the dairy herdsman classwork and then continue on for a degree in dairy science.

All students may participate in judging at regional and national levels, showing at state and area shows, working with area sales, and field trips to the Western International Dairy Expo, the Dairy Herd Improvement Laboratory, and progressive dairy enterprises. These activities provide a well-rounded background and improve employment opportunities.

Students in this program have access to all privileges available to Utah State University students: athletic and entertainment events, campus housing and food services, the University library, the bookstore, and recreational facilities.

Career Opportunities

Students who complete this program will have a good working knowledge of how to care for and make decisions about various dairy animals and will understand and be able to use various types of equipment. These skills, as well as an understanding of the management process involved, can greatly improve the chances of being employed by a dairy or dairy-related industry.

Required Coursework for Dairy Herdsman Program

Fall Semester (16 credits)

ADVS 1010 Artificial Insemination and Reproduction 2
ADVS 1020 Dairy Cattle Nutrition and Feeding 3
ADVS 1050 Dairy Genetics 3
ADVS 1250 Applied Agricultural Computations 2
ADVS 2130 Dairy Production Practices 3
ADVS 2250 Cooperative Work Experience 3

Spring Semester (16 credits)

ADVS 1030 Lactation and Milking Systems 3
ADVS 1040 Records and Financial Aspects of Dairy Herd Operations 3
ADVS 1060 Applied Feeding and Management of Dairy Calves and Basic Construction of Facilities 3
ADVS 1720 Dairy Cattle Evaluation and Judging 1
ADVS 2250 Cooperative Work Experience 6

Honors

There is also an Honors Plan for students desiring a BS degree "with Honors" in Animal/Dairy/Bioveterinary Science. For details, students should contact their academic advisor.

ADVS Minors

A minor can be valuable when associated with a major in agricultural education, agricultural economics, plant science, nutrition and food science, business, economics, computer science, rangeland resources, and in other disciplines where the animal industry has direct or indirect involvement.

Requirements for specialty or emphasis area minors are listed below. The same departmental standards applying to animal science and dairy science majors also apply to all minors (see page 150).

Requirements for Minors

The following is a listing of courses for the various minor emphasis areas. A specific course may not be used to fulfill the requirements of more than one ADVS minor.

General Animal Science
ADVS 1110; choose one or more courses from ADVS 2080, 2090, 2120, 2190; 10 elective ADVS credits with approval of an animal science advisor.

General Dairy Science
ADVS 1110, 2130; 10 elective ADVS credits with approval of a dairy science advisor.

Bioveterinary Science
ADVS 2200, 3000; 7 elective ADVS credits with approval of a bioveterinary science advisor. A minimum grade of *C* is required in all courses applied toward this minor.

Horse Production
ADVS 1110, 2190, 2250; 6 or more elective ADVS credits with approval of an animal science advisor.

Horse Training
ADVS 1110, 1600, 2190, 2600; 2 or more elective ADVS credits with approval of an animal science advisor.

Dairy Herdsman
ADVS 1020, 1030, 1040, 1050, 1060. *(Not available to Dairy Science Majors.)*

Transfer students must have a minimum of one 3-credit upper-division course in residency with the approval of an ADVS advisor.

Undergraduate Program Assessment

The ADVS Department assessment plan defines learning objectives for each of its undergraduate programs. These learning objectives are mapped to each of the required courses in each program, so that they may be evaluated for their contribution to program goals. Outcome measures have also been defined for each program, and a process has been implemented to conduct exit interviews with all graduating students in Animal and Dairy Science. Rate of admission to a professional veterinary medical program has been identified as the critical outcome measure for the Bioveterinary Science program. The ADVS Department Curriculum Committee oversees the assessment process, with input from the ADVS Department Internship and Placement Committee. The ADVS Curriculum Committee reports its assessment findings to the ADVS department head, as well as to faculty members, and incorporates these findings in its regular ongoing and periodic comprehensive reviews and revisions of the ADVS Department undergraduate programs.

Learning Objectives

Animal Science Major (Animal Industries Emphasis)
The following *Disciplinary Knowledge* objectives apply:

1. Attain knowledge in mathematics and basic sciences required for disciplinary competency.
2. Know the nature, intent, and scope of animal science.
3. Attain depth in two subfields of animal science.
4. Achieve understanding in the disciplines of animal genetics, health, nutrition, and reproduction.
5. Integrate knowledge from the various disciplines to effectively conduct livestock operations.

Skills and Career Competencies objectives are as follows:

1. Comprehend reading materials appropriate to course levels.
2. Communicate effectively in oral and written forms.
3. Conduct library research using modern methods.
4. Use a computer for written work, presentations, and research.
5. Attain proficiency in basic techniques of animal management.

Animal Science and Dairy Science Majors (Science Emphasis)
The following *Disciplinary Knowledge* objectives apply:

1. Attain knowledge in mathematics and basic sciences required for disciplinary competency.
2. Know the nature, intent, and scope of animal/dairy science.
3. Attain depth in one subfield of animal/dairy science.
4. Achieve understanding in the disciplines of animal genetics, health, nutrition, and reproduction.
5. Effectively integrate knowledge from basic sciences to applications in the animal sciences.

Skills and Career Competencies objectives are as follows:

1. Comprehend reading materials appropriate to course levels.
2. Communicate effectively in oral and written forms.
3. Conduct library research using modern methods.
4. Use a computer for written work, presentations, and research.

Animal Science and Bioveterinary Science Majors (Biotechnology Emphasis)
The following *Disciplinary Knowledge* objectives apply:

1. Attain a working knowledge of biological mechanisms, including genetics, reproduction, and microbiology.
2. Acquire a working knowledge of mathematics, including calculus and statistics.
3. Achieve a working knowledge of chemistry, including inorganic, organic, and biochemistry.
4. Attain a basic knowledge of animal biotechnology and ethics.

Skills and Career Competencies objectives are as follows:

1. Understand and perform molecular cloning.
2. Understand and perform cell culture procedures.
3. Understand and perform protein purification.
4. Communicate effectively in oral and written forms.
5. Achieve quantitative competency.
6. Conduct scientific-literature searches using modern methods.

Bioveterinary Science Major
The following *Disciplinary Knowledge* objectives apply:

1. Attain a working knowledge of biological mechanisms, including molecular genetics.
2. Acquire a working knowledge of mathematics, including calculus and statistics.
3. Achieve a working knowledge of chemistry, including inorganic, organic, and biochemistry.
4. Acquire a basic knowledge of general physics.
5. Attain a basic knowledge of animal production, including breeding, nutrition, and reproduction.
6. Achieve a basic understanding of health and disease mechanisms.
7. Understand the ethics and profession of veterinary medicine.

Skills and Career Competencies objectives are as follows:

1. Communicate effectively in oral and written forms.
2. Achieve quantitative competency.
3. Conduct scientific literature searches using modern methods.

Dairy Science Major (Dairy Industries Emphasis)
The following *Disciplinary Knowledge* objectives apply:

1. Attain knowledge in mathematics and basic sciences required for disciplinary competency.
2. Know the nature, intent, and scope of dairy science.
3. Achieve understanding in the disciplines of animal genetics, health, nutrition, reproduction, and lactation.
4. Integrate knowledge from the various disciplines to effectively conduct dairy operations.

Skills and Career Competencies objectives are as follows:

1. Comprehend reading materials appropriate to course levels.
2. Communicate effectively in oral and written forms.
3. Conduct library research using modern methods.
4. Use a computer for written work, presentations, and research.
5. Attain proficiency in basic techniques of animal management.

Undergraduate Research Opportunities

Students interested in pursuing undergraduate research opportunities in the ADVS Department should contact Tami Spackman, Agricultural Science 242, tami.spackman@usu.edu, (435) 797-2150, for information and referrals.

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Departmental honors programs are available for students majoring in Animal Science, Dairy Science, or Bioveterinary Science. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also

complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school.

ADVS students qualify for acceptance into the departmental honors program by having a cumulative GPA of 3.3 or better at the time of application. The program of study requires the completion of 15 credits of upper-division (3000-level or above) classwork as follows: One credit of HONR 4800H, Thesis/Project Seminar; 3 to 6 credits of HONR 4900H, Senior Thesis/Project; and 8 to 11 credits of upper-division Honors coursework by contract (3 credits may be taken outside the ADVS Department). Completion of the degree requires a cumulative GPA of 3.3 and a 3.5 GPA in upper-division Honors classes. Examples of departmental classes which may be suitable as Honors courses by contract are ADVS 3000, 3200, 3500, 3510, 4200, 4560, 5160, 5240, 5260, 5350, 5400, 5520, 5530, 5690, 5700, and 5820. Students should plan their Honors Program early, so that their thesis project can be completed during the first semester of their senior year, and their last semester can be used to write and present their thesis.

Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@cc.usu.edu. Additional information can be found online at: **http://www.usu.edu/honors/**

Additional Information and Updates

For more information about Bachelor of Science requirements and the sequence in which courses should be taken, see major requirement sheets. For more information on ADVS Department minors, see minor requirement sheet. These are available from the ADVS Department advisor's office (AG S 242). Major requirement sheets can also be found online at: **http://www.usu.edu/majorsheets/**

Successful completion of a bachelor's degree program in the ADVS Department requires that a very close student-academic advisor relationship be established and continued through each student's bachelor's degree program. Each student must take the responsibility of establishing this close working relationship with his or her advisor. Doing this soon after the student's entry into the department can keep academic problems to a minimum.

For updated information on ADVS programs and course offerings, check the departmental home page at: **http://www.advs.usu.edu**

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 precautions to avoid fainting 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.

Financial Support

In addition to the scholarships and other financial aid available through the University, the department awards designated scholarships to qualified students. The department employs students on a part-time basis to assist with its research and operate its animal facilities. The department also coordinates cooperative education and internship employment opportunities for students. For more information, contact the department.

Graduate Programs

Admission Requirements

In addition to the general admission requirements (see pages 101-102), 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 1610 and 1620 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 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 6800; BIOL 6380; 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 5210 or 5230 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, cytogenetics 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 5210, 5230; 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, 6520 or 6530, 6800; plus one of the following (if comparable course not previously completed at the undergraduate level): ADVS 6080, 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, and microbiology. Advanced techniques in laboratory procedures and animal health research are emphasized. Cooperation with other departments and research centers of the University and with federal collaborators and agencies allows for a strong graduate program in bioveterinary science.

Course requirements: Students in the MS program are required to complete the following courses: ADVS 6700, 6800; CHEM 5700; STAT 3000. Students in the PhD program are required to complete the following courses: ADVS 6700, 6800; CHEM 5700, 5710; STAT 5200. Additional coursework will be determined by the supervisory committee.

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

Professors
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
Amrit K. Judd, medicinal chemistry as applied to treatment of viral diseases
Michael R. Marshall, veterinary medicine
Kanok Pavasuthipaisit, medical science, anatomy
R. Dean Plowman, dairy genetics, management
Rex S. Spendlove, microbiology

Professors Emeritus
Stanley D. Allen, veterinary medicine, laboratory animal management
Clive W. Arave, behavior, dairy genetics
Clell V. Bagley, veterinary medicine
John E. Butcher, ruminant nutrition
Jay W. Call, veterinary medicine
Warren C. Foote, reproductive physiology
Robert C. Lamb, dairy genetics
James LeGrande Shupe, veterinary science, comparative clinical medicine
Robert W. Sidwell, virology
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
Lee S. Rickords, 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
Bryan L. Stegelmeier, pathology
J. Christopher Wilson, veterinary medicine, fisheries

Associate Professor Emeritus
Larry M. Slade, equine nutrition, management

Research Associate Professor
Dale L. Barnard, virology

Adjunct Research Associate Professor
Shiquan Wang, cytogenetics, reproductive physiology

Assistant Professors
Duarte E. Diaz, dairy nutrition extension specialist
Patricia A. Evans, equine management
Ramona T. Skirpstunas, bacterial diseases of fish, veterinary pathology, veterinary laboratory diagnostic medicine
Jessie D. Trujillo, infectious disease, diagnoses and vaccine
David J. Wilson, dairy cattle, mastitis
Quinton A. Winger, reproductive physiology, molecular biology

Department of Animal, Dairy and Veterinary Sciences

Adjunct Assistant Professors
Breck D. Hunsaker, veterinary immunology
Stephen T. Lee, analytical chemistry

Research Assistant Professors
Brian B. Gowen, immunology, virology
Benedict Green, animal physiology
Justin G. Julander, virology, microbiology
Kevin Welch, toxicology

Clinical Assistant Professor
Rusty Stott, clinical veterinarian, animal health

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
Rebecca A. Lewis, equine management

Course Descriptions

Animal, Dairy and Veterinary Sciences (ADVS), pages 556-560

Department Head: John Neely
Location: Fine Arts Visual 122
Phone: (435) 797-3460
FAX: (435) 797-3412
E-mail: neelyjc@cc.usu.edu
WWW: http://www.art.usu.edu/

Assistant Head and Graduate Program Director:
Christopher T. Terry, Fine Arts Visual 216, (435) 797-3409,
ctterry@cc.usu.edu

Assistant Head and Undergraduate Program Director:
Robert Winward, Fine Arts Visual 110, (435) 797-1394,
bob.winward@usu.edu

Art Department Advisor:
Marcia Roberts, University Reserve 107, (435) 797-3883
marcia.roberts@usu.edu

Art Education Undergraduate Advisor:
Jane S. Catlin, Fine Arts Visual 114, (435) 797-3469,
jcatlin@hass.usu.edu

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 and Painting, Graphic Design, Photography, Printmaking, Sculpture

Graduate specializations: Ceramics, Drawing, Graphic Design, Illustration, Painting, Photography, Printmaking, Sculpture

Undergraduate Programs

Objectives

The Department of Art's primary goal is to prepare undergraduate students for careers in art history, art education, and studio art, as well as the applied and fine arts. Requirements in eight 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 for students in related degree programs.

Departmental Admission Requirements

Admission to the Art major is competitive. New freshmen admitted to USU in good standing may apply for admission to the Art major by submitting a portfolio of digital images on CD-ROM 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.

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, 27-28 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 36 semester credits in art is required for a BA degree in Art with an Art History Emphasis. Students who desire to recieve a BA degree in Art *without an emphasis,* must earn a minimum of 50 semester credits in art.

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. A ***career total*** 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 27-28 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.

Department of Art

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 1020 Drawing I (3 cr) **or**
ART 1110 Drawing I (Art Majors Only) (3 cr) 3
ART 1120 Two-dimensional Design (3 cr) **or**
ART 1150 Two-dimensional Design (Art Majors Only) (3 cr) 3
ARTH 2710 (BHU) Survey of Western Art: Prehistoric to Medieval..... 3

Freshman year—second semester:
ART 1130 Three-dimensional Design (3 cr) **or**
ART 1160 Three-dimensional Design (Art Majors Only) (3 cr)..... 3
ART 2110 Drawing II..... 3
ARTH 2720 (BHU) Survey of Western Art: Renaissance to Post-Modern..... 3

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 1020 Drawing I (3 cr) **or**
ART 1110 Drawing I (Art Majors Only) (3 cr) 3
ART 1120 Two-dimensional Design (3 cr) **or**
ART 1150 Two-dimensional Design (Art Majors Only) (3 cr) 3
ART 1130 Three-dimensional Design (3 cr) **or**
ART 1160 Three-dimensional Design (Art Majors Only) (3 cr)..... 3
ART 2110 Drawing II..... 3
ART 2200 Painting I..... 3
ART 2230 Basic Printmaking..... 3
ART 2400 Computers and Art (Art Majors Only)..... 3
ART 2600 Basic Sculpture..... 3
ART 2650 Introduction to Ceramics..... 3
ARTH 2710 (BHU) Survey of Western Art: Prehistoric to Medieval..... 3
ARTH 2720 (BHU) Survey of Western Art: Renaissance to Post-Modern..... 3
ART 1050 Introduction to Photography (3 cr) **or**
ART 2810 Photography I (3 cr)..... 3

In addition, 6 credits are required 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 Secondary Art Methods I (Alt F)..... 3
ART 3300 Clinical Experience I (Alt F) 1
(ART 3000 and 3300 must be taken concurrently.)
ART 4000 Secondary Art Methods II (Alt F)..... 3
ART 4300 Clinical Experience II (Alt F) 1
(ART 4000 and 4300 must be taken concurrently.)
ART 5500 Student Teaching Seminar..... 2
ART 5630 Student Teaching in Secondary Schools 10
INST 3500 Technology Tools for Secondary Teachers..... 1
SCED 3100 Motivation and Classroom Management..... 3
SCED 3210 (DSS/CI) Educational and Multicultural Foundations..... 3
SCED 4200 (CI) Reading, Writing, and Technology..... 3
SCED 4210 Cognition and Evaluation of Student Learning..... 3
SPED 4000 Education of Exceptional Individuals..... 2

Sample Four-year Plan for Art Major, Art Education Emphasis

Minimum GPA for Admission: 2.75, USU; 2.75 Career
Additional Admission Requirement: admission granted by professor
Minimum GPA for Graduation: 2.75, core/foundation courses; 2.75, major; 2.75, USU; 2.75 Career
Minimum Grade Accepted: *B-* in emphasis courses; *C* in remaining ART courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (30 credits)

Fall Semester (15 credits)
ART 1110 Drawing I (Art Majors Only)..... 3
ART 1150 Two-dimensional Design (Art Majors Only)..... 3
ARTH 2710 (BHU) Survey of Western Art: Prehistoric to Medieval..... 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
University Studies Quantitative Literacy (QL) course..... 3

Spring Semester (15 credits)
ART 1160 Three-dimensional Design (Art Majors Only)..... 3
ART 2110 Drawing II..... 3
ARTH 2720 (BHU) Survey of Western Art: Renaissance to Post-Modern 3
University Studies Breadth courses 6

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (30 credits)

Fall Semester (15 credits)
ART 2200 Painting I..... 3
ART 2400 Computers and Art (Art Majors Only)..... 3
Art History upper-division course 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode..... 3
University Studies Breadth course 3

Spring Semester (15 credits)
ART 2230 Basic Printmaking 3
ART 2600 Basic Sculpture 3
Art History upper-division course 3
University Studies Breadth courses 6

Junior Year (29 credits)

Fall Semester (14 credits)
ART 1050 Introduction to Photography (3 cr) **or**
ART 2810 Photography I (3 cr) 3
ART 2650 Introduction to Ceramics..... 3
ART 3000 Secondary Art Methods I..... 3
ART 3300 Clinical Experience I 1
INST 3500 Technology Tools for Secondary Teachers..... 1
Depth Life and Physical Sciences (DSC) course 3

Spring Semester (15 credits)
SCED 3100 Motivation and Classroom Management..... 3
SCED 3210 (DSS/CI) Educational and Multicultural Foundations 3
Art Area of Concentration courses 6
Quantitative Intensive (QI) course..... 3

Senior Year (21 credits)
Fall Semester (13 credits)
ART 4000 Secondary Art Methods II....3
ART 4300 Clinical Experience II....1
SCED 4210 Cognition and Evaluation of Student Learning....3
Art Area of Concentration courses....6

Spring Semester (8 credits)
SPED 4000 Education of Exceptional Individuals....2
Art Area of Concentration courses....6

Certification Year (23 credits)
Fall Semester (9 credits)
SCED 4200 (CI) Reading, Writing, and Technology....3
Art Area of Concentration courses....6

Spring Semester (14 credits)
ART 4910 Senior BFA Exhibition....2
ART 5500 Student Teaching Seminar....2
ART 5630 Student Teaching in Secondary Schools....10

Art History (52 total credits)

For the BA degree in Art with an emphasis in Art History, all students must take the following required foundation courses (15 credits):
ARTH 2710 (BHU) Survey of Western Art: Prehistoric to Medieval (F) 3
ARTH 2720 (BHU) Survey of Western Art: Renaissance to Post-Modern (Sp)....3
HIST 1100 (BHU) Foundations of Western Civilization: Ancient and Medieval (F,Sp,Su)....3
HIST 1110 (BHU) Foundations of Western Civilization: Modern (F,Sp,Su)....3
One studio art course of student's choice (note prerequisites where necessary)

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 52 credits.

Sample Four-year Plan for Art Major, Art History Emphasis

Minimum GPA for Admission: 2.5, USU; 2.5 Career
Minimum GPA for Graduation: 2.5, major requirements; 2.5, USU; 2.5 Career
Minimum Grade Accepted: *C* in all major requirements

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (30 credits)
Fall Semester (15 credits)
ARTH 2710 (BHU) Survey of Western Art: Prehistoric to Medieval....3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose....3
HIST 1100 (BHU) Foundations of Western Civilization: Ancient and Medieval....3
ART Studio course....3
University Studies Quantitative Literacy (QL) course....3

Spring Semester (15 credits)
ARTH 2720 (BHU) Survey of Western Art: Renaissance to Post-Modern....3
HIST 1110 (BHU) Foundations of Western Civilization: Modern....3
University Studies Breadth courses....6
Elective course(s)....3

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (32 credits)
Fall Semester (16 credits)
ARTH upper-division course....3
Foreign Language 1010-level course....4
University Studies Breadth courses....6
Depth Social Sciences (DSS) course....3

Spring Semester (16 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode....3
ARTH upper-division course....9
Foreign Language 1020-level course....4

Junior Year (29 credits)
Fall Semester (16 credits)
Approved "Track" upper-division courses 6
University Studies Breadth course 3
Foreign Language 2010-level course 4
Elective course(s) 3

Spring Semester (13 credits)
Communications Intensive (CI) course 3
Depth Life and Physical Sciences (DSC) course 3
Foreign Language 2020-level course 4
Elective course(s) 3

Senior Year (30 credits)
Fall Semester (15 credits)
Upper-division elective courses 6
Communications Intensive (CI) course 3
Elective courses 6

Spring Semester (15 credits)
ART 4790 Art History Seminar and Special Problems 3
Upper-division elective courses 9
Elective course(s) 3

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 Basic Sculpture (F,Sp) 3
ART 2650 Introduction to Ceramics (F,Sp,Su) 3
ART 3610 Intermediate Sculpture (F) 3
ART 3650 Intermediate Ceramics: Handbuilding (F) 3
ART 3660 Intermediate Ceramics: Throwing on the Potter's Wheel (Sp) 3
ART 4640[1] Technology of Ceramic Art (F,Sp,Su) 6
ART 4650[2] Advanced Ceramic Studio (F,Sp,Su) 12
ART 4910 Senior BFA Exhibition (Sp) 2
Two upper-division Art History courses 6
CHEM 1010 (BPS) Introduction to Chemistry (F,Sp) (3 cr) **or**
CHEM 1110 (BPS) General Chemistry I (4 cr) (F,Sp) ..... 3 or 4
GEO 1010 (BPS) Geology of National Parks: Introduction to Geology (F,Su) (3 cr) **or**
GEO 1110 (BPS) The Dynamic Earth: Physical Geology (F,Sp) (4 cr) ..... 3 or 4

[1]ART 4640 is repeatable for credit, and must be taken during at least two semesters.
[2]ART 4650 is repeatable for credit, and must be taken during at least four semesters.

Sample Four-year Plan for Art Major, Ceramics Emphasis

Minimum GPA for Admission: 2.75, USU; 2.75 Career
Additional Admission Requirement: portfolio and application review
Minimum GPA for Graduation: 2.75, major; 2.75, USU; 2.75 Career
Minimum Grade Accepted: *B-* in emphasis courses; *C* in remaining ART courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (30 credits)
Fall Semester (15 credits)
ART 1110 Drawing I (Art Majors Only) 3
ART 1150 Two-dimensional Design (Art Majors Only) 3
ART 2400 Computers and Art (Art Majors Only) 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
University Studies Quantitative Literacy (QL) course 3

Spring Semester (15 credits)
ART 1160 Three-dimensional Design (Art Majors Only) 3
ART 2110 Drawing II 3
ART 2650 Introduction to Ceramics 3
ARTH 2720 (BHU) Survey of Western Art: Renaissance to Post-Modern 3
CHEM 1010 (BPS) Introduction to Chemistry 3

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (32 credits)
Fall Semester (16 credits)
ART 2200 Painting I (3 cr) **or**
ART 2230 Basic Printmaking (3 cr) 3
ART 3650 Intermediate Ceramics: Handbuilding 3
ARTH 2710 (BHU) Survey of Western Art: Prehistoric to Medieval 3
GEO 1110 (BPS) The Dynamic Earth: Physical Geology 4
University Studies Breadth course 3

Spring Semester (16 credits)
ART 2600 Basic Sculpture 3
ART 1050 Introduction to Photography (3 cr) **or**
ART 2810 Photography I 3
ART 3660 Intermediate Ceramics: Throwing on the Potter's Wheel 3
ART 3710 Fine Art Seminar 1
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
University Studies Breadth course 3

Junior Year (32 credits)
Fall Semester (16 credits)
ART 3610 Intermediate Sculpture 3
ART 3710 Fine Art Seminar 1
ART 4640 Technology of Ceramic Art 3
ART 4650 Advanced Ceramic Studio 3
University Studies Breadth course 3
Communications Intensive (CI) course 3

Spring Semester (16 credits)
ART 3710 Fine Art Seminar 1
ART 4610 Sculpture Projects 3
ART 4640 Technology of Ceramic Art 3
ART 4650 Advanced Ceramic Studio 3
Art History upper-division course 3
University Studies Breadth course 3

Senior Year (26 credits)
Fall Semester (13 credits)
ART 3710 Fine Art Seminar 1
ART 4650 Advanced Ceramic Studio 3
Quantitative Intensive (QI) course 3
Depth Life and Physical Sciences (DSC) course 3
Art upper-division course 3

Spring Semester (13 credits)
ART 3710 Fine Art Seminar 1
ART 4650 Advanced Ceramic Studio 3
ART 4910 Senior BFA Exhibition 2
Communications Intensive (CI) course 3
Depth Social Sciences (DSS) course 3
Elective course 1

Drawing and Painting

The drawing and painting emphasis includes the two-dimensional study of form and space, as well as the exploration of drawing and painting 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 and painting are also vehicles of creative expression, visual adventure, and self-discovery. The curriculum emphasizes an analysis of historical approaches to drawing and painting, and the exploration of new ideas, techniques, and materials. Basic courses are designed to foster a respect for the craft of drawing and painting, and subsequent courses encourage application of the craft to expressive goals. Central to the focus of drawing and 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 drawing and painting emphasis:

ART 1050 Introduction to Photography (F) (3 cr) **or**
ART 2810 Photography I (F,Sp) (3 cr) 3
ART 2200 Painting I (F) 3
ART 2230 Basic Printmaking (F) 3
ART 2400 Computers and Art (Art Majors Only) (F) 3
ART 2600 Basic Sculpture (F,Sp) (3 cr) **or**
ART 2650 Introduction to Ceramics (F,Sp,Su) (3 cr) 3
ART 3200 Painting II (Sp) 3
ART 4200 Advanced Drawing and Painting Studio (F,Sp,Su) 6
ART 4210 Figure Painting (Sp) 3
ART 4260[3] Life Drawing (F) 3
ART 4910 Senior BFA Exhibition (Sp) 2
ARTH 4750 Twentieth Century Art 3
One additional upper-division Art History course (required) 3

One course must be chosen from:
ART 3230 Lithography (F) 3
ART 3240 Intaglio (Sp) 3
ART 3250 Relief Prints (F) 3

The remainder of the 70 semester credits can be taken as electives.

[3]ART 4260 is repeatable for credit, and must be taken during at least two semesters.

Sample Four-year Plan for Art Major, Drawing and Painting Emphasis

Minimum GPA for Admission: 2.75, USU; 2.75 Career
Additional Admission Requirement: portfolio and application review
Minimum GPA for Graduation: 2.75, major; 2.75, USU; 2.75 Career
Minimum Grade Accepted: *B-* in emphasis courses;
C in remaining ART courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (30 credits)
Fall Semester (15 credits)
ART 1110 Drawing I (Art Majors Only) 3
ART 1150 Two-dimensional Design (Art Majors Only) 3
ARTH 2710 (BHU) Survey of Western Art: Prehistoric to Medieval 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
University Studies Quantitative Literacy (QL) course 3

Spring Semester (15 credits)
ART 1160 Three-dimensional Design (Art Majors Only) 3
ART 2110 Drawing II 3
ARTH 2720 (BHU) Survey of Western Art: Renaissance to Post-Modern 3
University Studies Breadth courses 6

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (32 credits)
Fall Semester (16 credits)
ART 2200 Painting I 3
ART 2230 Basic Printmaking 3
ART 3710 Fine Art Seminar 1
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
University Studies Breadth courses 6

Spring Semester (16 credits)
ART 1050 Introduction to Photography (3 cr) **or**
ART 2810 Photography I (3 cr) 3
ART 3200 Painting II 3
ART 3710 Fine Art Seminar 1
ARTH 4750 Twentieth Century Art 3
University Studies Breadth course 3
Elective course(s) 3

Junior Year (32 credits)
Fall Semester (16 credits)
ART 3710 Fine Art Seminar 1
ART 4200 Advanced Drawing and Painting Studio 3
ART 4260 Life Drawing 3
Art History upper-division course 3
Depth Social Sciences (DSS) course 3
Communications Intensive (CI) course 3

Spring Semester (16 credits)
ART 2600 Basic Sculpture (3 cr) **or**
ART 2650 Introduction to Ceramics (3 cr) 3
ART 3710 Fine Art Seminar 1
ART 4210 Figure Painting 3
Communications Intensive (CI) course 3
Depth Life and Physical Sciences (DSC) course 3
Quantitative Intensive (QI) course 3

Senior Year (26 credits)
Fall Semester (13 credits)
ART 3230 Lithography (3 cr) **or**
ART 3240 Intaglio (3 cr) **or**
ART 3250 Relief Prints (3 cr) 3

ART 3710 Fine Art Seminar 1
ART 4200 Advanced Drawing and Painting Studio 3
ART 4260 Life Drawing 3
Art elective course(s) 3

Spring Semester (13 credits)
ART 2400 Computers and Art (Art Majors Only) 3
ART 3710 Fine Art Seminar 1
ART 4200 Advanced Drawing and Painting Studio 3
ART 4910 Senior BFA Exhibition 2
Elective course(s) 4

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 Computers and Art (F) (Art Majors Only) 3
ART 3400 Typography (Sp) 3
ART 3420[4] Communication Arts Seminar (F,Sp) 1
ART 4410 Graphic Interface Design I (F) 3
ART 4420 Brand Identity Design (F) 3
ART 4440 Type, Image, and Visual Continuity (Sp) 3
ART 4450 Portfolio Preparation (F) 3
Additional Art courses 9
Two upper-division Art History courses (3000- or 4000-level) 6

[4]ART 3420 is repeatable for credit, and must be taken during a minimum of three semesters.

Sample Four-year Plan for Art Major, Graphic Design Emphasis

Minimum GPA for Admission: 2.75, USU; 2.75 Career
Additional Admission Requirement: portfolio and application review
Minimum GPA for Graduation: 2.75, major; 2.75, USU; 2.75 Career
Minimum Grade Accepted: *B-* in emphasis courses;
C in remaining ART courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (30 credits)

Fall Semester (15 credits)
ART 1110 Drawing I (Art Majors Only) 3
ART 1150 Two-dimensional Design (Art Majors Only) 3
ART 2400 Computers and Art (Art Majors Only) 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
University Studies Quantitative Literacy (QL) course 3

Spring Semester (15 credits)
ART 1160 Three-dimensional Design (Art Majors Only) 3
ART 2110 Drawing II 3
ART 3400 Typography 3
University Studies Breadth courses 6

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (32 credits)

Fall Semester (16 credits)
ARTH 2710 (BHU) Survey of Western Art: Prehistoric to Medieval 3
ART 3370 Illustration Concepts 3
ART 3420 Communication Arts Seminar 1
ART 4420 Brand Identity Design 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
University Studies Breadth course 3

Spring Semester (16 credits)
ARTH 2720 (BHU) Survey of Western Art: Renaissance to Post-Modern 3
ART 3420 Communication Arts Seminar 1
ART 4370 Illustration Studio 3
ART 4440 Type, Image, and Visual Continuity 3
University Studies Breadth courses 6

Junior Year (32 credits)

Fall Semester (16 credits)
ART 2200 Painting I 3
ART 3420 Communication Arts Seminar 1
ART 4410 Graphic Interface Design I 3
Art History upper-division course 3
Depth Social Sciences (DSS) course 3
Communications Intensive (CI) course 3

Spring Semester (16 credits)
ART 1050 Introduction to Photography (3 cr) **or**
ART 2810 Photography I (3 cr) 3
ART 3420 Communication Arts Seminar 1
ART 4430 Graphic Interface Design II 3
Art History upper-division course 3
Communications Intensive (CI) course 3
Depth Life and Physical Sciences (DSC) course 3

Senior Year (26 credits)

Fall Semester (13 credits)
ART 2230 Basic Printmaking 3
ART 3420 Communication Arts Seminar 1
ART 4450 Portfolio Preparation 3
Quantitative Intensive (QI) course 3
Elective course(s) 3

Spring Semester (13 credits)
ART 3420 Communication Arts Seminar 1
ART 4470 Special Topics in Graphic Design and Illustration 3
ART 4910 Senior BFA Exhibition 2
Elective courses 7

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 2810 Photography I (F,Sp) 3
ART 3810 Photography II (Sp) 3
ART 3820 History of Early Photography (Sp) 3
ART 3830 History of Contemporary Photography (Sp) 3
ART 4810 Digital Photography (F) 3
ART 4820 Nineteenth Century Photography Printing Processes (F) 3
ART 4830 Independent Projects in Photography (F,Sp,Su) 6
ART 4840 Color Photography I (F) 3
ART 4850 Color Photography II (Sp) 3
ART 4860 Photographic Studio (F) 3
ART 4870 Photographic Portfolio (Sp) 3
ART 4910 Senor BFA Exhibition (Sp) 2

Sample Four-year Plan for Art Major, Photography Emphasis

Minimum GPA for Admission: 2.75, USU; 2.75 Career
Additional Admission Requirement: portfolio and application review
Minimum GPA for Graduation: 2.75, major; 2.75, USU; 2.75 Career
Minimum Grade Accepted: *B-* in emphasis courses;
C in remaining ART courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (31 credits)

Fall Semester (15 credits)

ART 1110 Drawing I (Art Majors Only) 3
ART 1150 Two-dimensional Design (Art Majors Only) 3
ARTH 2710 (BHU) Survey of Western Art: Prehistoric to Medieval 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
University Studies Quantitative Literacy (QL) course 3

Spring Semester (16 credits)

ART 1160 Three-dimensional Design (Art Majors Only) 3
ART 2110 Drawing II 3
ARTH 2720 (BHU) Survey of Western Art: Renaissance to Post-Modern 3
ART 3710 Fine Art Seminar 1
University Studies Breadth courses 6

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (32 credits)

Fall Semester (16 credits)

ART 2400 Computers and Art (Art Majors Only) 3
ART 2810 Photography I 3
ART 3710 Fine Art Seminar 1
ART 3820 History of Early Photography 3
University Studies Breadth courses 6

Spring Semester (16 credits)

ART 2200 Painting I (3 cr) **or**
ART 2230 Basic Printmaking (3 cr) 3
ART 3710 Fine Art Seminar 1
ART 3810 Photography II 3
ART 3830 History of Contemporary Photography 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
University Studies Breadth course 3

Junior Year (32 credits)

Fall Semester (16 credits)

ART 2600 Basic Sculpture (3 cr) **or**
ART 2650 Introduction to Ceramics (3 cr) 3
ART 3710 Fine Art Seminar 1
ART 4810 Digital Photography 3
ART 4840 Color Photography I 3
Communications Intensive (CI) course 3
Quantitative Intensive (QI) course 3

Spring Semester (16 credits)

ART 3710 Fine Art Seminar 1
ART 4830 Independent Projects in Photography 3
ART 4850 Color Photography II 3
Depth Social Sciences (DSS) course 3
Communications Intensive (CI) course 3
Elective course(s) 3

Senior Year (25 credits)

Fall Semester (13 credits)

ART 3710 Fine Art Seminar 1
ART 4820 Nineteenth Century Photography Printing Processes 3
ART 4830 Independent Projects in Photography 3
ART 4860 Photographic Studio 3
Depth Life and Physical Sciences (DSC) course 3

Spring Semester (12 credits)

ART 3710 Fine Art Seminar 1
ART 4870 Photographic Portfolio 3
ART 4910 Senior BFA Exhibition 2
Elective courses 6

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 1050 Introduction to Photography (F) (3 cr) **or**
ART 2810 Photography I (F,Sp) (3 cr) 3
ART 2230 Basic Printmaking (F) 3
ART 3230[5] Lithography (F) 3
ART 3240[5] Intaglio (Sp) 3
ART 3250[5,6] Relief Prints (F) 3
ART 4250 Advanced Printmaking Studio (F,Sp) 9
ART 4910 Senor BFA Exhibition (Sp) 2
Two additional upper-division Art History courses, 3000-level and above (required) 6

[5]A total of 12 credits must be taken in a combination of ART 3230, 3240, and 3250.
[6]ART 3250 may be repeated for credit.

Sample Four-year Plan for Art Major, Printmaking Emphasis

Minimum GPA for Admission: 2.75, USU; 2.75 Career
Additional Admission Requirement: portfolio and application review
Minimum GPA for Graduation: 2.75, major; 2.75, USU; 2.75 Career
Minimum Grade Accepted: *B-* in emphasis courses;
C in remaining ART courses

Department of Art

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (30 credits)
Fall Semester (15 credits)
ART 1110 Drawing I (Art Majors Only) 3
ART 1150 Two-dimensional Design (Art Majors Only) 3
ARTH 2710 (BHU) Survey of Western Art: Prehistoric to Medieval 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
University Studies Quantitative Literacy (QL) course 3

Spring Semester (15 credits)
ART 1160 Three-dimensional Design (Art Majors Only) 3
ART 2110 Drawing II 3
ARTH 2720 (BHU) Survey of Western Art: Renaissance to Post-Modern 3
University Studies Breadth courses 6

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (32 credits)
Fall Semester (16 credits)
ART 2230 Basic Printmaking 3
ART 2400 Computers and Art 3
ART 3710 Fine Art Seminar 1
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
University Studies Breadth courses 6

Spring Semester (16 credits)
ART 1050 Introduction to Photography (3cr) **or**
ART 2810 Photography I (3cr) 3
ART 3230 Lithography 3
ART 3710 Fine Art Seminar 1
University Studies Breadth course 3
Communications Intensive (CI) course 3
Elective course(s) 3

Junior Year (28 credits)
Fall Semester (13 credits)
ART 2200 Painting I (3 cr) **or**
ART 2600 Basic Sculpture (3 cr) **or**
ART 2650 Introduction to Ceramics (3 cr) 3
ART 3240 Intaglio 3
ART 3710 Fine Art Seminar 1
Art History upper-division course 3
Depth Social Sciences (DSS) course 3

Spring Semester (15 credits)
ART 3710 Fine Art Seminar 1
ART 4250 Advanced Printmaking Studio 3
Art upper-division course 3
Art History upper-division course 3
Quantitative Intensive (QI) course 3
Elective course(s) 2

Senior Year (31 credits)
Fall Semester (16 credits)
ART 3710 Fine Art Seminar 1
ART 4250 Advanced Printmaking Studio 3
Art upper-division course 3
Communications Intensive (CI) course 3
Depth Life and Physical Sciences (DSC) course 3
Elective course(s) 3

Spring Semester (15 credits)
ART 3710 Fine Art Seminar 1
ART 4250 Advanced Printmaking Studio 3
ART 4910 Senior BFA Exhibition 2
ART 3230 Lithography 3
Art upper-division course 3
Elective course(s) 3

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 2600 Basic Sculpture (F,Sp) 3
ART 2650 Introduction to Ceramics (F,Sp,Su) 3
ART 1050 Introduction to Photography (F) (3 cr) **or**
ART 2810 Photography I (F,Sp) (3 cr) 3
ART 3610 Intermediate Sculpture (F) 3
ART 4660 Advanced Sculpture Studio (Sp) 9
ART 4910 Senior BFA Exhibition (Sp) 2
Two additional upper-division Art History courses (required) 6

Sample Four-year Plan for Art Major, Sculpture Emphasis

Minimum GPA for Admission: 2.75, USU; 2.75 Career
Additional Admission Requirement: portfolio and application review
Minimum GPA for Graduation: 2.75, major; 2.75, USU; 2.75 Career
Minimum Grade Accepted: *B-* in emphasis courses; *C* in remaining ART courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (30 credits)
Fall Semester (15 credits)
ART 1110 Drawing I (Art Majors Only) 3
ART 1150 Two-dimensional Design (Art Majors Only) 3
ARTH 2710 (BHU) Survey of Western Art: Prehistoric to Medieval 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
University Studies Quantitative Literacy (QL) course 3

Spring Semester (15 credits)
ART 1160 Three-dimensional Design (Art Majors Only) 3
ART 2110 Drawing II 3

ARTH 2720 (BHU) Survey of Western Art: Renaissance to Post-Modern 3
University Studies Breadth courses 6

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (32 credits)
Fall Semester (16 credits)
ART 2600 Basic Sculpture 3
ART 2650 Introduction to Ceramics 3
ART 3710 Fine Art Seminar 1
University Studies Breadth courses 6
Communications Intensive (CI) course 3

Spring Semester (16 credits)
ART 1050 Introduction to Photography (3 cr) **or**
ART 2810 Photography I (3 cr) 3
ART 3610 Intermediate Sculpture 3
ART 3710 Fine Art Seminar 1
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
University Studies Breadth course 3
Elective course(s) 3

Junior Year (32 credits)
Fall Semester (16 credits)
ART 2200 Painting I (3 cr) **or**
ART 2230 Basic Printmaking (3 cr) 3
ART 3710 Fine Art Seminar 1
ART 4610 Sculpture Projects 3
Art History upper-division course 3
Depth Social Sciences (DSS) course 3
Communications Intensive (CI) course 3

Spring Semester (16 credits)
ART 3710 Fine Art Seminar 1
ART 4660 Advanced Sculpture Studio 3
Art History upper-division course 3
Quantitative Intensive (QI) course 3
Art upper-division course 3
Elective course* 3

Senior Year (26 credits)
Fall Semester (13 credits)
ART 3710 Fine Art Seminar 1
ART 4660 Advanced Sculpture Studio 3
Depth Life and Physical Sciences (DSC) course 3
Art upper-division courses 6

Spring Semester (13 credits)
ART 3710 Fine Art Seminar 1
ART 4660 Advanced Sculpture Studio 3
ART 4910 Senior BFA Exhibition 2
Art upper-division course 3
Elective course(s) 4

*In addition, it is recommended that students complete one design course through Landscape Architecture and Environmental Planning (LAEP), Theatre Arts (THEA), or Interior Design (ID).

Minor Requirements

Art Minor

To plan a minor in Art, students should meet with an advisor. Generally, the minimum requirements include:
ART 1020 Drawing I (F,Sp) 3
ART 1120 Two-dimensional Design (F,Sp) 3
ART 1130 Three-dimensional Design (F,Sp) 3
ARTH 2710 (BHU) Survey of Western Art: Prehistoric to Medieval (F) (3 cr) **or**
ARTH 2720 (BHU) Survey of Western Art: Renaissance to Post-Modern (Sp) (3 cr) 3
Credits in any ART classes 12

Art History Minor

A minor in art history requires ARTH 2710 and 2720, plus 12 credits from the art history group (ART 3820, 3830, 4790, ARTH 4720, 4740, 4750).

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.

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Students wishing to pursue departmental honors in art must have a cumulative GPA of 3.30 or higher, and must first be admitted to the BFA program. Once that process is completed, they should meet with Alexa Sand, the departmental honors advisor, to complete an honors program of study contract form. Dr. Sand may be contacted at: Fine Arts Visual 144, (435) 797-8549, or by e-mail at alexa.sand@usu.edu.

The 15-credit requirement for Departmental Honors in Art is met in the following manner:

1. At least 6 credits in upper-division Art or Art History courses must be taken with an honors contract.
2. At least 3 credits must be completed in an Honors Depth Life and Physical Sciences (DSC) course or in an Honors Depth Social Sciences (DSS) course.
3. At least 3 credits of upper-division coursework must be completed in the emphasis area or from outside the department, and must be taken with an honors contract.
4. Students must complete ART 4910 (Senior BFA Exhibition, 2 credits), along with at least 1 credit in HONR 4900H (Senior Thesis/Project, 1-3 credits).

To qualify for departmental honors in art, students must graduate with a cumulative GPA of at least 3.30 in their upper-division coursework taken as part of their departmental honors contract, and must present their work in a public forum (such as the Senior BFA show and/or Student Showcase).

Additional Information

For additional information about undergraduate requirements in the Department of Art, see the major requirement sheet, which can be obtained from the department, or accessed online at:
http://www.usu.edu/majorsheets/

Department of Art

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 digital images 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 $50 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 digital images on CD-ROM 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
Robert Winward, graphic design

Associate Professor Emeritus
Marion R. Hyde, printmaking, art education

Assistant Professors
Eileen Doktorski, sculpture
JinMan Jo, sculpture
J. Daniel Murphy, ceramics
Alexa Sand, art history
Woody Shepherd, drawing, painting
Dave Smellie, graphic design

Course Descriptions

Art (ART), pages 563-566
Art History (ARTH), pages 566-567

Asian Studies Major and Minor

Program Director: R. Edward Glatfelter, Main 333, (435) 797-1196, ed.glatfelter@usu.edu

Assistant Director: Annie Inhae Kim, Main 002A, (435) 797-3281, anniekim@cc.usu.edu

Major

Requirements for Asian Studies Major (27 credits)

To graduate with a BA degree in Asian Studies, students must complete a minimum of 27 credits approved by the Asian Studies program director. The program must include a minimum of 18 credits selected from the Core Courses, and 9 credits from the General Electives, selected after consultation with the Asian Studies program advisor. In addition to the core and elective courses, proficiency at the 2020-level or higher in an Asian language is required for graduation.

Core Courses

BIS 4550 (CI) Principles of International Business Communications (Sp) 3
ECON 5400 International and Development Economics (F) 4
ENGL 3320 Period Studies in World Literature (when syllabus includes Asian literature) (F,Sp) 3
ENGL 4360 Studies in Drama/Film (when course subtitle is Asia) (Sp) 3
GEOG 4200 (CI) Regional Geography (when region covered is Asian) (F,Sp,Su) 3
HIST 1060 (BHU) Introduction to Islamic Civilization 3
HIST 3110 (DHA/CI) Ancient Near East 3
HIST 3410 The Modern Middle East 3
HIST 3460 Comparative Asian History 3
HIST 3480 History of China 3
HIST 3490 Survey of Japanese History (F) 3
HIST 4821 World War II in Asia 3
HIST 4890 (DHA) Cold War in Asia (F,Sp) 3
LANG/ANTH/HIST 3550 (DHA) Culture of East Asia (F,Sp) 3
PHIL 3710 Philosophies of East Asia (F) 3
PHIL 4900 Special Topics (when syllabus includes Asian philosophies) (F,Sp) 3
POLS 3230 Middle Eastern Government and Politics (F) 3
POLS 3250 (DSS) Chinese Government and Politics (F) 3
POLS 4220 (CI) Ethnic Conflict and Cooperation (when syllabus includes Asian Conflicts) (Sp) 3
POLS 4260 Southeast Asian Government and Politics (Sp) 3
POLS 4470 Foreign Policy in the Pacific (Sp) 3
RELS 3010 Introduction to Buddhism 3
RELS 3020 Introduction to Hinduism 3
RELS 4010 Buddhism in the West 3
SOC 4710 Asian Societies (Sp) 3
SOC 4730 Women in International Development (Sp) 3

General Electives

(required minimum of 9 credits):
ANTH 1010 (BSS) Cultural Anthropology (F,Sp) 3
ANTH 2010 (BSS) Peoples of the Contemporary World (Sp) 3
ANTH 3160 (DSS) Anthropology of Religion (F) 3
ANTH/LING 4100 The Study of Language (F,Sp) 3
ANTH 5100 (DSS) Anthropology of Sex and Gender (Sp) 3
ANTH 5160 (DSS) Cities and Development (Sp) 3
BA 4300 International Finance (F,Sp) 3
BA 4590 Global Marketing Strategy (F,Sp) 3
ECON 3400 (DSS) International Economics for Business (F,Sp,Su) 3
ECON 5120 Economics of Russia and Eastern Europe, 9th Century to 21st Century (F) 3
ECON 5150 (DSS) Comparative Economic Systems (Sp) 3
ECON 5850 Regional and Community Economic Development (F) 3
GEOG 1300 (BSS) World Regional Geography (F) 3
GEOG 1400 (BSS) Human Geography (Sp) 3
GEOG 2130 Population Geography (Sp) 3
GEOG 3430 Political Geography (Sp) 3
NR 1010 (BSS) Humans and the Changing Global Environment (F,Sp) 3
PLSC 4300 World Food Crops and Cropping Systems: The Plants That Feed Us (Sp) 3
POLS 2100 Introduction to International Politics (F,Sp) 3
POLS 2200 (BSS) Comparative Politics (F,Sp) 3
POLS 5200 Global Environment (F) 3
POLS 5440 (DSS) Gender and World Politics (Sp) 3
SOC 3200 (DSS) Population and Society (F,Sp) 3
SOC 3600 Sociology of Urban Places (F) 3
SOC/GEOG 5650 (DSS) Developing Societies (F) 3
SOC 6310 Sociology of Work and Occupations (Sp) 3
SPCH 3330 (DSS) Intercultural Communication (F) 3

Languages

Demonstrated proficiency at the 2020-level or higher in one of the following Asian languages is required for the Asian Studies major. For students completing an Asian Studies minor, an Asian language is recommended.

CHIN 1010 Chinese First Year I 5
CHIN 1020 Chinese First Year II 5
CHIN 2010 Chinese Second Year I 5
CHIN 2020 Chinese Second Year II 5
CHIN 3010 Chinese Third Year I 4
CHIN 3020 Chinese Third Year II 4
CHIN 3100 Readings in Contemporary Chinese Culture 3
CHIN 3510 Chinese Business Language 3

JAPN 1010 Japanese First Year I 5
JAPN 1020 Japanese First Year II 5
JAPN 2010 Japanese Second Year I 5
JAPN 2020 Japanese Second Year II 5
JAPN 3010 Japanese Third Year I 4
JAPN 3020 Japanese Third Year II 4
JAPN/ART 3050 Japanese Calligraphy 1
JAPN 3100 Readings in Contemporary Japanese Culture 3
JAPN 3510 Japanese for the Business Environment 3
JAPN 4250 Internship/Coop 3-9

KOR 1010 Korean First Year I 5
KOR 1020 Korean First Year II 5
KOR 2010 Korean Second Year I 5
KOR 2020 Korean Second Year II 5
KOR 3010 Korean Third Year I 4
KOR 3020 Korean Third Year II 4
KOR 3510 Business Korean 3

Minor

Requirements for Asian Studies Minor (20 credits)

Minors must complete a minimum of 12 credits selected from the Core Courses. The remaining 8 credits must be chosen from the General Electives *or* from the following language classes:

CHIN 3010 Chinese Third Year I 4
CHIN 3020 Chinese Third Year II 4
CHIN 3100 Readings in Contemporary Chinese Culture 3
CHIN 3510 Chinese Business Language 3

JAPN 3010 Japanese Third Year I 4
JAPN 3020 Japanese Third Year II 4
JAPN/ART 3050 Japanese Calligraphy 1
JAPN 3100 Readings in Contemporary Japanese Culture 3
JAPN 3510 Japanese for the Business Environment 3

KOR 3010 Korean Third Year I 4
KOR 3020 Korean Third Year II 4
KOR 3510 Business Korean 3

Sample Four-year Plan for Asian Studies Major

Minimum GPA for Admission: 2.5, USU; 2.2, Career
Minimum GPA for Graduation: 2.5, major requirements including foreign language; 2.0, USU
Minimum Grade Accepted: *C-* in all major requirements including foreign language

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (30 credits)

Fall Semester (15 credits)
Asian Language 1010-level course 5
Quantitative Literacy (QL) course 3
University Studies Breadth courses 6
Elective course 1

Spring Semester (15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
Asian Language 1020-level course 5
University Studies Breadth courses 6
Elective course 1

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (30 credits)

Fall Semester (15 credits)
Asian Language 2010-level course 5
Asian General Elective course 3
University Studies Breadth courses 6
Elective course 1

Spring Semester (15 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Asian Language 2020-level course 5
Asian Core course 3
Asian General Elective course 3
Elective course 1

Junior Year (30 credits)

Fall Semester (15 credits)
Asian General Elective course 3
Asian upper-division Core course 3
Communications Intensive (CI) course 3
Quantitative Intensive (QI) course 3
Depth Social Sciences (DSS) course (cannot be used toward minimum credits for Asian Studies major) 3

Spring Semester (15 credits)
Asian upper-division Core courses 6
Communications Intensive (CI) course 3
Depth Life and Physical Sciences (DSC) course 3
Asian General Elective course 3

Senior Year (30 credits)

Fall Semester (15 credits)
Asian upper-division Core course 3
Upper-division elective courses 10
Elective course 2

Spring Semester (15 credits)
Asian upper-division Core course 3
Upper-division elective courses 9
Elective course 3

Asian Language Course Descriptions

Chinese (CHIN), page 595
Japanese (JAPN), pages 652-653
Korean (KOR), page 656

Department of 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 Advising:
Engineering Advising Center, Engineering 314A, (435) 797-2705, isobel.roskelley@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*—Biomedical; Bioprocess; Bioenvironmental; and Soil and Water Resource Systems Engineering

Graduate areas of interest: Biomedical Engineering; Biosensors; Biofuels; Sustainable Energy; Bioprocess Engineering; Biophotonics; Bioenvironmental Engineering; Irrigation Conveyance and Control Structures; Surface, Sprinkle, and Trickle Irrigation Methods; Irrigation Project Planning, Design, and Operation and Management; Agricultural Hydrology; Crop Water-Yield Analysis; Evapotranspiration; On-Farm Water Management; Remote Sensing and Geographical Information Systems; Groundwater Management and Simulation

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 design, control, and analysis of biological-engineered systems and to solutions of biotechnology problems. The department also prepares students for entry into other professions, including biomedical engineering, environmental engineering, medicine, and law.

Scope and Objectives

The scope of the Biological Engineering Program involves engaging students to learn to manipulate biological materials for useful purposes, to understand the biological literature, and to be able to communicate with biological scientists. 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. The scope involves applications in engineered biological systems, from nanoscale to watershed scale, as well as engineered life-support systems in above-earth and planetary space environments.

The objectives of the Biological Engineering Program are to:

1. Develop practical problem-solving and communication abilities that will contribute to biological engineering practice, advance knowledge, and contribute to society;

2. Expand a professional sensitivity to the economic, social, and legal dimensions of technical problems, in order that engineering solutions are more holistic and applicable; and

3. Stimulate a desire for life-long learning and adaptation as one means of extending engineering knowledge.

Outcomes

Biological Engineering Program outcomes are aligned with the program outcomes of all academic engineering programs in the U.S. that are provided by the Accreditation Board for Engineering and Technology/Engineering Accreditation Commission (ABET/EAC). Six specific outcomes are identified below.

1. Students have proven themselves to be proficient in mathematics, the sciences, and engineering.

2. Students have shown a capacity for investigation and experimentation, including the analysis and interpretation of data, as well as the ability to design an effective biological or irrigation system.

3. Students have exercised their engineering skills as part of a multi-disciplinary group, and have demonstrated the capability to communicate verbally, in writing, graphically, and through engineering media.

4. Students have demonstrated the ability to solve engineering analysis and design problems, utilizing both fundamental engineering principles and modern engineering technology and tools.

5. Students have demonstrated an understanding of the standards of professional conduct and ethical responsibility, in addition to understanding the role that an engineer plays in modern global society.

6. Students have manifested recognition of and commitment to the need for life-long learning as a professional, and have broadened the scope of their interests beyond engineering to include an awareness of the world around them.

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 ABET.

The continuing improvement processes that are documented and implemented annually as part of the accreditation activities in support of the EAC/ABET requirements provide for formal and external review of the Biological Engineering Bachelor of Science program. Internal assessment and evaluation is formally conducted annually through BIE Department committees including: (1) the Curriculum Committee, and (2) the ABET Committee. This assessment and evaluation 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 self-assessment survey

2. Fundamentals of Engineering Examination performances

3. Biological and Irrigation Engineering Advisory Board activities, including employer responses and board reviews
4. Alumni survey
5. Graduating student exit interviews
6. Teaching evaluations

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 21 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 program, general education, and other academic requirements. Additional information concerning these items is given in the College of Engineering requirements on pages 121-123. 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 Engineering Quantification of Biological Processes (Sp) 3
BIE 2330 Engineering Properties of Biological Materials (Sp) 3
CHEM 1210 Principles of Chemistry I (F,Sp) 4
CHEM 1215 Chemical Principles Laboratory I (F,Sp) 1
CHEM 2300 Principles of Organic Chemistry (F) 3
CHEM 2315 Organic Chemistry Laboratory I (F) 1
ENGR 1000 Introduction to Engineering Design (F) 2
ENGR 2010 Engineering Mechanics Statics (F,Sp) 2
ENGR 2030 Engineering Mechanics Dynamics (F,Sp) 3
ENGR 2200 Engineering Numerical Methods I (F) 3
BIOL 1610 (BLS)[1] Biology I (F) 4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode (F,Sp,Su) 3
ETE 2270 Computer Engineering Drafting (F,Sp,Su) 2
BIE 2400 Biological and Environmental Thermodynamics (Sp) 3
MATH 1210 (QL) Calculus I (F,Sp,Su) 4
MATH 1220 (QL) Calculus II (F,Sp,Su) 4
MATH 2250 (QI) Linear Algebra and Differential Equations (F,Sp,Su) 4
PHYS 2200 Elements of Mechanics 2
Communications Literacy 3

Professional Program:

BIE 3000 Instrumentation for Biological Systems (Sp) 2
BIE 3200 Introduction to Unit Operations in Biological Engineering (F) 3
BIE 3670 Transport Phenomena in Bio-Environmental Systems (Sp) 3
BIE 3870 Biological Engineering Design I (F,Sp,Su) 1
BIE 4880 (CI) Biological Engineering Design II (F,Sp,Su) 3
BIE 4890 (CI) Biological Engineering Design III (F,Sp,Su) 3
BIE 5930 Special Studies: Modeling Biological Systems (F) 3
BIOL 3300 (BLS)[1] General Microbiology (F,Sp) 4
CEE 3500 Civil and Environmental Engineering Fluid Mechanics (F,Sp) 3
CHEM 3700 Introductory Biochemistry (Sp) 3
CHEM 3710 Introductory Biochemistry Laboratory (Sp) 1
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su) 3
ETE 2300 (QI) Electronic Fundamentals (F,Su) 4
Biological Engineering Electives 6-21
Engineering Electives (0-15 cr) (9-21 cr total for Biological Engineering Electives *and* Engineering Electives combined) 9-21
Technical Electives (0-12 cr) (21 cr total for Biological Engineering Electives, Engineering Electives, *and* Technical Electives combined) 0-12
University Studies (18 credits) 18

Biological Engineering Required Coursework

Suggested Semester Schedule (126 credits)

Preengineering: Freshman and Sophomore

Freshman Year (32 credits)

Fall Semester (15 credits)

BIOL 1610 (BLS)[1,3] Biology I 4
CHEM 1210[3] Principles of Chemistry I 4
CHEM 1215[3] Chemical Principles Laboratory I 1
ENGR 1000[3] Introduction to Engineering Design 2
MATH 1210 (QL)[3] Calculus I 4

Spring Semester (17 credits)

BIE 1880[3] Engineering Quantification of Biological Processes 3
ETE 2270[3] Computer Engineering Drafting 2
MATH 1220 (QL)[3] Calculus II 4
PHYS 2200[3] Elements of Mechanics 2
University Studies Breadth courses 6

Sophomore Year (33 credits)

Fall Semester (16 credits)

BIE 2330[3] Engineering Properties of Biological Materials 3
CHEM 2300[3] Principles of Organic Chemistry 3
CHEM 2315[3] Organic Chemistry Laboratory I 1
ENGR 2010[3] Engineering Mechanics Statics 2
ENGR 2200[3] Engineering Numerical Methods I 3
MATH 2250 (QI)[3] Linear Algebra and Differential Equations 4

Department of Biological and Irrigation Engineering

Spring Semester (17 credits)
BIE 2400[3] Biological and Environmental Thermodynamics 3
BIOL 3300 (BLS)[1] General Microbiology 4
ENGL 2010 (CL2)[3] Intermediate Writing: Research Writing in a Persuasive Mode 3
ENGR 2030[3] Engineering Mechanics Dynamics 3
ETE 2300 (QI) Electronic Fundamentals 4

Professional Engineering: Junior and Senior

Junior Year (31 credits)

Fall Semester (15 credits)
BIE 3200 Introduction to Unit Operations in Biological Engineering 3
CEE 3500 Civil and Environmental Engineering Fluid Mechanics 3
STAT 3000 (QI) Statistics for Scientists 3
Technical Elective course[2] 3
University Studies Breadth course 3

Spring Semester (16 credits)
BIE 3000 Instrumentation for Biological Systems 2
BIE 3670 Transport Phenomena in Bio-Environmental Systems 3
BIE 3870 Biological Engineering Design I 1
CHEM 3700 Introductory Biochemistry 3
CHEM 3710 Introductory Biochemistry Laboratory 1
Technical Elective course[2,4] 3
University Studies Breadth course 3

Senior Year (32-34 credits)

Fall Semester (15-16 credits)
BIE 4880 (CI) Biological Engineering Design II 3
BIE 5930 Special Studies: Modeling Biological Systems 3
University Studies Depth Humanities and Creative Arts (DHA) course 2-3
Technical Elective courses[2] 7

Spring Semester (17-18 credits)
BIE 4890 (CI) Biological Engineering Design III 3
Technical Elective courses[2] 8
University Studies Breadth Physical Sciences (BPS) course 3-4
University Studies Depth Social Sciences (DSS) course 3

Technical Elective Courses (select 21 or more credits)

Students must select 9-21 credits from the **Biological Engineering Electives** and **Engineering Electives** categories.

Biological Engineering Electives (select 6-21 credits)
BIE 5010 Principles of Irrigation Engineering (F) 3
BIE 5110 Sprinkle and Trickle Irrigation (F) 4
BIE 5150 Surface Irrigation Design (Sp) 3
BIE 5250 Remote Sensing of Land Surfaces (Sp) 4
BIE 5300 Irrigation Conveyance and Control Systems (F) 3
BIE 5350 Drainage and Water Quality Engineering (Sp) 3
BIE 5520 Irrigation Project Operation and Maintenance (Sp) 3
BIE 5550 Groundwater Systems Engineering I (F) 3
BIE 5610 Food and Bioprocess Engineering (F) 3
BIE 5680 Soil-based Waste Management (Sp) 2
BIE 5810 Biochemical Engineering (F) 3
BIE 5830 Management and Utilization of Biological Solids and Wastewater (F) 3
BIE 5840 Introduction to Biophotonics (F) 3
BIE 5850 Biomaterials Engineering (F) 3
BIE 5890 Tissue Engineering (Sp) 3
BIE 5910 Introduction to Biosensors (F) 3
BIE 5930 Special Studies: Biophotonics (F) 3

Engineering Electives (select 0-15 credits)
CEE 3430 Engineering Hydrology (Sp) 3
CEE 3510 Civil and Environmental Engineering Hydraulics (F,Sp) 3
CEE 3640 Water and Wastewater Engineering (Sp) 4
CEE 4200 Engineering Economics (F) 2
CEE 5430 Groundwater Engineering (F) 3
CEE 5680 Soil-based Waste Management (Sp) 2
MAE 5620 Manufacturing Automation (F) 3

Technical Electives (select 0-12 credits)
AV 4200 Composite Manufacturing Processes and Repair (Sp) 3
BIE 4250 Cooperative Practice (F,Sp,Su) 3
BIOL 2320 Human Anatomy (Sp,Su) 4
BIOL 2420 Human Physiology (F,Sp,Su) 4
BIOL 3100 (CI) Bioethics (Sp) 3
BIOL 3060 (QI) Principles of Genetics (F,Sp,Su) 4
BIOL 5160 Methods in Biotechnology: Cell Culture (Sp) 3
BIOL 5210 Cell Biology (F) 3
BIOL 5230 Developmental Biology (Sp) 3
BIOL 5240 Methods in Biotechnology: Protein Purification Techniques (Sp) 3
BIOL 5260 Methods in Biotechnology: Molecular Cloning (F) 3
BIOL 5620 Medical Physiology (Sp) 3
CEE 2240 Engineering Surveying (F,Su) 3
CEE/PUBH 3610 Environmental Management (F) 3
CEE/PUBH 3870 Professional/Technical Writing in Civil and Environmental Engineering (F) 2
CHEM 2320 Organic Chemistry II (Sp) 4
CHEM 2325 Organic Chemistry Laboratory II (Sp) 1
CHEM 3070 (QI) Physical Chemistry (Sp) 3
ECE 2250 Electrical Circuits (F,Sp) 4
ECE 2700 Digital Circuits (F,Sp) 4
ENGR 2140 Strength of Materials (F,Sp) 2
ETE 3030 Computer-Integrated Manufacturing Systems (Sp) 3
MAE 2160 Material Science (F,Sp) 3
MAE 2650 Manufacturing Processes (Sp) 3
NFS 3100 (QI) Sensory Evaluation of Food (Sp) 3
NFS 4020 Advanced Nutrition (F) 3
NFS 5110 (CI) Food Microbiology (Sp) 4
PHYS 2110 The Physics of Living Systems I 4
PHYS 2120 (BPS) The Physics of Living Systems II 4
PHYS 2210 (QI) General Physics—Science and Engineering I 4
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II 4
SOIL 3000 Fundamentals of Soil Science (F,Sp) 4
SOIL 5650 Environmental Soil Physics (F) 3
WATS 4490 Small Watershed Hydrology (F) 4
WATS 4500 Limnology: Ecology of Inland Waters (Sp) 3
WATS 5660 Watershed and Stream Restoration (Sp) 2

Other technical courses may be accepted with prior written approval from the Department of Biological and Irrigation Engineering.

Suggested Semester Schedule for Premedical Program

It is possible for students to combine premedical requirements with requirements for the Biological Engineering major. Some of the premedical requirements add to the total amount of credits required. This combination may be completed within five years, if the student is very diligent. Medical schools *do not* accept AP, CLEP, or ACT scores toward fulfillment of English Composition, Chemistry, or Biology requirements. The following schedule is designed to satisfy the requirements without time conflicts. Students who must deviate from this schedule should be sure to meet often with a College of Engineering advisor.

Preengineering: First Three Years

First Year (31 credits)

Fall Semester (15 credits)
BIOL 1610[1,3] Biology I 4

CHEM 1210[3] Principles of Chemistry I 4
CHEM 1215[3] Chemical Principles Laboratory I 1
ENGR 1000[3] Introduction to Engineering Design 2
MATH 1210 (QL)[3] Calculus I 4

Spring Semester (16 credits)
BIE 1880[3] Engineering Quantification of Biological Processes 3
BIOL 1620 (BLS) Biology II 4
CHEM 1220 (BPS) Principles of Chemistry II 4
CHEM 1225 Chemical Principles Laboratory II 1
MATH 1220 (QL)[3] Calculus II 4

Second Year (32 credits)
Fall Semester (15 credits)
PHYS 2210 (QI)[3] General Physics—Science and Engineering I 4
MATH 2250 (QI)[3] Linear Algebra and Differential Equations 4
ENGL 1010 (CL1)[3] Introduction to Writing: Academic Prose 3
ENGR 2010[3] Engineering Mechanics Statics 2
ETE 2270[3] Computer Engineering Drafting 2

Spring Semester (17 credits)
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II 4
ENGL 2010 (CL2)[3] Intermediate Writing: Research Writing in a Persuasive Mode 3
ENGR 2030[3] Engineering Mechanics Dynamics 3
BIOL 2320 Human Anatomy 4
University Studies Breadth American Institutions (BAI) course 3

Third Year (31 credits)
Fall Semester (15 credits)
BIE 2330[3] Engineering Properties of Biological Materials 3
ENGR 2200[3] Engineering Numerical Methods I 3
CHEM 2310[3] Organic Chemistry I 4
CHEM 2315 Organic Chemistry Laboratory I 1
BIOL 2420 Human Physiology 4

Spring Semester (16 credits)
BIE 2400[3] Biological and Environmental Thermodynamics 3
CHEM 2320 Organic Chemistry II 4
CHEM 2325 Organic Chemistry Laboratory II 1
BIOL 3060 (QI) Principles of Genetics 4
ETE 2300 (QI) Electronic Fundamentals 4

Professional Engineering: Junior and Senior Years
Junior Year (30 credits)
Fall Semester (15 credits)
BIE 3200 Introduction to Unit Operations in Biological Engineering 3
CEE 3500 Civil and Environmental Engineering Fluid Mechanics 3
BIOL 5210 Cell Biology 3
University Studies Breadth Humanities (BHU) course 3
University Studies Breadth Social Sciences (BSS) course 3

Spring Semester (15 credits)
BIOL 3300 (BLS)[1,3] General Microbiology 4
BIE 3670 Transport Phenomena in Bio-Environmental Systems 3
BIE 3870 Biological Engineering Design I 1
CHEM 3700 Introductory Biochemistry 3
CHEM 3710 Introductory Biochemistry Laboratory 1
University Studies Breath Creative Arts (BCA) course 3

Students should plan to take the MCAT during summer prior to their final year.

Senior Year (29 credits)
Fall Semester (15 credits)
BIE 4880 (CI) Biological Engineering Design II 3
BIE 5850 Biomaterials Engineering 3
BIE 5930 Special Studies: Modeling Biological Systems 3
STAT 3000 (QI) Statistics for Scientists 3
BIE elective course 3

Spring Semester (14 credits)
BIE 3000 Instrumentation for Biological Systems 2
BIE 4890 (CI) Biological Engineering Design III 3
Engineering Elective 3
University Studies Depth Humanities and Creative Arts (DHA) course 3
University Studies Depth Social Sciences (DSS) course 3

[1]The Breadth Life Sciences (BLS) area in the University Studies Program is satisfied by the combination of BIOL 1610 and 3300.
[2]To emphasize irrigation, bioprocesses, premedical, etc., contact department for suggested technical electives.
[3]This course is required for admission to the Professional Engineering Program (PEP).
[4]Irrigation engineers must take CEE 3430 this semester. It is a prerequisite to all senior irrigation classes

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. Minimum GPA requirements for participation in departmental honors vary by department, but usually fall within the range of 3.30-3.50. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level. The campus-wide Honors Program, which is open to all qualified students regardless of major, offers a rich array of cultural and social activities, special classes, and the benefit of Honors early registration. Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@cc.usu.edu. Additional information can be found online at: **http://www.usu.edu/honors/**

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, or online at:
http://www.usu.edu/majorsheets/

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 and by the BIE Department.

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 applicable to a graduate design project or thesis. After completing the BS degree coursework, 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, pages 123-124.)

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).

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 comprehensive examinations or submission of an approved manuscript to a refereed archival journal, 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 sciences.

Research

Graduate research projects in the BIE Department encompass two broad options: biological engineering and irrigation engineering. Specific research projects in the biological engineering option include tissue and biomedical engineering related to heart stents, biosensor design and development for biomedical and bioenvironmental applications (genetic probes), microbial fermentations, biorefining (production of biofuels and bioplastics from biological feedstocks), nanobiotechnology (quantum dots), biophotonics (interactions of light with biological materials), and land-based bioenvironmental sustainable systems (land application of industrial and municipal residuals for recycling, vegetative growth, soil improvement, and groundwater protection).

Department of Biological and Irrigation Engineering

Food engineering represents an area of emphasis under the biological engineering option. Land application of food processing wastes, extrusion of dairy-based food, multi-stage anaerobic digestion of biological materials, functional properties of foods, and biological detoxification of metals are some of the research topics supported in food engineering.

In the irrigation engineering area, USU has attained worldwide prestige through the successful professional contributions of its graduates during a period of 80 years. The BIE Department is substantially involved in overseas research and training activities, for example in the Dominican Republic, Armenia, and Tatarstan, concerned with managing irrigation systems, on-farm water management, water resource development, and soil assimilation and recycling of industrial residues. Specific research projects in the irrigation and drainage engineering option include hydraulics of surface irrigation, consumptive use, return flow quantity and quality of irrigation waters, transient flow in tile drainage systems, drain envelopes, 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.

Financial Assistance

The large and diverse departmental research programs make it possible to offer graduate financial support in the form of research assistantships, traineeships, and teaching assistantships for qualified students. Research assistantships are provided by the BIE Department and by individual research projects. Teaching assistantships are provided by the School of Graduate Studies and by the College of Engineering. Traineeships and research assistantships carry tuition waivers. It is the goal of the BIE Department to provide research and/or teaching support for all qualified students.

Additional Information

Two guides are available from the department to assist students: (1) *Report, Thesis, and Dissertation Format Guidelines and Policies*, and (2) *Policies and Procedures for Graduate Study*.

Biological and Irrigation Engineering Faculty

Professors
Conly L. Hansen, food engineering
Robert W. Hill, irrigation and water resource extension
Gary P. Merkley, conveyance systems
Christopher M. U. Neale, remote sensing
Richard C. Peralta, groundwater
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 Professors
Richard Allen, irrigation
Anne J. Anderson, plant root-microbe interactions
Daryll B. DeWald, cell biology; Department Head, Biology
H. Scott Hinton, biophotonics
Lawrence E. Hipps, biometeorology
Kamal Rashid, biotechnology
Bart C. Weimer, microbiology, Director of Center for Integrated BioSystems

Professors Emeritus
George H. Hargreaves, crop water requirements
Jack Keller, sprinkle and drip irrigation
Glen E. Stringham, surface irrigation

Research Associate Professors
Joan E. McLean, soil chemistry
Judith L. Sims, soil biology

Adjunct Associate Professor
Michael J. McFarland, biosolids

Associate Professor Emeritus
Edwin C. Olsen III, international irrigation, water management

Assistant Professors
David W. Britt, biomedical engineering
Soonjo Kwon, tissue engineering
Sridhar Viamajala, bioprocess engineering
Anhong Zhou, nanobiotechnology

Adjunct Assistant Professors
David G. Chandler, soil processes
Andrew A. Keller, irrigation
Paul D. Schreuders, biomedical engineering

Adjunct Research Assistant Professors
Hui Fang Dou, electrical engineering
Arnulfo González-Meza, irrigation system transfer
Scott B. Jones, soil physics
Charles D. Miller, biology

Research Assistant Professor Emeritus
R. Kern Stutler, irrigation structures

Principal Lecturer
Timothy A. Taylor, bioprocess engineering

Course Descriptions

Biological and Irrigation Engineering (BIE), pages 574-576

Department of Biology

Department Head: Daryll B. DeWald
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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:
Edmund D. Brodie, Jr., Biology-Natural Resources 149, (435) 797-2489, brodie@biology.usu.edu

Biology Advisor:
Liz Heffernan, Biology-Natural Resources 101, (435) 797-2577, heffernanliz@biology.usu.edu

Advisor for Prehealth Professions Programs:
D. M. Andy Anderson, Veterinary Science and Bacteriology 231, (435) 797-1913, andy@biology.usu.edu

Advisor for Public Health Major:
David Wallace, Biology-Natural Resources 333, (435) 797-7155, dwallace@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 avaliable 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

Learning 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 prehealth professions programs. 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. **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 qualified to apply for a teaching license through the Utah State Office of Education. **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. For detailed information, obtain an official Major Requirement Sheet from the Biology Advising Center or online at: **http://www.usu.edu/majorsheets/**. 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.

Assessment

The primary mission of the Department of Biology is to discover and advance knowledge in the biological sciences, and to make that knowledge available to students through a diverse set of educational experiences. To achieve this, three specific areas are being targeted: (1) A core program in the life sciences is aimed at providing the skills and knowledge base needed for a wide variety of employment and educational opportunities in biological and biotechnology fields; (2) a premedical, predental, and prehealth program has the specific goal of guiding students with respect to opportunities in the health professions; and (3) a public health program provides pre-professional training in such subjects as environmental health, industrial hygiene, and public health education. For full details about Program Learning Objectives, Undergraduate Program Assessment, Data-based Decisions, and more, go to **http://www.biology.usu.edu**

Undergraduate Research in Biology

The Department of Biology offers a broad array of undergraduate research opportunities. Undergraduate research allows students to

have a real-life experience in a faculty research lab. Many students publish their research in scientific journals and present their research at national scientific meetings. 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. Students doing Honors in Biology do undergraduate research and write a bachelor's thesis.

For complete information about undergraduate research, contact Liz Heffernan, Biology Advisor, at heffernanliz@biology.usu.edu or (435) 797-2577.

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 49-59 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 or 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 and a grade of *C*- or better in BIOL 1610 and 1620. 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 and the *C*- or better grade in BIOL 1610 and 1620 requirement apply 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
Required Biology Courses (21-22 credits)
BIOL 1610 Biology I (F)....4
BIOL 1620 (BLS) Biology II (Sp)....4
BIOL 2220 General Ecology (F,Sp)....3
BIOL 3060 (QI) Principles of Genetics (F,Sp,Su)....4
BIOL 3300 General Microbiology (F,Sp) (4 cr) **or**
BIOL 5210 Cell Biology (F) (3 cr)....3 or 4
BIOL 5250 (CI) Evolutionary Biology (F,Sp)....3

Field Course Requirement (2-3 credits)
Students must take one course from the following list:
BIOL 2410 Plants and Fungi in the Field (Su)....2
BIOL 3220 (QI) Field Ecology (F)....2
BIOL 4500 Applied Entomology (Sp)....3
BIOL 5530 Insect Systematics and Evolution (F)....3
BIOL 5550 Freshwater Invertebrates (Sp)....3
BIOL 5560 Ornithology (Sp)....3
BIOL 5570 Herpetology (Sp)....3

Physiology Course with Lab Requirement (4-5 credits)
Students must take from the following list one upper-division physiology course with an integrated or separate laboratory:

Courses with integrated laboratories:
BIOL 4400 (QI) Plant Physiology (F)....4
BIOL 5300 (QI) Microbial Physiology (Sp)....4

Courses with separate lecture and lab; both must be taken to meet the requirement:
BIOL 5600 Comparative Animal Physiology (Sp)....3
BIOL 5610 (QI) Animal Physiology Laboratory (F,Sp)....2
Or
BIOL 5620 Medical Physiology (F)....3
BIOL 5610 (QI) Animal Physiology Laboratory (F,Sp)....2

Biology Electives (10 credits)
Students must select an additional 10 credits of 4000-level and above BIOL or PUBH prefix courses as electives. BIOL 3065 (Genetics Laboratory) may also be included toward these elective credits, even though it is a 3000-level course. A maximum of 4 credits from the following courses may be included among the 10 elective credits.
BIOL 4250 Internship/Co-op (F,Sp,Su)....1-2
BIOL 4710 Teaching Internship (F,Sp,Su)....1
BIOL 5800 Undergraduate Research (F,Sp,Su)....1-3
Seminar courses....1-2

Required Physical Science Courses (26 credits)
CHEM 1210 Principles of Chemistry I (F,Sp)....4
CHEM 1215 Chemical Principles Laboratory I (F,Sp)....1
CHEM 1220 (BPS) Principles of Chemistry II (F,Sp,Su)....4
CHEM 1225 Chemical Principles Laboratory II (F,Sp)....1
CHEM 2300 Principles of Organic Chemistry (F)....3
CHEM 2315 Organic Chemistry Laboratory I (F)....1
CHEM 3700 Introductory Biochemistry (Sp)....3
CHEM 3710 Introductory Biochemistry Laboratory (Sp)....1

PHYS 2110 The Physics of Living Systems I (4 cr) **and**
PHYS 2120 (BPS) The Physics of Living Systems II (4 cr).....8
Or
PHYS 2210 (QI) General Physics—Science and Engineering I (4 cr) **and**
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II (4 cr).....8

Mathematics and Statistics Requirement (7 credits)
MATH 1210 (QL) Calculus I (F,Sp,Su).....4
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su).....3

Suggested Four-year Course of Study for Biology Major, Biology Emphasis
The suggested schedule shown below should be used in conjunction with the major requirement sheet.

Freshman Year (30 credits)
Fall Semester (15 credits)
BIOL 1610 Biology I.....4
CHEM 1210 Principles of Chemistry I.....4
CHEM 1215 Chemical Principles Laboratory I.....1
University Studies or MATH[1] prerequisite courses.....6

Spring Semester (15 credits)
BIOL 1620 (BLS) Biology II.....4
CHEM 1220 (BPS) Principles of Chemistry II.....4
CHEM 1225 Chemical Principles Laboratory II.....1
University Studies or MATH[1] prerequisite courses.....6

Sophomore Year (30-35 credits)
Fall Semester (15-18 credits)
BIOL 2220 General Ecology (3 cr) **or**
BIOL 3060 (QI) Principles of Genetics (4 cr).....3 or 4
CHEM 2300 Principles of Organic Chemistry.....3
CHEM 2315 Organic Chemistry Laboratory I.....1
MATH 1210 (QL) Calculus I.....4
University Studies or elective courses.....4-6

Spring Semester (15-17 credits)
BIOL 2220 General Ecology (3 cr) **or**
BIOL 3060 (QI) Principles of Genetics (4 cr).....3 or 4
CHEM 3700 Introductory Biochemistry.....3
CHEM 3710 Introductory Biochemistry Laboratory.....1
STAT 3000 (QI) Statistics for Scientists.....3
University Studies or elective courses.....5-6

Junior Year (30-34 credits)
Fall Semester (15-17 credits)
BIOL 3300 General Microbiology (4 cr) **or**
Biology elective course (3-4 cr).....3 or 4
PHYS 2110 The Physics of Living Systems I (4 cr) **or**
PHYS 2210 (QI) General Physics—Science and Engineering I (4 cr).....4
Biology elective field course (2-3 cr) **or**
Biology elective course (2-3 cr).....2 or 3
University Studies or elective courses.....6

Spring Semester (15-17 credits)
BIOL 3300 (BLS) General Microbiology (4 cr) **or**
Biology elective course (3-4 cr).....3 or 4
PHYS 2120 (BPS) The Physics of Living Systems II (4 cr) **or**
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II (4 cr).....4
Biology elective field course (2-3 cr) **or**
Biology elective course (2-3 cr).....2 or 3
University Studies or elective courses.....6

Senior Year (30-34 credits)
Fall Semester (15-17 credits)
BIOL 5210 Cell Biology (3 cr) **or**
Biology elective course (3 cr).....3
BIOL 5250 (CI) Evolutionary Biology (3 cr) **or**
Biology elective course (3 cr).....3
Upper-division Physiology elective course (4-5 cr) **or**
Biology elective course (3-5 cr).....3-5
University Studies or elective courses.....6

Spring Semester (15-17 credits)
BIOL 5250 (CI) Evolutionary Biology (3 cr) **or**
Biology elective course (3 cr).....3
Upper-division Physiology elective course (4-5 cr) **or**
Biology elective course (3-5 cr).....3-5
University Studies or elective courses.....9

[1]If students need Math courses prerequisite to MATH 1210, Calculus I, credits in addition to those listed here will be required.

Cellular/Molecular Emphasis

Required Biology Courses (30 credits)
BIOL 1610 Biology I (F).....4
BIOL 1620 (BLS) Biology II (Sp).....4
BIOL 2220 General Ecology (F,Sp).....3
BIOL 3060 (QI) Principles of Genetics (F,Sp,Su).....4
BIOL 5190 Molecular Genetics (Sp).....3
BIOL 5210 Cell Biology (F).....3
BIOL 5230 Developmental Biology (Sp).....3
BIOL 5250 (CI) Evolutionary Biology (F,Sp).....3

Choose one of the following Biotechnology courses:
BIOL 5160 Methods in Biotechnology: Cell Culture (Sp).....3
BIOL 5240 Methods in Biotechnology: Protein Purification Techniques (Sp).....3
BIOL 5260 Methods in Biotechnology: Molecular Cloning (F).....3

Physiology Course with Lab Requirement (4-5 credits)
Students must take from the following list one upper-division physiology course with an integrated or separate laboratory:

Courses with integrated laboratories:
BIOL 4400 (QI) Plant Physiology (F).....4
BIOL 5300 (QI) Microbial Physiology (Sp).....4

Courses with separate lecture and lab; both must be taken to meet the requirement:
BIOL 5600 Comparative Animal Physiology (Sp).....3
BIOL 5610 (QI) Animal Physiology Laboratory (F,Sp).....2
Or
BIOL 5620 Medical Physiology (F).....3
BIOL 5610 (QI) Animal Physiology Laboratory (F,Sp).....2

Biology Electives (9 credits)
Students must select an additional 9 credits of 4000-level and above BIOL prefix courses as electives. BIOL 3065 (Genetics Laboratory) and BIOL 3300 (General Microbiology) may also be included toward these elective credits (even though they are 3000-level courses). A maximum of 4 credits from the following courses may be included among the 9 elective credits:
BIOL 4250 Internship/Co-op (F,Sp,Su).....1-2
BIOL 4710 Teaching Internship (F,Sp,Su).....1
BIOL 5800 Undergraduate Research (F,Sp,Su).....1-3
Seminar courses.....1-2

Required Physical Science Courses (36 credits)
CHEM 1210 Principles of Chemistry I (F,Sp) 4
CHEM 1215 Chemical Principles Laboratory I (F,Sp) 1
CHEM 1220 (BPS) Principles of Chemistry II (F,Sp,Su) 4
CHEM 1225 Chemical Principles Laboratory II (F,Sp) 1
CHEM 2310 Organic Chemistry I (F) 4
CHEM 2315 Organic Chemistry Laboratory I (F) 1
CHEM 2320 Organic Chemistry II (Sp) 4
CHEM 2325 Organic Chemistry Laboratory II (Sp) 1
CHEM 5700 General Biochemistry I (F) 3
CHEM 5710 General Biochemistry II (Sp) 3
CHEM 5720 General Biochemistry Laboratory (Sp) 2

PHYS 2110 The Physics of Living Systems I (4 cr) **and**
PHYS 2120 (BPS) The Physics of Living Systems II (4 cr) 8
Or
PHYS 2210 (QI) General Physics—Science and Engineering I (4 cr) **and**
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II (4 cr) 8

Mathematics and Statistics Requirement (7 credits)
MATH 1210 (QL) Calculus I (F,Sp,Su) 4
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su) 3

Suggested Four-year Course of Study for Biology Major, Cellular/Molecular Emphasis
The suggested schedule shown below should be used in conjunction with the major requirement sheet.

Freshman Year (30 credits)
Fall Semester (15 credits)
BIOL 1610 Biology I 4
CHEM 1210 Principles of Chemistry I 4
CHEM 1215 Chemical Principles Laboratory I 1
University Studies or MATH[2] prerequisite courses 6

Spring Semester (15 credits)
BIOL 1620 (BLS) Biology II 4
CHEM 1220 (BPS) Principles of Chemistry II 4
CHEM 1225 Chemical Principles Laboratory II 1
University Studies or MATH[2] prerequisite courses 6

Sophomore Year (30-37 credits)
Fall Semester (15-19 credits)
BIOL 2220 General Ecology (3 cr) **or**
BIOL 3060 (QI) Principles of Genetics (4 cr) ....3 or 4
CHEM 2310 Organic Chemistry I 4
CHEM 2315 Organic Chemistry Laboratory I 1
MATH 1210 (QL) Calculus I 4
University Studies or elective courses 3-6

Spring Semester (15-18 credits)
BIOL 2220 General Ecology (3 cr) **or**
BIOL 3060 (QI) Principles of Genetics (4 cr) ....3 or 4
CHEM 2320 Organic Chemistry II 4
CHEM 2325 Organic Chemistry Laboratory II 1
STAT 3000 (QI) Statistics for Scientists 3
University Studies or elective courses 4-6

Junior Year (30-35 credits)
Fall Semester (15-17 credits)
BIOL 5210 Cell Biology 3
CHEM 5700 General Biochemistry I 3
PHYS 2110 The Physics of Living Systems I (4 cr) **or**
PHYS 2210 (QI) General Physics—Science and Engineering I (4 cr) 4
Biology elective course(s) 2-4
Biology Biotechnology elective course (3 cr) **or**
Biology elective course (3 cr) 3

Spring Semester (15-18 credits)
BIOL 5230 Developmental Biology 3
CHEM 5710 General Biochemistry II 3
CHEM 5720 General Biochemistry Laboratory 2
PHYS 2120 (BPS) The Physics of Living Systems II (4 cr) **or**
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II (4 cr) 4
University Studies or elective courses 3-6

Senior Year (30-34 credits)
Fall Semester (15-17 credits)
BIOL 5250 (CI) Evolutionary Biology (3 cr) **or**
Biology elective course (3 cr) 3
Upper-division Physiology elective course (4-5 cr) **or**
Biology elective course (3-5 cr) 3-5
Biology elective course 3
University Studies or elective courses 6

Spring Semester (15-17 credits)
BIOL 5190 Molecular Genetics 3
BIOL 5250 (CI) Evolutionary Biology (3 cr) **or**
Biology elective course (3 cr) 3
Upper-division Physiology elective or Biology Biotechnology Elective course(s) (3-5 cr) **or**
Biology elective course(s) (3-5 cr) 3-5
University Studies or elective courses 6

[2] If students need Math courses prerequisite to MATH 1210, Calculus I, credits in addition to those listed here will be required.

Ecology/Biodiversity Emphasis

Required Biology Courses (24 credits)
BIOL 1610 Biology I (F) 4
BIOL 1620 (BLS) Biology II (Sp) 4
BIOL 2220 General Ecology (F,Sp) 3
BIOL 3060 (QI) Principles of Genetics (F,Sp,Su) 4
BIOL 3220 (QI) Field Ecology (F) 2
BIOL 3300 General Microbiology (F,Sp) 4
BIOL 5250 (CI) Evolutionary Biology (F,Sp) 3

Physiology Course with Lab Requirement (4-5 credits)
Students must take one upper-division physiology course with an integrated or separate laboratory from the following list:

Courses with integrated laboratories:
BIOL 4400 (QI) Plant Physiology (F) 4
BIOL 5300 (QI) Microbial Physiology (Sp) 4

Courses with separate lecture and lab; both must be taken to meet the requirement:
BIOL 5600 Comparative Animal Physiology (Sp) 3
BIOL 5610 (QI) Animal Physiology Laboratory (F,Sp) 2
Or
BIOL 5620 Medical Physiology (F) 3
BIOL 5610 (QI) Animal Physiology Laboratory (F,Sp) 2

Clusters (8-10 credits)
Students must take one course from each of the following three clusters.

Department of Biology

Plant Biology:
BIOL 2410 Plants and Fungi in the Field (Su).....2
BIOL 4420 Plant Taxonomy (Sp).....3

Animal Biology:
BIOL 4500 Applied Entomology (Sp).....3
BIOL 5530 Insect Systematics and Evolution (F).....3
BIOL 5550 Freshwater Invertebrates (Sp).....3
BIOL 5560 Ornithology (Sp).....3
BIOL 5570 Herpetology (Sp).....3
BIOL 5580 Mammalogy (F).....3

Ecology/Evolution:
BIOL 4060 (CI) Exploring Animal Behavior (Sp).....3
BIOL 5010 Biogeography (Sp).....3
BIOL 5020 (QI) Modeling Biological Systems (F).....3
BIOL 5380 Evolutionary Genetics (F).....4
BIOL 5590 Animal Community Ecology (Sp) (Alt. Years).....4
WILD 4600 Conservation Biology (Sp).....3

Electives (2-3 credits)
Students must take one additional course from this list or the clusters above or other upper-division courses approved by advisor.
BIOL 3065 Genetics Laboratory (F).....2
BIOL 4410 Plant Structure (Sp).....3
BIOL 5310 Soil Microbiology (F) (Alt. Years).....3
BIOL 5800 Undergraduate Research (F,Sp,Su).....2-3

Required Physical Science Courses (34 credits)
CHEM 1210 Principles of Chemistry I (F,Sp).....4
CHEM 1215 Chemical Principles Laboratory I (F,Sp).....1
CHEM 1220 (BPS) Principles of Chemistry II (F,Sp,Su).....4
CHEM 1225 Chemical Principles Laboratory II (F,Sp).....1
CHEM 2300 Principles of Organic Chemistry (F).....3
CHEM 2315 Organic Chemistry Laboratory I (F).....1
CHEM 3700 Introductory Biochemistry (Sp).....3
CHEM 3710 Introductory Biochemistry Laboratory (Sp).....1
GEO 1110 (BPS) The Dynamic Earth: Physical Geology (F,Sp).....4
SOIL 3000 Fundamentals of Soil Science (F,Sp).....4

PHYS 2110 The Physics of Living Systems I (4 cr) **and**
PHYS 2120 (BPS) The Physics of Living Systems II (4 cr).....8
Or
PHYS 2210 (QI) General Physics—Science and Engineering I (4 cr) **and**
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II (4 cr).....8

Mathematics and Statistics Requirement (7 credits)
MATH 1210 (QL) Calculus I (F,Sp,Su).....4
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su).....3

Suggested Four-year Course of Study for Biology Major, Ecology/Biodiversity Emphasis
The suggested schedule shown below should be used in conjunction with the major requirement sheet.

Freshman Year (30 credits)
Fall Semester (15 credits)
BIOL 1610 Biology I.....4
CHEM 1210 Principles of Chemistry I.....4
CHEM 1215 Chemical Principles Laboratory I.....1
University Studies or MATH[3] prerequisite courses.....6

Spring Semester (15 credits)
BIOL 1620 (BLS) Biology II.....4
CHEM 1220 (BPS) Principles of Chemistry II.....4
CHEM 1225 Chemical Principles Laboratory II.....1
University Studies or MATH[3] prerequisite courses.....6

Sophomore Year (30-35 credits)
Fall Semester (15-18 credits)
BIOL 2220 General Ecology (3 cr) **or**
BIOL 3060 (QI) Principles of Genetics (4 cr).....3 or 4
CHEM 2300 Principles of Organic Chemistry.....3
CHEM 2315 Organic Chemistry Laboratory I.....1
MATH 1210 (QL) Calculus I.....4
University Studies or elective courses.....4-6

Spring Semester (15-17 credits)
BIOL 2220 General Ecology (3 cr) **or**
BIOL 3060 (QI) Principles of Genetics (4 cr).....3 or 4
CHEM 3700 Introductory Biochemistry.....3
CHEM 3710 Introductory Biochemistry Laboratory.....1
STAT 3000 (QI) Statistics for Scientists.....3
University Studies or elective courses.....5-6

Junior Year (30-35 credits)
Fall Semester (15-17 credits)
BIOL 3300 General Microbiology (4 cr) **or**
Biology elective course (3-4 cr).....3 or 4
BIOL 3220 (QI) Field Ecology.....2
GEO 1110 (BPS) The Dynamic Earth: Physical Geology.....4
PHYS 2110 The Physics of Living Systems I (4 cr) **or**
PHYS 2210 (QI) General Physics—Science and Engineering I (4 cr).....4
University Studies or elective course.....2-3

Spring Semester (15-18 credits)
BIOL 3300 General Microbiology (4 cr) **or**
Biology elective course (3-4 cr).....3 or 4
PHYS 2120 (BPS) The Physics of Living Systems II (4 cr) **or**
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II (4 cr).....4
Biology elective course.....2-4
University Studies or elective courses.....6

Senior Year (30-36 credits)
Fall Semester (15-18 credits)
BIOL 5250 (CI) Evolutionary Biology (3 cr) **or**
Biology elective course (3 cr).....3
SOIL 3000 Fundamentals of Soil Science.....4
Upper-division Physiology elective course (4-5 cr) **or**
Biology elective course (3-5 cr).....3-5
University Studies or elective courses.....5-6

Spring Semester (15-18 credits)
BIOL 5250 Evolutionary Biology (3 cr) **or**
Biology elective course (3-4 cr).....3 or 4
Upper-division Physiology elective course (4-5 cr) **or**
Biology elective course (3-5 cr).....3-5
University Studies or elective courses.....9

[3]If students need Math courses prerequisite to MATH 1210, Calculus I, credits in addition to those listed here will be required.

Environmental Emphasis

Required Biology Courses (24 credits)

BIOL 1610 Biology I (F).....4
BIOL 1620 (BLS) Biology II (Sp).....4
BIOL 2220 General Ecology (F,Sp).....3
BIOL 3060 (QI) Principles of Genetics (F,Sp,Su).....4
BIOL 3220 (QI) Field Ecology (F).....2
BIOL 3300 General Microbiology (F,Sp).....4
BIOL 5250 (CI) Evolutionary Biology (F,Sp).....3

Plant Identification (2-3 credits)

Choose one of the following courses:
BIOL 2410 Plants and Fungi in the Field (Su).....2
BIOL 4420 Plant Taxonomy (Sp).....3

Physiology Course with Lab Requirement (4-5 credits)

Students must take from the following list one upper-division physiology course with an integrated or separate laboratory:

Courses with integrated laboratories:
BIOL 4400 (QI) Plant Physiology (F).....4
BIOL 5300 (QI) Microbial Physiology (Sp).....4

Courses with separate lecture and lab; both must be taken to meet the requirement:
BIOL 5600 Comparative Animal Physiology (Sp).....3
BIOL 5610 (QI) Animal Physiology Laboratory (F,Sp).....2
Or
BIOL 5620 Medical Physiology (F).....3
BIOL 5610 (QI) Animal Physiology Laboratory (F,Sp).....2

Biology Elective Courses (12 credits)

Students must take 12 credits from the following list or others approved by advisor. Up to 3 credits of BIOL 5800 may be included.
ADVS 5400 Environmental Toxicology (Sp).....3
BIOL 4430 Introduction to Plant Pathology (Sp).....4
BIOL 4500 Applied Entomology (Sp).....3
BIOL 5020 (QI) Modeling Biological Systems (F).....3
BIOL 5310 Soil Microbiology (F) (Alt. Years).....3
BIOL 5320 Soil Microbiology Laboratory (F) (Alt. Years).....2
BIOL 5800 Undergraduate Research (F,Sp,Su).....1-3
CEE/SOIL 5620 Aquatic Chemistry (F).....3
GEO 1110 (BPS) The Dynamic Earth: Physical Geology (F,Sp).....4
PUBH/CEE 3610 Environmental Management (F).....3
SOIL 3000 Fundamentals of Soil Science (F,Sp).....4

Required Physical Science Courses (36 credits)

CHEM 1210 Principles of Chemistry I (F,Sp).....4
CHEM 1215 Chemical Principles Laboratory I (F,Sp).....1
CHEM 1220 (BPS) Principles of Chemistry II (F,Sp,Su).....4
CHEM 1225 Chemical Principles Laboratory II (F,Sp).....1
CHEM 2310 Organic Chemistry I (F).....4
CHEM 2315 Organic Chemistry Laboratory I (F).....1
CHEM 2320 Organic Chemistry II (Sp).....4
CHEM 2325 Organic Chemistry Laboratory II (Sp).....1
CHEM 3000 (QI) Quantitative Analysis (F).....3
CHEM 3005 Quantitative Analysis Laboratory (F).....1
CHEM 3700 Introductory Biochemistry (Sp).....3
CHEM 3710 Introductory Biochemistry Laboratory (Sp).....1

PHYS 2110 The Physics of Living Systems I (4 cr) **and**
PHYS 2120 (BPS) The Physics of Living Systems II (4 cr).....8
Or
PHYS 2210 (QI) General Physics—Science and Engineering I (4 cr) **and**
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II (4 cr).....8

Mathematics and Statistics Requirement (7 credits)

MATH 1210 (QL) Calculus I (F,Sp,Su).....4
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su).....3

Suggested Four-year Course of Study for Biology Major, Environmental Emphasis

The suggested schedule shown below should be used in conjunction with the major requirement sheet.

Freshman Year (30 credits)

Fall Semester (15 credits)
BIOL 1610 Biology I.....4
CHEM 1210 Principles of Chemistry I.....4
CHEM 1215 Chemical Principles Laboratory I.....1
University Studies or MATH[4] prerequisite courses.....6

Spring Semester (15 credits)
BIOL 1620 (BLS) Biology II.....4
CHEM 1220 (BPS) Principles of Chemistry II.....4
CHEM 1225 Chemical Principles Laboratory II.....1
University Studies or MATH[4] prerequisite courses.....6

Sophomore Year (30-36 credits)

Fall Semester (15-18 credits)
BIOL 2220 General Ecology (3 cr) **or**
BIOL 3060 (QI) Principles of Genetics (4 cr).....3 or 4
CHEM 2310 Organic Chemistry I.....4
CHEM 2315 Organic Chemistry Laboratory I.....1
MATH 1210 (QL) Calculus I.....4
University Studies or elective course(s).....3-5

Spring Semester (15-18 credits)
BIOL 2220 General Ecology (3 cr) **or**
BIOL 3060 (QI) Principles of Genetics (4 cr).....3 or 4
CHEM 2320 Organic Chemistry II.....4
CHEM 2325 Organic Chemistry Laboratory II.....1
STAT 3000 (QI) Statistics for Scientists.....3
University Studies or elective course(s).....4-6

Junior Year (30-31 credits)

Fall Semester (15-16 credits)
BIOL 3220 (QI) Field Ecology.....2
CHEM 3000 (QI) Quantitative Analysis.....3
CHEM 3005 Quantitative Analysis Laboratory.....1
PHYS 2110 The Physics of Living Systems I (4 cr) **or**
PHYS 2210 (QI) General Physics—Science and Engineering I (4 cr).....4
University Studies or elective course(s).....5-6

Spring Semester (15 credits)
BIOL 3300 General Microbiology (4 cr) **or**
Biology elective course (4 cr).....4
CHEM 3700 Introductory Biochemistry.....3
CHEM 3710 Introductory Biochemistry Laboratory.....1
PHYS 2120 (BPS) The Physics of Living Systems II (4 cr) **or**
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II (4 cr).....4
University Studies or elective course(s).....3

Senior Year (30-35 credits)

Fall Semester (15-17 credits)
BIOL 3300 General Microbiology (4 cr) **or**
Biology elective course (4 cr).....4
Biology elective course.....3

Upper-division Physiology elective course (4-5 cr) **or**
Biology elective course (3-5 cr) 3-5
University Studies or elective course(s) 5

Spring Semester (15-18 credits)
BIOL 4420 Plant Taxonomy 3
BIOL 5250 (CI) Evolutionary Biology 3
Biology elective course(s) 2-3
Upper-division Physiology elective course (4-5 cr) **or**
Biology elective course(s) (3-5 cr) 3-5
University Studies or elective course(s) 4

[4] If students need Math courses prerequisite to MATH 1210, Calculus I, credits in addition to those listed here will be required.

BS Degree in Composite Teaching—Biological Science

The Composite Teaching—Biological Science Major leads to licensure to teach in secondary schools. Students who may wish to teach Integrated Science at the middle or junior high school level should talk to their advisor about completing the courses necessary for an Integrated Science endorsement. **Note:** Beginning in 2006, all USU teacher education candidates will be required to take and pass the content exam approved by the Utah State Office of Education in their major content area prior to student teaching. The Composite Teaching—Biological Science course requirements are as follows:

Required Courses (32 credits)

BIOL 1610 Biology I (F) 4
BIOL 1620 (BLS) Biology II (Sp) 4
BIOL 2220 General Ecology (F,Sp) 3
BIOL 2420 Human Physiology (F,Sp,Su) 4
BIOL 3060 (QI) Principles of Genetics (F,Sp,Su) 4
BIOL 3065 Genetics Laboratory (F) (Alt. Years) 2
BIOL 3220 (QI) Field Ecology (F) 2
BIOL 3300 General Microbiology (F,Sp) 4
BIOL 5250 (CI) Evolutionary Biology (F,Sp) 3
SCI 4300 Science in Society (F,Sp) 2

Physiology Course with Lab Requirement (4-5 credits)

Students must take from the following list one upper-division physiology course with an integrated or separate laboratory:

Courses with integrated laboratories:
BIOL 4400 (QI) Plant Physiology (F) 4
BIOL 5300 (QI) Microbial Physiology (Sp) 4

Courses with separate lecture and lab; both must be taken to meet the requirement:
BIOL 5600 Comparative Animal Physiology (Sp) 3
BIOL 5610 (QI) Animal Physiology Laboratory (F,Sp) 2
Or
BIOL 5620 Medical Physiology (F) 3
BIOL 5610 (QI) Animal Physiology Laboratory (F,Sp) 2

Required Physical Science Courses (21 credits)

GEO 1110 (BPS) The Dynamic Earth: Physical Geology (F,Sp) 4
CHEM 1110 (BPS) General Chemistry I (F,Sp) 4
CHEM 1115 General Chemistry Laboratory (Sp) 1
CHEM 1120 (BPS) General Chemistry II (Sp) 4
PHYS 2110 The Physics of Living Systems I (4 cr) **and**
PHYS 2120 (BPS) The Physics of Living Systems II (4 cr) 8
Or
PHYS 2210 (QI) General Physics—Science and Engineering I (4 cr) **and**
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II (4 cr) 8

Mathematics and Statistics Requirement (7 credits)

MATH 1210 (QL) Calculus I (F,Sp,Su) 4
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su) 3

Required Courses for the Secondary Teacher Education Program (STEP) (35 credits)

Level 1:

INST 3500 Technology Tools for Secondary Teachers (F,Sp,Su) 1
SCED 3100 Motivation and Classroom Management (F,Sp) 3
SCED 3210 (CI/DSS) Educational and Multicultural Foundations (F,Sp) 3
SCED 3300 Clinical Experience I (F,Sp) 1
SCED 3400 Teaching Science I (F,Sp) 3

Level 2:

SPED 4000 Education of Exceptional Individuals (may be taken anytime) (F,Sp,Su) 2
SCED 4200 (CI) Reading, Writing, and Technology (F,Sp) 3
SCED 4210 Cognition and Evaluation of Student Learning (F,Sp) 3
SCED 4300 Clinical Experience II (F,Sp) 1
SCED 4400 Teaching Science II (F,Sp) 3

Level 3:

SCED 5500 Student Teaching Seminar (F,Sp) 2
SCED 5630 Student Teaching in Secondary Schools (F,Sp) 10

Suggested Four-year Course of Study for Composite Teaching-Biological Science Major

The suggested schedule shown below should be used in conjunction with the major requirement sheet.

Freshman Year (29 credits)

Fall Semester (14 credits)
BIOL 1610 Biology I 4
CHEM 1110 (BPS) General Chemistry I 4
University Studies or MATH[5] prerequisite courses 6

Spring Semester (15 credits)
BIOL 1620 (BLS) Biology II 4
CHEM 1115 General Chemistry Laboratory 1
CHEM 1120 (BPS) General Chemistry II 4
University Studies or MATH[5] prerequisite courses 6

Sophomore Year (31 credits)

Fall Semester (15 credits)
BIOL 2420 Human Physiology 4
BIOL 3060 (QI) Principles of Genetics 4
MATH 1210 (QL) Calculus I 4
University Studies courses 3

Spring Semester (16 credits)
BIOL 2220 General Ecology 3
STAT 3000 (QI) Statistics for Scientists 3
GEO 1110 (BPS) The Dynamic Earth: Physical Geology 4
University Studies courses 6

Junior Year (31-32 credits)
Fall Semester (16-17 credits)
BIOL 3065[6] Genetics Laboratory (2 cr) **or**
SCI 4300[6] Science in Society (2 cr) 2
BIOL 3220 (QI) Field Ecology 2
BIOL 3300 General Microbiology 4
PHYS 2110 The Physics of Living Systems I (4 cr) **or**
PHYS 2210 (QI) General Physics—Science and Engineering I (4 cr) 4
Upper-division Physiology elective with lab[7] 4-5

Spring Semester (15 credits)
INST 3500 Technology Tools for Secondary Teachers 1
SCED 3100 Motivation and Classroom Management 3
SCED 3210 (CI/DSS) Educational and Multicultural Foundations 3
SCED 3300 Clinical Experience I 1
SCED 4400[8] Teaching Science II 3
PHYS 2120 (BPS) The Physics of Living Systems II (4 cr) **or**
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II (4 cr) 4

Senior Year (29 credits)
Fall Semester (17 credits)
SCED 3400[8] Teaching Science I 3
SPED 4000 Education of Exceptional Individuals 2
SCED 4200 (CI) Reading, Writing, and Technology 3
SCED 4210 Cognition and Evaluation of Student Learning 3
SCED 4300 Clinical Experience II 1
BIOL 3065[6] Genetics Laboratory (2 cr) **or**
SCI 4300[6] Science in Society (2 cr) 2
BIOL 5250 (CI) Evolutionary Biology 3

Spring Semester (12 credits)
SCED 5500 Student Teaching Seminar 2
SCED 5630 Student Teaching in Secondary Schools 10

[5]If students need Math courses prerequisite to MATH 1210, Calculus I, credits in addition to those listed here will be required.
[6]Both BIOL 3065 and SCI 4300 are required. BIOL 3065 is only offered during odd years.
[7]Courses that meet this requirement are also offered during spring semester.
[8]SCED 3400 is only offered during fall semester, and SCED 4400 is only offered during spring semester. Either may be taken first.

BA Degrees in Biology and Composite Teaching—Biological Science

The student must complete the requirements for the BS (above) plus two years of a foreign language. (See page 60 of this catalog.)

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 environmental health, industrial hygiene, or public health education. The industrial hygiene program is accredited by the Applied Science Commission of the Accreditation Board for Engineering and Technology; 111 Market Place, Suite 1050; Baltimore MD 21202-4012; telephone (410) 347-7700. Individuals completing the environmental health option are qualified to take the Registered Environmental Health Specialist/Sanitarian Examination (REHS/RS). Those completing the industrial hygiene option are granted benefits toward both the Certified Industrial Hygienist (CIH) and the Certified Safety Professional (CSP) examinations. Public Health Education graduates are qualified to take the Certified Health Education Specialist (CHES) examination. The Public Health degree requires a core of biology courses similar to that required for the biology degrees; additional biology and public health courses; and chemistry, physics, mathematics, statistics, and allied science and engineering courses appropriate to each emphasis. The course requirements are as follows:

Industrial Hygiene Emphasis

Required Biology Courses (16 credits)
BIOL 1610 Biology I (F) 4
BIOL 1620 (BLS) Biology II (Sp) 4
BIOL 2420 Human Physiology (F,Sp,Su) 4
BIOL 3300 General Microbiology (F,Sp) 4

Required Physical Science Courses (30 credits)
CHEM 1210 Principles of Chemistry I (F,Sp) 4
CHEM 1215 Chemical Principles Laboratory I (F,Sp) 1
CHEM 1220 (BPS) Principles of Chemistry II (F,Sp,Su) 4
CHEM 1225 Chemical Principles Laboratory II (F,Sp) 1
CHEM 2300 Principles of Organic Chemistry (F) 3
CHEM 2315 Organic Chemistry Laboratory I (F) 1
CHEM 3000 (QI) Quantitative Analysis (F) 3
CHEM 3005 Quantitative Analysis Laboratory (F) 1
CHEM 3700 Introductory Biochemistry (Sp) 3
CHEM 3710 Introductory Biochemistry Laboratory (Sp) 1

PHYS 2110 The Physics of Living Systems I (4 cr) **and**
PHYS 2120 (BPS) The Physics of Living Systems II (4 cr) 8
Or
PHYS 2210 (QI) General Physics—Science and Engineering I (4 cr) **and**
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II (4 cr) 8

Mathematics and Statistics Requirement (7 credits)
MATH 1210 (QL) Calculus I (F,Sp,Su) 4
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su) 3

Required Program Courses (32 credits)
PUBH 3310 Occupational Health and Safety (F) 3
PUBH 3610 Environmental Management (F) 3
PUBH 3870 (CI) Professional/Technical Writing in Civil and Environmental Engineering (F) 2
PUBH 4040 Fundamentals of Epidemiology (Sp) 3
PUBH 4310 Industrial Hygiene Recognition of Hazards (F) 4
PUBH 4320 Industrial Hygiene Chemical Hazard Evaluation (Sp) 3
PUBH 4330 Industrial Hygiene Physical Hazards (Sp) 3
PUBH 4380 Industrial Hygiene Internship (F,Sp,Su) 3
PUBH 5330 (QI) Industrial Hygiene Chemical Hazard Control (F) 3
PUBH 5500 (CI) Public Health Management (F,Sp) 2
ADVS 5400 Environmental Toxicology (Sp) 3

Elective Options (select 5 credits)
BIOL 3060 (QI) Principles of Genetics (F,Sp,Su) 4
CEE 5610 Environmental Quality Analysis (F) 3
PUBH 4300 Industrial Hygiene Seminar (F) 1-2
PUBH 4410 Industrial Safety (Sp) 3
PUBH 5340 Industrial Hygiene and Safety Programs (Sp) 2
PUBH 5670 Hazardous Chemicals Handling and Safety (Sp) 2
PUBH 5730 Analysis and Fate of Environmental Contaminants (F) 3
PUBH 5790 Accident and Emergency Management (Sp) 3

Suggested Four-year Course of Study for Public Health Major, Industrial Hygiene Emphasis
The suggested schedule shown below should be used in conjunction with the major requirement sheet.

Freshman Year (30 credits)
Fall Semester (15 credits)
BIOL 1610 Biology I 4
CHEM 1210 Principles of Chemistry I 4
CHEM 1215 Chemical Principles Laboratory I 1
University Studies or MATH[9] prerequisite courses 6

Spring Semester (15 credits)
BIOL 1620 (BLS) Biology II 4
CHEM 1220 (BPS) Principles of Chemistry II 4
CHEM 1225 Chemical Principles Laboratory II 1
University Studies or MATH[9] prerequisite courses 6

Sophomore Year (30-36 credits)
Fall Semester (15-18 credits)
BIOL 2420 Human Physiology 4
CHEM 2300 Principles of Organic Chemistry 3
CHEM 2315 Organic Chemistry Laboratory I 1
MATH 1210 (QL) Calculus I 4
PUBH 3310 Occupational Health and Safety 3
University Studies or elective courses 0-3

Spring Semester (15-18 credits)
CHEM 3700 Introductory Biochemistry 3
CHEM 3710 Introductory Biochemistry Laboratory 1
STAT 3000 (QI) Statistics for Scientists 3
University Studies or elective courses 8-11

Junior Year (30-36 credits)
Fall Semester (13-16 credits)
PUBH 4300 Industrial Hygiene Seminar 1
PUBH 4310 Industrial Hygiene Recognition of Hazards 4
PHYS 2110 The Physics of Living Systems I (4 cr) **or**
PHYS 2210 (QI) General Physics—Science and Engineering I (4 cr) 4
University Studies or elective courses 4-7

Spring Semester (14-17 credits)
BIOL 3300 General Microbiology 4
PHYS 2120 (BPS) The Physics of Living Systems II (4 cr) **or**
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II (4 cr) 4
PUBH 4320 Industrial Hygiene Chemical Hazard Evaluation 3
PUBH 4330 Industrial Hygiene Physical Hazards 3
Public Health elective course, University Studies course, or other elective course(s) 0-3

Summer Semester (3 credits)
PUBH 4380 Industrial Hygiene Internship 3

Senior Year (30-36 credits)
Fall Semester (15-18 credits)
CHEM 3000 (QI) Quantitative Analysis 3
CHEM 3005 Quantitative Analysis Laboratory 1
PUBH 3610 Environmental Management 3
PUBH 3870 (CI) Professional/Technical Writing in Civil and Environmental Engineering 2
PUBH 5330 (QI) Industrial Hygiene Chemical Hazard Control 3
Public Health elective courses, University Studies courses, or other elective courses 3-6

Spring Semester (15-18 credits)
ADVS 5400 Environmental Toxicology 3
PUBH 4040 Fundamentals of Epidemiology 3
PUBH 5500 (CI) Public Health Management 2
Public Health elective courses, University Studies courses, or other elective courses 7-10

[9] If students need Math courses prerequisite to MATH 1210, Calculus I, credits in addition to those listed here will be required.

Environmental Health Emphasis

Required Biology Courses (19 credits)
BIOL 1610 Biology I (F) 4
BIOL 1620 (BLS) Biology II (Sp) 4
BIOL 2220 General Ecology (F,Sp) 3
BIOL 2420 Human Physiology (F,Sp,Su) 4
BIOL 3300 General Microbiology (F,Sp) 4

Required Physical Science Courses (22 credits)
CHEM 1210 Principles of Chemistry I (F,Sp) 4
CHEM 1215 Chemical Principles Laboratory I (F,Sp) 1
CHEM 1220 (BPS) Principles of Chemistry II (F,Sp,Su) 4
CHEM 1225 Chemical Principles Laboratory II (F,Sp) 1
CHEM 2300 Principles of Organic Chemistry (F) 3
CHEM 2315 Organic Chemistry Laboratory I (F) 1

PHYS 2110 The Physics of Living Systems I (4 cr) **and**
PHYS 2120 (BPS) The Physics of Living Systems II (4 cr) 8
Or
PHYS 2210 (QI) General Physics—Science and Engineering I (4 cr) **and**
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II (4 cr) 8

Mathematics and Statistics Requirement (7 credits)
MATH 1210 (QL) Calculus I (F,Sp,Su) 4
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su) 3

Required Program Courses (31 credits)
PUBH 3310 Occupational Health and Safety (F) 3
PUBH 3610 Environmental Management (F) 3
PUBH 3870 (CI) Professional/Technical Writing in Civil and Environmental Engineering (F) 2
PUBH 4000 Public Health Field Experience (F,Sp,Su) 3
PUBH 4030 Communicable Disease Control (F) 3
PUBH 4040 Fundamentals of Epidemiology (Sp) 3
PUBH 4310 Industrial Hygiene Recognition of Hazards (F) 4
PUBH 5000 Public Health Seminar (Sp) 1
PUBH 5500 (CI) Public Health Management (F,Sp) 2
PUBH 5730 Analysis and Fate of Environmental Contaminants (Sp) 3
NFS 5110 (CI) Food Microbiology (Sp) 4

Required Electives (select 10 credits)
ADVS 5400 Environmental Toxicology (Sp) 3
BIOL 3220 (QI) Field Ecology (F) 2
BIOL 4420 Plant Taxonomy (Sp) 3
BIOL 5550 Freshwater Invertebrates (Sp) 3
CHEM 3700 Introductory Biochemistry (Sp) 3
CHEM 3710 Introductory Biochemistry Laboratory (Sp) 1
SOIL 3000 Fundamentals of Soil Science (F,Sp) 4
SPCH 1020 (CI) Public Speaking (F,Sp) 3

Suggested Four-year Course of Study for Public Health Major, Environmental Health Emphasis

The suggested schedule shown below should be used in conjunction with the major requirement sheet.

Freshman Year (30 credits)
Fall Semester (15 credits)
BIOL 1610 Biology I 4
CHEM 1210 Principles of Chemistry I 4
CHEM 1215 Chemical Principles Laboratory I 1
University Studies or MATH[10] prerequisite courses 6

Spring Semester (15 credits)
BIOL 1620 (BLS) Biology II....4
CHEM 1220 (BPS) Principles of Chemistry II....4
CHEM 1225 Chemical Principles Laboratory II....1
University Studies or MATH[10] prerequisite courses....6

Sophomore Year (30-36 credits)
Fall Semester (15-18 credits)
BIOL 2420 Human Physiology....4
CHEM 2300 Principles of Organic Chemistry....3
CHEM 2315 Organic Chemistry Laboratory I....1
MATH 1210 (QL) Calculus I....4
PUBH 3310 Occupational Health and Safety....3
University Studies or elective courses....0-3

Spring Semester (15-18 credits)
BIOL 2220 General Ecology....3
PUBH 5000 Public Health Seminar....1
STAT 3000 (QI) Statistics for Scientists....3
University Studies or elective courses....8-11

Junior Year (30-36 credits)
Fall Semester (13-16 credits)
PHYS 2110 The Physics of Living Systems I (4 cr) **or**
PHYS 2210 (QI) General Physics—Science and Engineering I (4 cr)....4
PUBH 4310 Industrial Hygiene Recognition of Hazards....4
PUBH 5730 Analysis and Fate of Environmental Contaminants....3
University Studies or elective courses....2-5

Spring Semester (14-17 credits)
BIOL 3300 General Microbiology....4
PHYS 2120 (BPS) The Physics of Living Systems II (4 cr) **or**
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II (4 cr)....4
Public Health elective courses, University Studies courses, or other elective courses....6-9

Summer Semester (3 credits)
PUBH 4000 Public Health Field Experience....3

Senior Year (30-36 credits)
Fall Semester (15-18 credits)
PUBH 3610 Environmental Management....3
PUBH 3870 (CI) Professional/Technical Writing in Civil and Environmental Engineering....2
PUBH 4030 Communicable Disease Control....3
Public Health elective courses, University Studies courses, or other elective courses....7-10

Spring Semester (15-18 credits)
PUBH 4040 Fundamentals of Epidemiology....3
PUBH 5500 (CI) Public Health Management....2
NFS 5110 (CI) Food Microbiology....4
Public Health elective courses, University Studies courses, or other elective courses....6-9

[10]If students need Math courses prerequisite to MATH 1210, Calculus I, credits in addition to those listed here will be required.

Public Health Education Emphasis

Required Biology Courses (16 credits)
BIOL 1610 Biology I (F)....4
BIOL 1620 (BLS) Biology II (Sp)....4
BIOL 2420 Human Physiology (F,Sp,Su)....4
BIOL 3300 General Microbiology (F,Sp)....4

Required Physical Science Courses (13 credits)
CHEM 1110 (BPS) General Chemistry I (F,Sp)....4
CHEM 1115 General Chemistry Laboratory (Sp)....1
CHEM 1120 (BPS) General Chemistry II (Sp)....4
PHYS 1200 (BPS) Introduction to Physics by Hands-on Exploration (4 cr) **or**
PHYS 1800 (BPS) Physics of Technology (4 cr)....4

Mathematics and Statistics Requirement (7 credits)
MATH 1210 (QL) Calculus I (F,Sp,Su)....4
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su)....3

Required Program Courses (15 credits)
PUBH 3120 Family and Community Health (Sp)....3
PUBH 4000 Public Health Field Experience (F,Sp,Su)....3
PUBH 4030 Communicable Disease Control (F)....3
PUBH 4040 Fundamentals of Epidemiology (Sp)....3
PUBH 5000 Public Health Seminar (Sp)....1
PUBH 5500 (CI) Public Health Management (F,Sp)....2

Required Supporting Courses (30 credits)
HEP 2000 First Aid and Emergency Care (F,Sp,Su)....2
HEP 2500 Health and Wellness (F,Sp,Su)....2
HEP 3000 Drugs and Human Behavior (F,Su)....3
HEP 3800 Grant Proposal Writing (Sp)....3
HEP 3900 Social Marketing in Health Education (Sp)....3
HEP 4200 (QI) Planning and Evaluation for Health Education (F)....3
NFS 1020 (BLS) Science and Application of Human Nutrition (F,Sp,Su)....3
NFS 5210 Advanced Public Health Nutrition (Sp)....2
SOC 3330 Medical Sociology (F)....3
SOC 3500 Social Psychology (F,Sp)....3
SPCH 1020 (CI) Public Speaking (F,Sp)....3

Suggested Four-year Course of Study for Public Health Major, Public Health Education Emphasis

The suggested schedule shown below should be used in conjunction with the major requirement sheet.

Freshman Year (29 credits)
Fall Semester (14 credits)
BIOL 1610 Biology I....4
CHEM 1110 (BPS) General Chemistry I....4
University Studies or MATH[11] prerequisite courses....6

Spring Semester (15 credits)
BIOL 1620 (BLS) Biology II....4
CHEM 1115 General Chemistry Laboratory....1
CHEM 1120 (BPS) General Chemistry II....4
University Studies or MATH[11] prerequisite courses....6

Sophomore Year (30-36 credits)
Fall Semester (15-18 credits)
BIOL 2420 Human Physiology....4
MATH 1210 (QL) Calculus I....4
NFS 1020 (BLS) Science and Application of Human Nutrition....3
University Studies or elective courses....4-7

Spring Semester (15-18 credits)
BIOL 3300 General Microbiology....4
HEP 2000 First Aid and Emergency Care....2
HEP 2500 Health and Wellness....2
PUBH 3120 Family and Community Health....3
University Studies or elective courses....4-7

Department of Biology

Junior Year (30-36 credits)
Fall Semester (13-16 credits)
HEP 3000 Drugs and Human Behavior....3
SOC 3330 Medical Sociology....3
STAT 3000 (QI) Statistics for Scientists....3
University Studies or elective courses....4-7

Spring Semester (14-17 credits)
HEP 3800 Grant Proposal Writing....3
PHYS 1200 (BPS) Introduction to Physics by Hands-on Exploration (4 cr) **or**
PHYS 1800 (BPS) Physics of Technology (4 cr)....4
PUBH 5000 Public Health Seminar....1
SPCH 1020 (CI) Public Speaking....3
Public Health elective course(s), University Studies course(s), or other elective course(s)....3-6

Summer Semester (3 credits)
PUBH 4000 Public Health Field Experience....3

Senior Year (30-36 credits)
Fall Semester (15-18 credits)
HEP 4200 (QI) Planning and Evaluation for Health Education....3
PUBH 4030 Communicable Disease Control....3
SOC 3500 Social Psychology....3
Public Health elective courses, University Studies courses, or other elective courses....6-9

Spring Semester (15-18 credits)
HEP 3900 Social Marketing in Health Education....3
NFS 5210 Advanced Public Health Nutrition....2
PUBH 4040 Fundamentals of Epidemiology....3
PUBH 5500 (CI) Public Health Management....2
Public Health elective courses, University Studies courses, or other elective courses....5-8

[11] If students need Math courses prerequisite to MATH 1210, Calculus I, credits in addition to those listed here will be required.

Biology Minor

The Biology minor requires completion of the following courses. A minimum cumulative GPA of 2.25 is required for these courses, with a *C-* or better grade in BIOL 1610 and 1620.
BIOL 1610 Biology I (F)....4
BIOL 1620 (BLS) Biology II (Sp)....4
Upper-division (3000-level and above) BIOL prefix courses....12
Note: Although BIOL/NR 2220 is a lower-division course, it may be counted toward the 12 elective credits.

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. Requirements for the BioMath minor include:
BIOL 1610 Biology I (F)....4
BIOL 1620 (BLS) Biology II (Sp)....4
MATH 1210 (QL) Calculus I (F,Sp,Su)....4
MATH 1220 (QL) Calculus II (F,Sp,Su)....4
MATH 2270 (QI) Linear Algebra (F)....3
MATH 2280 (QI) Ordinary Differential Equations (Sp)....3
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su)....3
MATH/BIOL 4230 (QI) Applied Mathematics in Biology (Sp)....3
(**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 3060 (QI) Principles of Genetics (F,Sp,Su)....4
BIOL 3220 (QI) Field Ecology (F)....2
BIOL 4400 (QI) Plant Physiology (F)....4
BIOL 5020 (QI) Modeling Biological Systems (F)....3
BIOL 5300 (QI) Microbial Physiology (Sp)....4
BIOL 5380 Evolutionary Genetics (F)....4
BIOL 5610 (QI) Animal Physiology Laboratory (F,Sp)....2
BIOL 5800 Undergraduate Research (F,Sp,Su) (3 credits min.)....3
BMET 5500 Land-Atmosphere Interactions (Sp)....3
PUBH 5330 (QI) Industrial Hygiene Chemical Hazard Control (F)....3

Mathematics and Statistics Electives
MATH 4630 Computer Aided Math for Scientists and Engineers (Sp)....3
MATH 5410 Methods of Applied Mathematics (F)....3
MATH 5420 Partial Differential Equations (Sp)....3
MATH 5460 Introduction to the Theory and Application of Nonlinear Dynamical Systems (Sp)....3
MATH 5610 Computational Linear Algebra and Solution of Systems of Equations (F)....3
MATH 5620 Numerical Solution of Differential Equations (Sp)....3
MATH 5710 Introduction to Probability (F,Sp)....3
MATH 5910 Directed Reading and Conference (F,Sp,Su) (3 credits min.)....3
STAT 5100 (CI/QI) Linear Regression and Time Series (F)....3
STAT 5110 Theory of Linear Models (F)....3
STAT 5120 Categorical Data Analysis (F)....3
STAT 5200 Design of Experiments (Sp)....3
STAT 5300 (QI) Statistical Process Control (Sp)....3
STAT 5600 (CI) Applied Multivariate Statistics (Sp)....3
STAT 5940 Directed Reading and Conference (F,Sp,Su) (3 credits min.)....3

BIOL 5800, MATH 5910, and STAT 5940 must involve mathematical or statistical analysis of a biological problem.

Public Health Minor

The Public Health minor requires completion of the following courses. A minimum cumulative GPA of 2.25 is required for these courses, with a *C-* or better grade in BIOL 1610 and 1620.
BIOL 1610 Biology I (F)....4
BIOL 1620 (BLS) Biology II (Sp)....4
Upper-division (3000-level and above) Public Health elective courses....12

Field Trips and Laboratory Fees

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 to purchase and maintain equipment and supplies for use in the laboratories.

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. Applications for departmental

and college scholarships should be submitted during early spring semester. Contact the College of Science Office (ESLC 245) and the Biology Advising Center (BNR 101) for details.

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school.

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, (435) 797-3713, yejunco@biology.usu.edu.

Additional Information

For more information about requirements for the majors and minors within the Biology Department, see major requirement sheets, available from the Biology Department, or online at: **http://www.usu.edu/majorsheets/**

Graduate Programs

Admission Requirements

See general admission requirements on pages 101-102. Complete details about graduate programs, admission requirements, preapplication, and application procedures are available online at: **http://www.biology.usu.edu/graduate/graduate.htm**.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 (paper-based exam) or 233 (computer-based exam) 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 238-239).

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, Education and Human Services, 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. For further details about the faculty's research interests, students are encouraged to visit the Biology website: **http://www.biology.usu.edu/**

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.

Department of Biology

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; 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:** animal physiology; toxicology and industrial hygiene; insect pathology; plant physiology and pathology; and **Systematics and Evolution:** systematics and evolution of plants, fungi, insects, mammals, 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 more than two 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

Trustee Professor
James A. MacMahon, community ecology, mammalogy, herpetology

Professors
Diane G. Alston, integrated pest management
Anne J. Anderson, microbiology and plant pathology
Edmund D. Brodie, *Jr.*, behavior and evolution
Daryll B. DeWald, cell biology
E. W. "Ted" Evans, insect ecology
Timothy A. Gilbertson, neurobiology
James W. Haefner, systems analysis
Joseph K.-K. Li, virology
Frank J. Messina, insect biology
Keith A. Mott, plant physiology
William J. Popendorf, industrial hygiene
Peter C. Ruben, neurobiology
John M. Stark, microbial ecology and biogeochemistry
Jon Y. Takemoto, microbiology
Paul G. Wolf, systematics and molecular biology
David A. York, human nutrition and obesity

Associate Professors
Brett A. Adams, cell signaling
Michelle A. Baker, aquatic ecology
Mary E. Barkworth, plant systematics
Bradley R. Kropp, mycology
Richard J. Mueller, plant morphology
Gregory J. Podgorski, developmental biology
Kimberly A. Sullivan, behavioral ecology
Carol D. von Dohlen, insect biology
Dennis L. Welker, microbial functional genomics

Assistant Professors
Paul F. Cliften, microbial functional genomics
S. K. Morgan Ernest, spatial ecology
C. Kent Evans, extension plant pathology
Erin W. Hodgson, insect biology
Michael E. Pfrender, evolutionary quantitative genetics
James P. Pitts, insect biology
Katarina Stroffekova, physiology

Professors Emeritus
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
Reed S. Roberts, entomology
Richard J. Shaw, vascular plant taxonomy
John R. Simmons, biochemical genetics
Sherman V. Thomson, plant pathology
Nabil N. Youssef, cell biology and parasitology

Associate Professors Emeritus
David B. Drown, environmental health
Wilford J. Hansen, systematic entomology
Jay B. Karren, 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
Dane R. Hansen, molecular biology, physiology, cell signaling
Joanne E. Hughes, molecular genetics
Charles D. Miller, plant pathology
Mark P. Miller, genetics
MieJung Park, neurobiology
Ethan White, ecology

Adjunct Professors
James H. Cane, bee biology
Noelle E. Cockett, biotechnology
Robert Fogel, mycology
Donal G. Sinex, psychology
Rex S. Spendlove, virology
Bart C. Weimer, food microbiology

Adjunct Associate Professors
Dale L. Barnard, chemotherapy of viruses
Jeanette M. Norton, soil microbiology
Vincent J. Tepedino, entomology

Adjunct Assistant Professors
Karen H. Beard, community ecology, ecosystem ecology, conservation biology
Shaun Bushman, genetics, molecular biology
Terry Griswold, bee biology
Rosalind R. James, entomology
Theresa L. Pitts-Singer, entomology

Principal Lecturer
David M. "Andy" Anderson, medical technology

Senior Lecturer
David O. Wallace, public health, industrial hygiene

Lecturers
John A. Flores II, public health, industrial hygiene
Alice M. Lindahl, invertebrate biology

Course Descriptions

Biology (BIOL), pages 576-580
Public Health (PUBH), pages 706-707

Department of Business Administration

Department Head: Alan A. Stephens
Location: Business 811
Phone: (435) 797-2362
FAX: (435) 797-2634
E-mail: alan.stephens@usu.edu
WWW: http://www.usu.edu/cob/admin

Undergraduate Advisor:
Candice Nyman, Business 309, (435) 797-2272,
candice.nyman@usu.edu

Degrees offered: Bachelor of Science (BS) and Bachelor of Arts (BA) in Business Administration, Finance, Marketing, and Operations Management; BS and BA in International Business. The Department of Business Administration participates in the College of Business MBA (Master of Business Administration) degree (see pages 202-203).

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 five 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; (3) **Operations Management**, leading to careers related to supply chain management, operations planning and scheduling, project management, quality management, and consulting; (4) **International Business,** involving courses both in and out of the college leading toward international business training; and (5) **Business Administration**, providing broad cross-disciplinary experience in the core business areas of operations, finance, and marketing.

Departmental Honors

See *Honors in Business* description in the College of Business section of this catalog (page 114).

Learning Objectives and Assessment

Assessment information for the Business Administration Department can be found online at:
http://www.usu.edu/cob/admin/assessment/index.cfm

College of Business Admission Requirements

All students desiring to major in the Business Administration Department must satisfy the College of Business admission requirements, provided on pages 114-115. Academic advising about these requirements is available in the College of Business Career and Education Opportunities Center, Business 309. All students enrolled at USU are required to satisfy the General Education requirements and the University Studies Depth Education requirements of the University, as described on pages 49-59 of this catalog.

Matriculation Requirement and Transfer Limitation

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 College of Business credits added to previously earned transfer business credits may not exceed a combined total of 15. Furthermore, to earn a bachelor's degree in a College of Business major, at least 50 percent of the required College of Business credits must be earned from coursework taken from the Utah State University College of Business.

USU Credits and Business Credits

At least 30 of the last 60 semester credits must be taken from Utah State University, at least 20 of which must be completed in upper-division courses, of which at least 10 credits must be completed in courses required by the student's major. At least 50 percent of the College of Business credits required for a College of Business degree must be taken from the Utah State University College of Business or its departments, which include: School of Accountancy, Business Administration, Economics, Management and Human Resources, and Management Information Systems.

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 (13 credits)

ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp) 3
MATH 1100 (QL) Calculus Techniques (F,Sp,Su) 3
STAT 2300 (QL) Business Statistics (F,Sp,Su) 4
PSY 1010 (BSS) General Psychology (F,Sp,Su) (3 cr) **or**
SOC 1010 (BSS) Introductory Sociology (F,Sp) (3 cr) 3

Business majors must take the above courses as prerequisite to 3000-, 4000-, and 5000-level courses in the College of Business.

College of Business Core (37 credits)

ACCT 2010 Survey of Accounting I (F,Sp,Su) 3
ACCT 2020 Survey of Accounting II (F,Sp,Su) 3
BA 3400 (QI) Corporate Finance (F,Sp,Su) 3
BA 3500 Fundamentals of Marketing (F,Sp,Su) 3
BA 3700 Operations Management (F,Sp,Su) 3
BIS 2100 Principles of Management Information Systems (F,Sp,Su) ... 3
BIS 2200 (CI) Business Communication (F,Sp,Su) 3
BUS 3250 Discussions With Business Leaders (F,Sp) 1
ECON 2010 (BSS) Introduction to Microeconomics (F,Sp) 3
ECON 3400 International Economics for Business (F,Sp,Su) 3
MHR 2050 Legal and Ethical Environment of Business (F,Sp,Su) 3
MHR 3110 Managing Organizations and People (F,Sp,Su) 3
MHR 4880 (CI) Business Strategy in an Entrepreneurial Context (F,Sp) (3 cr) **or**
MHR 4890 (CI) Business Strategy in a Global Context (F,Sp,Su) (3 cr) 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.

Department of Business Administration

Majors

The Department of Business Administration offers five majors. An overall GPA of at least 2.50 is required to graduate. Course requirements for each major are listed on the following pages.

Finance Major Requirements (21 credits)

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. Before continuing with the following courses, students must receive a grade of *B-* or better in BA 3400.

Required Courses (12 credits)

BA 4450 Financial Policy (F,Sp) 3
BA 4460 Investments (F,Sp) 3
ECON 4010 Managerial Economics (F,Sp) 3
ECON 4020 Macroeconomics for Managers (F,Sp) 3

Electives (9 credits)

Three electives are required, two of which must be selected from the following list:

BA 4300 International Finance (F,Sp) 3
BA 4410 Financial Institutions (F,Sp) 3
BA 4420 Insurance (F) 3
BA 4430 Real Estate Finance (Sp) 3

The remaining elective may be chosen from the following, or from the list above:

ACCT 3310 Strategic Cost Management (F,Sp,Su) 3
ACCT 3410 Income Taxation I (F,Sp,Su) 3
BA 3080 (QI) Operations Research (F) 3
ECON 4030 (CI) Agribusiness Finance (F) 3
ECON 5030 Agricultural Marketing and Price Analysis (F) 3
ECON 5330 (QI) Applied Econometrics (Sp) 3
ECON 5600 Financial Economics (Sp) 3
PFP 5060 Personal Financial Planning and Advising (F) 3
PFP 5070 Retirement Planning (Sp) 3
PFP 5080 Estate Planning (Sp) 3

For a suggested four-year plan, see pages 198-199.

International Business Major Requirements (24 credits)

For the BA degree in International Business, students must complete 15 credits of required courses, 6 credits of supporting coursework, and one 3-credit nonbusiness elective course (as shown below). In addition to coursework requirements, students are required to demonstrate competence in a second language, and complete an international experience. Competence in a second language can be demonstrated by one of the following: (1) successful completion of a minor or major in a second language; (2) passing 16 semester credits of a second language at an accredited college or university; (3) passing a language challenge competency exam and successfully completing the next higher class; (4) successful completion of the BYU Language Test (minimum of 16 credits); or (5) completion of 16 credits from the Intensive English Language Institute or attainment of a TOEFL score of at least 173 computerized, 500 paper/pencil, or 61 on the iBT.

The international experience can be fulfilled by meeting *one* of the following requirements:

1. Demonstration of international work experience or completion of an internship. The work experience/internship is either to be completed overseas or to provide substantial and approved international experience. It is to be of no less than nine weeks in duration.

   Or

2. Completion of a minimum of one semester of study at an approved overseas institute of higher education or participation in an approved overseas study tour.

Required Courses (15 credits)

BA 4300 International Finance (F,Sp) 3
BA 4590 Global Marketing Strategy (F,Sp) 3
BA 4790 Supply Chain Management (Sp) 3
ECON 5150 Comparative Economic Systems (Sp) 3
MHR 3820 International Management (F,Sp) 3

Supporting Coursework (6 credits)[1]

Students must complete 6 credits of coursework from one of the following five supporting areas:

Eastern Europe[2]

ECON 5120 Economics of Russia and Eastern Europe, 9th Century to 21st Century (F) (3 cr) **or**
HIST 3280 East Central Europe Since 1520 (3 cr) **or**
HIST 3310 Balkans Since 1389 (3 cr) **or**
HIST 3330 The Soviet Union and its Heirs (3 cr) 3
POLS 3220 Russian and East European Government and Politics (F) 3

Western Europe[2]

HIST 3240 Modern Europe from 1789 to the Present 3
POLS 3210 Western European Government and Politics (F) (3 cr) **or**
POLS 4210 European Union Politics (Sp) (3 cr) 3

Latin America[2]

HIST 3630 History of Modern Latin America 3
POLS 3270 Latin American Government and Politics (F) 3

Asia[2]

HIST 3460 Comparative Asian History 3
POLS 3250 Chinese Government and Politics (F) (3 cr) **or**
POLS 4260 Southeast Asian Government and Politics (Sp) (3 cr) 3

International Trade[2]

ECON 5400 International and Development Economics (F) 3
POLS 4480 International Trade Policy (Sp) 3

Nonbusiness Electives (select 3 credits)[3]

Students must complete *one* elective, selected from the following:

BIS 4550 (CI) Principles of International Business Communications (Sp) 3
CHIN 3100 (DHA) Readings in Contemporary Chinese Culture (Sp) ... 3
FREN 3550 (DHA) French Civilization (F) 3
FREN 3570 France Today (Sp) 3
GERM 3300 (DHA) Contemporary German Speaking Cultures (Sp) ... 3
GERM 3550 (DHA) Cultural History of German Speaking Peoples (F) 3
HIST 3410 The Modern Middle East 3
HIST 3510 Africa and the World 3
JAPN 3100 Readings in Contemporary Japanese Culture (F) 3

POLS 3100 Global Issues (F) 3
RUSS 3300 (DHA) Contemporary Russian Language and Culture (F,Sp) 3
RUSS 3540 Russian Translation for Science, Business, and Culture (Sp) 3
SPAN 3550 (DHA) Spanish Culture and Civilization (Sp) 3
SPAN 3570 (DHA) Latin American Culture and Civilization (Sp) 3
Any class from one of the supporting areas (if not already taken) 3

For a suggested four-year plan, contact the Department of Business Administration.

[1]Supporting areas were established in cooperation with the History and Political Science departments within the College of Humanities, Arts, and Social Sciences.
[2]In the event that a course required for a supporting area is not offered or available, an approved alternative course may be substituted.
[3]Nonbusiness electives were established in cooperation with the History; Languages, Philosophy, and Speech Communication; and Political Science departments within the College of Humanities, Arts, and Social Sciences.

Marketing Major Requirements (21-22 credits)

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. As prerequisites to BA 4590, students must complete the following courses: BA 3500, 4540, and 4550. Before continuing with the following courses, students must receive a grade of *B-* or better in BA 3500.

Required Courses (15 credits)

BA 4510 Buyer Behavior (F,Sp) 3
BA 4530 Marketing Research (F,Sp) 3
BA 4540 Marketing Institutions (F,Sp) (3 cr) **or**
BA 4070 (CI) Retail Management (3 cr) 3
BA 4550 Promotion Management (F,Sp) 3
BA 4590 Global Marketing Strategy (F,Sp) 3

Elective Courses (6-7 credits)

Select one of the following marketing tracks:

Track 1: Analysis of Culture (Choose 2 courses)
LING 4100 The Study of Language (F,Sp) 3
LING 4900 Analysis of Cross-Cultural Difference (Sp) 3
PSY 4210 Personality Theory (Sp) 3
PSY 4240 Multicultural Psychology (F) 3
MHR 4630 Human Resource Management (F,Sp) 3
ENVS 3000 Natural Resources Policy and Economics (F) 4
ENVS 3330 Environment and Society (Sp) 3
ENVS 4000 Human Dimensions of Natural Resource Management (F) 3
BIS 4550 (CI) Principles of International Business Communications (Sp) 3

Track 2: Recreation/Tourism (Choose 2 courses)
ENVS 3300 Fundamentals of Recreation Resources Management (F) 3
ENVS 4130 Recreation Policy and Planning (Sp) 3
ENVS 4500 (CI) Wildland Recreation Behavior (F) 3
PRP 3750 Commercial Recreation and Tourism (Sp) 3
PRP 4400 Recreation Park and Facility Management (F) 3

Track 3: Research (Choose 2 courses)
ECON 4010 Managerial Economics (F,Sp) 3
ECON 4310 (QI) Mathematical Methods for Economics (F) 3
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su) 3
BA 4790 Supply Chain Management (Sp) 3

For a suggested four-year plan, see page 199-200.

Operations Management Major Requirements (21 credits)

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. Before continuing with the following courses, students must receive a grade of *B-* or better in BA 3700.

Required Courses (18 credits)

BA 3080 (QI) Operations Research (F,Sp) 3
BA 4720 Production Planning and Control (F) 3
BA 4750 Production Simulation (Sp) 3
BA 4790 Supply Chain Management (Sp) 3
BA 5730 Process Analysis and Improvement (F) 3
MAE 5600 Manufacturing Process Planning and Statistical Quality Control (F) (3 cr) **or**
STAT 5200 Design of Experiments (Sp) (3 cr) **or**
STAT 5300 (QI) Statistical Process Control (Sp) (3 cr) 3

Elective Course (3 credits)

Select one of the following two courses:
ACCT 3310 Strategic Cost Management (F,Sp,Su) 3
MHR 4630 Human Resource Management (F,Sp) 3

For a suggested four-year plan, see page 200.

Business Administration Major Requirements

The Business Administration major is a general degree that recognizes that most business students will have multiple business responsibilities throughout their career. This degree provides broad cross-discipline experience in the core business areas of operations, finance, and marketing. Before continuing with the following courses, students must receive a grade of *B-* or better in BA 3400, 3500, and 3700.

Required Courses (18 credits)

BA 4410 Financial Institutions (F,Sp) 3
BA 4450 Financial Policy (F,Sp) 3
BA 4530 Marketing Research (F,Sp) 3
BA 4590 Global Marketing Strategy (F,Sp) 3
BA 4790 Supply Chain Management (Sp) 3
BA 5730 Process Analysis and Improvement (F) 3

Capstone Course

MHR 4880 (CI) Business Strategy in an Entrepreneurial Context (F,Sp) (3 cr) **or**
Another approved course (3 cr) 3
Students choosing the MHR 4880 option must complete MHR 4890 to satisfy the business core requirement.

For a suggested four-year plan, see pages 200-201.

Business Major

A general business major is administered by the College of Business (see pages 115-116). For further information, contact the College of Business Career and Education Opportunities Center, Business 309, (435) 797-2272.

Minor Requirements

The Department of Business Administration offers four minors: a marketing minor, a finance minor, an operations management minor, and an international business minor.

A student from outside the College of Business who desires to pursue these minors must recognize that there are several prerequisites to the required courses, which may themselves have prerequisites. As an alternative, students from outside the College of Business may want to consider the College of Business minor in Business.

Marketing Minor (16 credits)

Required Courses (10 credits)

BA 3500 Fundamentals of Marketing (F,Sp,Su) 3
MHR 3110 (DSS) Managing Organizations and People (F,Sp,Su) 3
STAT 2300 (QL) Business Statistics (F,Sp,Su) 4

Electives (6 credits)

Select two of the following courses:
BA 4510 Buyer Behavior (F,Sp) 3
BA 4530 Marketing Research (F,Sp) 3
BA 4540 Marketing Institutions (F,Sp) 3
BA 4550 Promotion Management (F,Sp) 3

Finance Minor (15 credits)

Required Courses (12 credits)

BA 3400 (QI) Corporate Finance (F,Sp,Su) 3
BA 3500 Fundamentals of Marketing (F,Sp,Su) 3
BA 4450 Financial Policy (F,Sp) 3
BA 4460 Investments (F,Sp) 3

Elective Course (3 credits)

Select one of the following courses:
BA 4300 International Finance (F,Sp) 3
BA 4410 Financial Institutions (F,Sp) 3
BA 4420 Insurance (F) 3
BA 4430 Real Estate Finance (Sp) 3

Operations Management Minor (15 credits)

Required Courses (9 credits)

BA 3500 Fundamentals of Marketing (F,Sp,Su) 3
BA 3700 Operations Management (F,Sp,Su) 3
BA 4720 Production Planning and Control (F) 3

Electives (6 credits)

Select two of the following courses:
BA 3080 (QI) Operations Research (F,Sp) 3
BA 4750 Production Simulation (Sp) 3
BA 4790 Supply Chain Management (Sp) 3
BA 5730 Process Analysis and Improvement (F) 3

A grade point average of at least 2.50 over the minor courses is required.

A student may request a deviation from the preceding requirements by submitting a written justification for the changes to the department head for approval. If approved, it becomes the minor for that student only.

International Business Minor (18 credits maximum)

Required Courses (12 credits)

Select four of the following courses:
BA 4300[4] International Finance (F,Sp) 3
BA 4590[5] Global Marketing Strategy (F,Sp) 3
BA 4790[6] Supply Chain Management (Sp) 3
BIS 4550 (CI) Principles of International Business Communications (Sp) 3
ECON 5150 (DSS)[7] Comparative Economic Systems (Sp) 3
MHR 3820 (DSS) International Management (F,Sp) 3

Students must also complete *one of* sections A, B, C, *or* D below:

A. Electives (6 credits)

Students who choose this option must complete 6 credits from *one* of the following supporting areas:

Eastern Europe[8]
ECON 5120 Economics of Russia and Eastern Europe, 9th Century to 21st Century (F) (3 cr) **or**
HIST 3280 East Central Europe Since 1520 (3 cr) **or**
HIST 3310 Balkans Since 1389 (3 cr) **or**
HIST 3330 The Soviet Union and its Heirs (3 cr) 3
POLS 3220 (DSS) Russian and East European Government and Politics (F) 3
RUSS 3300 (DHA) Contemporary Russian Language and Culture (F,Sp) 3

Western Europe[8]
HIST 3240 Modern Europe from 1789 to the Present 3
POLS 3210 (DSS) Western European Government and Politics (F) (3 cr) or
POLS 4210 European Union Politics (Sp) (3 cr) 3
FREN 3570 France Today (Sp) (3 cr) **or**
GERM 3300 (DHA) Contemporary German Speaking Cultures (Sp) (3 cr) **or**
SPAN 3550 (DHA) Spanish Culture and Civilization (F) 3

Latin America[8]
HIST 3630 History of Modern Latin America 3
POLS 3270 (DSS) Latin American Government and Politics (F) 3
SPAN 3570 (DHA) Latin American Culture and Civilization (Sp) 3

Asia[8]
HIST 3460 Comparative Asian History 3
POLS 3250 (DSS) Chinese Government and Politics (F) (3 cr) or
POLS 4260 Southeast Asian Government and Politics (Sp) (3 cr) 3
CHIN 3100 (DHA) Readings in Contemporary Chinese Culture (Sp) (3 cr) **or**
JAPN 3100 Readings in Contemporary Japanese Culture (F) (3 cr) 3

International Trade[8]
ECON 5400 International and Development Economics (F) 3
POLS 3100 Global Issues (F) 3
POLS 5480 International Trade Policy (Sp) 3

B. Second Language Competence

Students selecting this option must demonstrate competence in a second language by one of the following five methods:

1. A minor or major in a second language
2. Completion of 16 semester credits of a second language, earned at an accredited institution
3. Passing a language challenge competency exam and successful completion of the next higher class

4. Successful completion of the BYU Language Test (minimum of 16 credits)

5. Completion of 16 credits from the Intensive English Language Institute *or* a TOEFL score of at least 173 computerized, 500 paper/pencil, or 61 on the iBT

C. International Work Experience or Internship
For this option, work experience or an internship must *either* be completed overseas *or* must provide substantial and approved international experience. This work experience or internship must be *at least nine weeks* in duration.

D. Study Overseas
Students selecting this option must *either* spend a minimum of one semester studying at an approved overseas institution of higher education *or* must participate in an approved overseas study tour.

[4]Prerequisite: Grade of *B-* or better in BA 3400.
[5]Prerequisites: Grade of *B-* or better in BA 3500; BA 4540, 4550.
[6]Prerequisite: Grade of *B-* or better in BA 3700.
[7]Prerequisite: ECON 2010.
[8]In the event a course required for a supporting area is not offered or available, an approved alternative class may be substituted.

Business Minor
A Business Minor is administered by the College of Business. For further information, students should contact the College of Business Career and Education Opportunities Center, Business 309, (435) 797-2272.

Other Degree Options

Dual Majors
Dual majors are available in accounting, human resources, management, management 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 309.

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 309. These sheets can also be found online at:
http://www.usu.edu/cobssc/web/requirementsheets.htm

A major requirement sheet, which includes further information about career opportunities and course requirements for the majors and minors within the Business Administration Department, can be obtained from the department, or accessed online at:
http://www.usu.edu/majorsheets/

Four-Year Degree Plans (8 Semesters)

The following are suggested four-year plans for majors offered by the Department of Business Administration. These plans may also be found at:
http://www.usu.edu/cobssc/web/fouryeardegreeplans.htm

Suggested Four-year Course of Study for Finance Major
Students enrolled in the finance major should consult with their advisor to determine which breadth, depth, and elective courses they should complete. Each student should also consult with his or her advisor to develop an individualized plan of study that is applicable to his or her own interests.

Freshman Year (31 credits)
Fall Semester (15 credits)
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles 3
MATH 1010 Intermediate Algebra 3
PSY 1010 (BSS) General Psychology (3 cr) **or**
SOC 1010 (BSS) Introductory Sociology (3 cr) 3
Breadth Creative Arts (BCA) course[9] 3
Elective course(s) 3
Passing scores on Computer and Information Literacy (CIL) exams 0
Note: The CIL requirement is met *only* by passing all six exams.

Spring Semester (16 credits)
ECON 2010 (BSS) Introduction to Microeconomics 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MATH 1050 (QL) College Algebra 4
Breadth Humanities (BHU) course[9] 3
Breadth Life Sciences (BLS) course[9] 3

Sophomore Year (31 credits)
Fall Semester (16 credits)
ACCT 2010 Survey of Accounting I 3
BIS 2200 (CI) Business Communication 3
MHR 2050 Legal and Ethical Environment of Business 3
STAT 2300 (QL) Business Statistics 4
Breadth Physical Sciences (BPS) course[9] 3

Spring Semester (15 credits)
ACCT 2020 Survey of Accounting II 3
BIS 2100 Principles of Management Information Systems 3
MATH 1100 (QL) Calculus Techniques 3
Depth Life and Physical Sciences (DSC) course 3
Elective course(s) 3

Junior Year (30 credits)
Fall Semester (15 credits)
BA 3400 (QI) Corporate Finance 3
BA 3500 Fundamentals of Marketing 3
ECON 3400 International Economics for Business 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Depth Humanities and Creative Arts (DHA) course 3

Spring Semester (15 credits)
BA 3700 Operations Management 3
ECON 4010 Managerial Economics 3
MHR 3110 Managing Organizations and People 3
Finance Elective 3
Elective course(s) 3

Senior Year (28 credits)
Fall Semester (16 credits)
BA 4450 Financial Policy 3
BA 4300 International Finance (3 cr) **or**
BA 4410 Financial Institutions (3 cr) **or**
BA 4420 Insurance (3 cr) 3

BUS 3250 Discussions With Business Leaders 1
ECON 4020 Macroeconomics for Managers..... 3
Elective courses 6

Spring Semester (12 credits)
BA 4300 International Finance (3 cr) **or**
BA 4410 Financial Institutions (3 cr) **or**
BA 4430 Real Estate Finance (3 cr)..... 3
BA 4460 Investments..... 3
MHR 4880 (CI) Business Strategy in an Entrepreneurial Context (3 cr) **or**
MHR 4890 (CI) Business Strategy in a Global Context (3 cr) 3
Elective course(s)..... 3

Suggested Four-year Course of Study for International Business Major

Students enrolled in the international business major should consult with their advisor to determine which breadth, depth, and elective courses they should complete. Each student should also consult with his or her advisor to develop an individualized plan of study that is applicable to his or her own interests.

Freshman Year (31 credits)

Fall Semester (16 credits)
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles..... 3
MATH 1050 (QL) College Algebra..... 4
OSS 1400 Microcomputer Applications..... 3
PSY 1010 (BSS) General Psychology (3 cr) **or**
SOC 1010 (BSS) Introductory Sociology (3 cr)..... 3
University Studies Breadth course[9] 3

Note: Students must pass MATH 1050 with a grade of *C-* or better. If OSS 1400 is not taken, an additional 3 credits of electives must be completed.

Spring Semester (15 credits)
ECON 2010 (BSS) Introduction to Microeconomics 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MATH 1100 (QL) Calculus Techniques 3
University Studies Breadth courses[9] 6

Sophomore Year (31 credits)

Fall Semester (16 credits)
ACCT 2010 Survey of Accounting I..... 3
BIS 2100 Principles of Management Information Systems 3
MHR 2050 Legal and Ethical Environment of Business..... 3
STAT 2300 (QL) Business Statistics 4
University Studies Breadth course[9] 3

Note: During their third semester, students should apply for College of Business admission.

Spring Semester (15 credits)
ACCT 2020 Survey of Accounting II..... 3
BA 3700 Operations Management..... 3
BIS 2200 (CI) Business Communication..... 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode..... 3
Elective course(s)[10]..... 3

Junior Year (28 credits)

Fall Semester (13 credits)
BA 3400 (QI) Corporate Finance 3
BA 3500 Fundamentals of Marketing..... 3
BUS 3250 Discussions With Business Leaders..... 1
ECON 3400 International Economics for Business..... 3
Elective course(s)[10]..... 3

Spring Semester (15 credits)
BA 4300 International Finance..... 3
ECON 5150 Comparative Economic Systems 3
MHR 3110 Managing Organizations and People 3
International Business Supporting Coursework Option..... 3
Elective course(s)[10]..... 3

Senior Year (30 credits)

Fall Semester (15 credits)
BA 4590 Global Marketing Strategy..... 3
MHR 3820 International Management 3
International Business Elective Option..... 3
International Business Supporting Coursework Option..... 3
Elective course(s)[10]..... 3

Spring Semester (15 credits)
BA 4790 Supply Chain Management..... 3
MHR 4890 (CI) Business Strategy in a Global Context..... 3
University Studies Depth Humanities and Creative Arts (DHA) course 3
University Studies Depth Life and Physical Sciences (DSC) course 3
Elective course(s)[10]..... 3

Suggested Four-year Course of Study for Marketing Major

Students enrolled in the marketing major should consult with their advisor to determine which breadth, depth, and elective courses they should complete. Each student should also consult with his or her advisor to develop an individualized plan of study that is applicable to his or her own interests.

Freshman Year (31credits)

Fall Semester (15 credits)
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles 3
MATH 1010 Intermediate Algebra 3
PSY 1010 (BSS) General Psychology (3 cr) **or**
SOC 1010 (BSS) Introductory Sociology (3 cr)..... 3
Breadth Creative Arts (BCA) course[9] 3
Elective course(s)..... 3
Passing scores on Computer and Information Literacy (CIL) exams 0
Note: The CIL requirement is met *only* by passing all six exams.

Spring Semester (16 credits)
ECON 2010 (BSS) Introduction to Microeconomics 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MATH 1050 (QL) College Algebra..... 4
Breadth Humanities (BHU) course[9]..... 3
Breadth Life Sciences (BLS) course[9] 3

Sophomore Year (31 credits)

Fall Semester (16 credits)
ACCT 2010 Survey of Accounting I..... 3
BIS 2200 (CI) Business Communication..... 3
MHR 2050 Legal and Ethical Environment of Business..... 3
STAT 2300 (QL) Business Statistics 4
Breadth Physical Sciences (BPS) course[9] 3

Spring Semester (15 credits)
ACCT 2020 Survey of Accounting II..... 3
BIS 2100 Principles of Management Information Systems 3
MATH 1100 (QL) Calculus Techniques 3
Depth Life and Physical Sciences (DSC) course 3
Elective course(s)..... 3

Junior Year (30 credits)
Fall Semester (15 credits)
BA 3500 Fundamentals of Marketing 3
BA 3700 Operations Management 3
ECON 3400 International Economics for Business 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Depth Humanities and Creative Arts (DHA) course 3

Spring Semester (15 credits)
BA 3400 (QI) Corporate Finance 3
BA 4540 Marketing Institutions 3
BA 4550 Promotion Management 3
MHR 3110 Managing Organizations and People 3
Elective course(s) 3

Senior Year (28 credits)
Fall Semester (15 credits)
BA 4510 Buyer Behavior 3
BA 4530 Marketing Research 3
Marketing Track course 3
Elective courses 6

Spring Semester (13 credits)
BA 4590 Global Marketing Strategy 3
BUS 3250 Discussions With Business Leaders 1
MHR 4880 (CI) Business Strategy in an Entrepreneurial Context (3 cr) **or**
MHR 4890 (CI) Business Strategy in a Global Context (3 cr) 3
Marketing Track course 3
Elective course(s) 3

Suggested Four-year Course of Study for Operations Management Major

Students enrolled in the operations management major should consult with their advisor to determine which breadth, depth, and elective courses they should complete. Each student should also consult with his or her advisor to develop an individualized plan of study that is applicable to his or her own interests.

Freshman Year (31 credits)
Fall Semester (15 credits)
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles 3
MATH 1010 Intermediate Algebra 3
PSY 1010 (BSS) General Psychology (3 cr) **or**
SOC 1010 (BSS) Introductory Sociology (3 cr) 3
Breadth Creative Arts (BCA) course[9] 3
Elective course(s) 3
Passing scores on Computer and Information Literacy (CIL) exams 0
Note: The CIL requirement is met *only* by passing all six exams.

Spring Semester (16 credits)
ECON 2010 (BSS) Introduction to Microeconomics 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MATH 1050 (QL) College Algebra 4
Breadth Humanities (BHU) course[9] 3
Breadth Life Sciences (BLS) course[9] 3

Sophomore Year (31 credits)
Fall Semester (16 credits)
ACCT 2010 Survey of Accounting I 3
BIS 2200 (CI) Business Communication 3
MHR 2050 Legal and Ethical Environment of Business 3
STAT 2300 (QL) Business Statistics 4
Breadth Physical Sciences (BPS) course[9] 3

Spring Semester (15 credits)
ACCT 2020 Survey of Accounting II 3
BIS 2100 Principles of Management Information Systems 3
MATH 1100 (QL) Calculus Techniques 3
Depth Life and Physical Sciences (DSC) course 3
Elective course(s) 3

Junior Year (30 credits)
Fall Semester (15 credits)
BA 3500 Fundamentals of Marketing 3
BA 3700 Operations Management 3
ECON 3400 International Economics for Business 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Depth Humanities and Creative Arts (DHA) course 3

Spring Semester (15 credits)
BA 3080 (QI) Operations Research 3
BA 3400 (QI) Corporate Finance 3
ACCT 3310 Strategic Cost Management (3 cr) **or**
MHR 4630 Human Resource Management (3 cr) 3
MHR 3110 Managing Organizations and People 3
STAT 5200 Design of Experiments (3 cr) **or**
STAT 5300 (QI) Statistical Process Control (3 cr) **or**
Elective course(s) (3 cr) 3

Senior Year (28 credits)
Fall Semester (16 credits)
BA 4720 Production Planning and Control 3
BA 5730 Process Analysis and Improvement 3
BUS 3250 Discussions With Business Leaders 1
MAE 5600 Manufacturing Process Planning and Statistical Quality Control (3 cr) **or**
Elective course(s) (3 cr) 3
Elective courses 6

Spring Semester (12 credits)
BA 4750 Production Simulation 3
BA 4790 Supply Chain Management 3
MHR 4880 (CI) Business Strategy in an Entrepreneurial Context (3 cr) **or**
MHR 4890 (CI) Business Strategy in a Global Context (3 cr) 3
Elective course(s) 3

Suggested Four-year Course of Study for Business Administration Major

Students enrolled in the business administration major should consult with their advisor to determine which breadth, depth, and elective courses they should complete. Each student should also consult with his or her advisor to develop an individualized plan of study that is applicable to his or her own interests.

Freshman Year (31 credits)
Fall Semester (15 credits)
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles 3
MATH 1010 Intermediate Algebra 3
PSY 1010 (BSS) General Psychology (3 cr) **or**
SOC 1010 (BSS) Introductory Sociology (3 cr) 3
Breadth Creative Arts (BCA) course[9] 3
Elective course 3

Passing scores on Computer and Information Literacy (CIL) exams 0
Note: The CIL requirement is met *only* by passing all six exams.

Spring Semester (16 credits)
ECON 2010 (BSS) Introduction to Microeconomics 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MATH 1050 (QL) College Algebra 4
Breadth Humanities (BHU) course[9] 3
Breadth Life Sciences (BLS) course[9] 3

Sophomore Year (31 credits)
Fall Semester (16 credits)
ACCT 2010 Survey of Accounting I 3
BIS 2200 (CI) Business Communication 3
MHR 2050 Legal and Ethical Environment of Business 3
STAT 2300 (QL) Business Statistics 4
Breadth Physical Sciences (BPS) course[9] 3

Spring Semester (15 credits)
ACCT 2020 Survey of Accounting II 3
BIS 2100 Principles of Management Information Systems 3
MATH 1100 (QL) Calculus Techniques 3
Depth Life and Physical Sciences (DSC) course 3
Elective courses 3

Junior Year (30 credits)
Fall Semester (15 credits)
BA 3500 Fundamentals of Marketing 3
BA 3700 Operations Management 3
ECON 3400 International Economics for Business 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Depth Humanities and Creative Arts (DHA) course 3

Spring Semester (15 credits)
BA 3400 (QI) Corporate Finance 3
BA 4410 Financial Institutions 3
BA 4790 Supply Chain Management 3
MHR 3110 Managing Organizations and People 3
Elective courses 3

Senior Year (28 credits)
Fall Semester (16 credits)
BA 4530 Marketing Research 3
BA 5730 Process Analysis and Improvement 3
BUS 3250 Discussion with Business Leaders 1
MHR 4880 (CI) Business Strategy in an Entrepreneurial Context (3 cr) **or**
Another approved course (3 cr) 3
Note: Students choosing the MHR 4880 option must take MHR 4890 to satisfy the business core requirement.
Elective courses 6

Spring Semester (12 credits)
BA 4450 Financial Policy 3
BA 4590 Global Marketing Strategy 3
MHR 4880 (CI) Business Strategy in an Entrepreneurial Context (3 cr) **or**
MHR 4890 (CI) Business Strategy in a Global Context (3 cr) 3
Elective courses 3

[9] At least *two* of the six required breadth courses *must* have a USU prefix.
[10] Electives may need to include the requirement of a second language or international experience. If they do not have the second language or international business experience completed, students will need to personalize their own four-year schedule. For clarification, students should contact their advisor.

Graduate Programs

For information about the **Interdepartmental Curriculum for the Master of Business Administration (MBA)**, see pages 202-203. Master's degrees are also offered by the following departments in the College of Business: Accountancy, Management Information Systems, and Economics. For further information, refer to the appropriate sections of this catalog.

Business Administration Faculty

Professors Emeritus
Allen D. Kartchner, production and operations research
Eugene C. Kartchner, production and operations research
Paul A. Randle, corporate finance and valuation analysis

Professors
Kenneth R. Bartkus, promotion management
Drew Dahl, financial institutions and international finance
Peter M. Ellis, production and operations research
Cathy L. Hartman, consumer behavior and environmental sustainability
Vijay R. Kannan, supply chain and quality management, cellular manufacturing
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

Associate Professors
J. Brian Atwater, "theory of constraints," quality management, lean manufacturing
Edwin R. Stafford, marketing management, strategy, environmental sustainability
Alan A. Stephens, corporate finance and investments

Assistant Professors
Stacey B. Hills, marketing research, strategy, and product management
Haiyan Hu, retailing and consumer behavior, international retailing, visual merchandising and promotion
Seung-Woog Kwag, investments and corporate finance

Senior Lecturer/Executive in Residence
Randall L. Cook, operations management and finance

Lecturer
Janet P. Lyons, operations and marketing

Adjunct Lecturers
Shaun D. Barker, marketing
Scott F. Boyle, marketing
Steven R. Broadbent, finance
Kent B. Haueter, finance
Strat D. Roper, operations
Karl B. Ward, finance

Course Descriptions

Business Administration (BA), pages 572-573

Master of Business Administration (MBA)

Program Administrator: Katherine E. McConkie
Location: Business 809
Phone: (435) 797-1773
FAX: (435) 797-2634
E-mail: katherine.mcconkie@usu.edu
WWW: http://mba.usu.edu/

Degree Offered: Master of Business Administration (MBA)

Graduate Specializations: Accounting, Entrepreneurship, Human Resource Management, Manufacturing Management, Personal Financial Planning

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 of 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) or Graduate Record Examination (GRE) scores, and three letters of recommendation from qualified professionals. TOEFL scores are required for candidates from abroad, with a minimum of 213 (computerized) or 79 (Internet) deemed acceptable. International students with a prior degree from an English-speaking university are exempt from the TOEFL exam.

Students are expected to be admitted to the program as matriculated students before taking coursework leading to the degree.

Application Deadline for Fall Semester

No application 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 but not required. 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 courses, basic competencies in business that have not been acquired through prior courses or experience must be met. 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

Students are held responsible for meeting requirements as outlined below. It is the student's responsibility to be aware of all requirements and initiate the resolution of apparent inconsistencies.

Business Core

The MBA Business Core curriculum provides skills and knowledge in statistics, written communication, computer literacy, mathematics, information systems, economics, accounting, finance, marketing, operations, management, and organizational behavior. Students who have completed a bachelor's degree must have coursework which includes learning experiences in management-specific areas recommended by AACSB International for direct entry into the advanced program.

Accelerated Business Core

Students who have not completed a bachelor's degree accredited by AACSB International may choose to gain the necessary basic business competencies by attending the Accelerated Business Core (ABC). The ABC is a uniquely efficient and effective way of delivering the basic program curriculum in a compressed format during the summer semester. The ABC enables students from nonbusiness backgrounds to prepare quickly for the Advanced Program Courses. The classes offered include: ACCT 6010 (Financial and Managerial Accounting), BA 6410 (Corporate Finance Essentials), BA 6510 (Marketing Techniques), BA 6710 (Essentials of Operations Management), ECON 6050 (Fundamentals of Economics), MHR 6050 (Management Principles), and MHR 6070 (Fundamentals of Business Law). The ABC *does not* include MATH 1100 (Calculus) and STAT 2300 (Business Statistics); therefore, students who have not completed equivalent classes at the undergraduate level may be required to take these classes. Before enrolling for the ABC classes, students must be accepted into a College of Business graduate program.

Alternatively, students may acquire the necessary basic competencies by completing courses satisfying the following management-specific knowledge and skills requirement: ACCT 2010, 2020; BA 3400, 3500, 3700; ECON 1500, 2010; MHR 2050, 3110; MATH 1100; and STAT 2300. Students may not be required to take courses which duplicate prior academic or industrial training. Students must meet with the advisor of the MBA program to plan their course of study.

Advanced Program Courses (33 credits)

The advanced program courses, along with electives, consist of 33 credits. Students must complete the advanced program course requirements listed below. In addition, students may choose to select among several specializations, which are also described below. A specialization requires the student to complete additional courses beyond the 33 credits.

Students must complete the following six courses: ACCT 6350; BA 6420, 6520, 6720; and MHR 6500, 6890. Additionally, students must complete one course each in information systems (e.g., ACCT 6500), research methods (e.g., BUS 6860), quantitative analysis (e.g., ECON 6330), and business ethics (e.g., MHR 6770). These courses must be selected in consultation with the MBA program director. Also, students are required to attend a professional development program (BUS 6310) that begins in August before the start of classes and continues throughout the MBA program.

Specializations (12 credits)

Students may select a specialization in one of several areas listed below. Classes taken as part of the MBA advanced program courses cannot be used as part of a specialization. One course in each specialization will be designated as research intensive to meet the research methods requirement.

Accounting
To qualify for this specialization, students must complete at least 12 approved 6000-level accounting credits as part of their MBA program of study. Students must complete, or have previously completed, the equivalent of ACCT 3110, 3120, 3310, 3410, 4200, 4410, 4500, 4510, 6200, 6510, and 6610.

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 6550, 6620, 6630, 6640, 6670, and 6760.

Manufacturing Management
This specialization includes BA 5730, 6740; and MHR 6350, 6370.

Personal Financial Planning
This specialization consists of PFP 6060, 6070, and 6080. Students must have *either* already completed, *or* complete as part of their graduate work, the following courses: 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 financial aid must be made by **February 15**. A recipient of a graduate assistantship is usually eligible for a waiver of the out-of-state portion of his or her tuition.

MBA Association (MBAA)

The MBA Association (MBAA) provides USU students with an opportunity to enhance their professional and academic skills while building their resumes. Club members focus on career attainment and benefit from a forum for networking with faculty, alumni, and employers. The MBAA also works to increase awareness of the USU MBA program and assists the USU College of Business in developing an effective curriculum for the MBA program.

Master of Business Administration Faculty

Professors
Kenneth R. Bartkus, marketing and promotion management
Gaylen N. Chandler, human resources, management, and entrepreneurship
L. Dwight Israelsen, comparative systems and economic history
Richard L. Jenson, information systems and managerial accounting
I. Richard Johnson, accounting theory and research
Vijay R. Kannan, supply chain and quality management, cellular manufacturing
J. Robert Malko, corporate and energy utility finance
Glenn M. McEvoy, organizational behavior, human resources, and management
David H. Olsen, business information systems management
C. R. Michael Parent, marketing research and strategy
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 R. Callister, organization behavior, management
David H. Olsen, database manager
Alan A. Stephens, corporate finance and investments
Steven S. Vickner, applied econometrics

Adjunct Associate Professor
M. Harrison Kleiner, business ethics

Assistant Professors
Alison Cook, organizational behavior, human resource management
Konrad S. Lee, business ethics

Adjunct Assistant Professor
Nazih T. Al-Rashid, business ethics and social responsibility

Executive-in-Residence/Principal Lecturers
David Herrmann, management and entrepreneurship
Alan P. Warnick, human resources

MBA Courses

Descriptions of MBA courses can be found in the *Course Descriptions* section of this catalog.

Department of 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 Advisors:
Faculty advisors in the Department of Chemistry and Biochemistry are as follows:

Biochemistry:

Steven D. Aust, Biotechnology Center 213, (435) 797-2730, sdaust@cc.usu.edu

Scott A. Ensign, Widtsoe 239, (435) 797-3969, ensigns@cc.usu.edu

Chemistry:

Stephen E. Bialkowski, Maeser Lab 359, (435) 797-1907, stephen.bialkowski@usu.edu

Robert S. Brown, Widtsoe 206, (435) 797-0545, brownusu@cc.usu.edu

Steve Scheiner, Maeser Lab 140, (435) 797-7419, scheiner@cc.usu.edu

Vernon D. Parker, Widtsoe 345, (435) 797-1697, vparker@cc.usu.edu

For faculty advisor assignment, contact Department of Chemistry and Biochemistry at (435) 797-1619 or chemist@cc.usu.edu.

Degrees Offered: Bachelor of Science (BS), Bachelor of Arts (BA), Master of Science (MS), Doctor of Philosophy (PhD) in Chemistry; BS, MS, and PhD in Biochemistry; BS in Chemistry Teaching; BS in Composite Teaching—Physical Science (Chem)

Undergraduate emphases: *BS in Chemistry*—Professional Chemistry, Biochemistry, Environmental Chemistry, Chemical Education, Life Science

Graduate specializations: *Chemistry*—Analytical Chemistry, Inorganic Chemistry, Organic Chemistry, Physical Chemistry

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 in Chemistry** 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 **Bachelor of Science Degree in Biochemistry** encompasses the study of the properties and functions of biological macromolecules, the mechanisms of action of enzymes, gene and protein regulation and expression, bioenergetics, and the metabolic pathways and processes that use and generate chemical and light energy. At its core, biochemistry recognizes and explains the unifying chemical principles that lie at the heart of the diverse expressions of life.

The core courses for the major are built around two-semester course sequences in the areas of general, organic, and biological chemistry; general biology; calculus; and general physics, along with associated laboratory courses. Students may choose from two physics tracks: (1) the life sciences track (typically preferred by students with a more biological inclination) and (2) the science-engineering track (typically preferred by students with a more mathematical/physical inclination). One-semester courses in analytical and biophysical chemistry and statistics round out the core of the program. To complete the additional 18 credits of coursework required for the major, students may choose elective courses from within the disciplines of chemistry, biochemistry, and biology. A wide range of advanced courses are available to meet the advanced electives requirement; students are encouraged to meet with their academic advisor to select courses that provide the best preparation for their intended career path. Representative courses (not all encompassing) include those in biology (e.g., human physiology, genetics, ecology, microbiology, plant physiology, cell biology); biochemistry (e.g., enzymology, structured biology, bioenergetics and metabolism, protein structure/function); and chemistry (e.g., intermediate and advanced inorganic, advanced organic).

Department of Chemistry and Biochemistry

The biochemistry major differs from the "chemistry major with biochemistry emphasis," which is an American Chemical Society (ACS) certified degree that emphasizes specialization in biochemistry, but has a more chemical and mathematical emphasis than the biochemistry major. The biochemistry major is more biologically inclined (as well as somewhat less physically and mathematically inclined) than the chemistry major and is designed to meet the standards for the curriculum proposed by the American Society for Biochemistry and Molecular Biology (ASBMB).

The requirements of the BS and BA degrees in chemistry and the BS degree in biochemistry, 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 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.

Assessment

The Department of Chemistry and Biochemistry has implemented a multilayered assessment strategy that defines learning objectives at the following levels: individual courses, divisional levels, and at the overall program level for the chemistry major. Details of this strategy can be found at: **http://www.chem.usu.edu/pages/assessment.html**

Learning objectives for the Chemistry Major are specifically outlined in an organized matrix at:
http://www.chem.usu.edu/pages/assessment/matrix.pdf

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 the chemistry or biochemistry major in good standing.

Students interested in studying chemistry or biochemistry should take high school mathematics courses that will enable them to start calculus during their first semester at USU. High school coursework in chemistry, biology, and physics is also desirable. AP credit in chemistry may be counted toward the chemistry or biochemistry degree. For details, contact the departmental advising faculty.

No CHEM prefix course may be applied toward graduation with any major or minor in chemistry or biochemistry with an earned grade of less than *C-*. 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 or biochemistry 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.

Chemistry Major Core Requirements
Suggested Schedule
First Year (30-32 credits)
Fall Semester (15-16 credits)
CHEM 1210 Principles of Chemistry I 4
CHEM 1215 Chemical Principles Laboratory I 1
MATH 1210 (QL) Calculus I 4
University Studies courses 6-7

Spring Semester (15-16 credits)
CHEM 1220 (BPS) Principles of Chemistry II 4
CHEM 1225 Chemical Principles Laboratory II 1
MATH 1220 (QL) Calculus II 4
University Studies courses 6-7

Second Year (32-33 credits)
Fall Semester (16 credits)
CHEM 2310[2] Organic Chemistry I 4
CHEM 2315[2] Organic Chemistry Laboratory I 1
CHEM 3000 (QI) Quantitative Analysis 3
CHEM 3005 Quantitative Analysis Laboratory 1
PHYS 2210 (QI) General Physics—Science and Engineering I 4
MATH 2210 (QI) Multivariable Calculus 3

Spring Semester (16-17 credits)
CHEM 2320[3] Organic Chemistry II 4
CHEM 2325[3] Organic Chemistry Laboratory II 1
CHEM 3510 Intermediate Inorganic Chemistry 2
CHEM 3520 Inorganic Chemistry Laboratory 1
PHYS 2220 (QI/BPS) General Physics—Science and Engineering II .. 4
University Studies courses 4-5

Third Year (29-31 credits)
Fall Semester (14-16 credits)
CHEM 3060 (QI)[2] Physical Chemistry 3
CHEM 3080 (CI)[2] Physical Chemistry Laboratory I 1
CHEM 5700[2] General Biochemistry I 3
MATH 2250 (QI)[1] Linear Algebra and Differential Equations (4 cr) **or**
STAT 3000 (QI)[1] Statistics for Scientists (3 cr) ..... 3 or 4
University Studies or elective courses 4-5

Spring Semester (15 credits)
CHEM 3070 (QI)[3] Physical Chemistry 3
CHEM 3090 (CI)[3] Physical Chemistry Laboratory II 1
CHEM 5640[3] Instrumental Analysis 3
CHEM 5650[3] Instrumental Analysis Laboratory 2
University Studies or elective courses for specific degree emphasis 6

Fourth Year (31-32 credits)
CHEM 4990 (CI) Undergraduate Seminar 2
Upper-division and advanced elective courses for specific degree emphasis 29-30

[1] The completion of MATH 2250 or STAT 3000 is optional for the Teaching Major.

Chemistry Degree Emphases

Professional Chemistry Emphasis (ACS Certified)

In addition to the chemistry core, students must complete the following:
CHEM 5520[2] Advanced Inorganic Chemistry (F) 2
CHEM 5530[3] Advanced Synthesis Laboratory (Sp) 2
Advanced electives as approved by department 6

Department of Chemistry and Biochemistry

Biochemistry Emphasis (ACS Certified)

In addition to the chemistry core, students must complete the following:
CHEM 5710[3] General Biochemistry II (Sp) 3
CHEM 5720[3] General Biochemistry Laboratory (Sp) 2
BIOL 1610[2] Biology I (F) 4
Advanced Biology electives, as approved by department 4

Environmental Chemistry Emphasis (ACS Certified)

In addition to the chemistry core, students must complete the following:
CHEM 5670[3] Intermediate Environmental Chemistry (Sp).....3
CHEM 5680[3] Environmental Chemistry Laboratory (Sp) 2
Introductory environmental electives as approved by department 6-7
Advanced environmental electives as approved by department 3

Chemical Education Emphasis (ACS Certified)

In addition to the chemistry core, students must complete the following:
Required courses for the Secondary Teacher Education Program (STEP) (see details on page 207) 35
Teaching minor from outside the Department of Chemistry and Biochemistry 12-16

[2] Offered fall semester only
[3] Offered spring semester only

BS Degree in Chemistry with Honors

This option can be met by completing any ACS certified program and by meeting the following requirements:

1. Minimum GPA of 3.50 in chemistry courses
2. Overall GPA of 3.30
3. Completion of 15 credits of honors work as follows:

CHEM 4800H (CI) Research Problems (F, Sp, Su).....3-6
CHEM 4990H (CI) Undergraduate Seminar (F, Sp) 2
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 6000 or above.....3-6

In addition, select two courses from the following:
CHEM 2320H Organic Chemistry II (Sp).....4
CHEM 3070H (QI) Physical Chemistry (Sp).....3
CHEM 5640H Instrumental Analysis (Sp) 3
CHEM 5700H General Biochemistry I (F) 3

BS in Chemistry, Life Science Emphasis

In addition to the Chemistry Core Requirements (with the exception of CHEM 5640, 5650), students must complete the following:
BIOL 1610 Biology I (F).....4
BIOL 1620 (BLS) Biology II (Sp) (4 cr) **or**
BIOL 2420 Human Physiology (F,Sp,Su) (4 cr).....4
BIOL 3060 (QI) Principles of Genetics (F,Sp,Su) (4 cr) **or**
BIOL 3300 (BLS) General Microbiology (F,Sp) (4 cr) 4
CHEM 5710 General Biochemistry II (Sp).....3
CHEM 5720 General Biochemistry Laboratory (Sp) 2

BA in Chemistry

In addition to the chemistry core (with the exception of CHEM 5640, 5650), students must complete the following:
CHEM 5520 Advanced Inorganic Chemistry (F) (2 cr) **or**
CHEM 5640 Instrumental Analysis (Sp) (3 cr).....2 or 3
Completion of one foreign language (16 cr) **or**
Completion of two foreign languages (20 cr).....16 or 20

Chemistry Teaching Major

In addition to the Chemistry Core Requirements (with the exception of MATH 2250 or STAT 3000, and CHEM 5640 and 5650), students must complete the following:
SCI 4300 Science in Society (F,Sp) 2
Required courses for the Secondary Teacher Education Program (STEP) (see details on page 207) 35
Teaching minor from outside the Department of Chemistry and Biochemistry 12-16

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.

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 Principles of Chemistry I (F,Sp) 4
CHEM 1215 Chemical Principles Laboratory I (F,Sp) 1
CHEM 1220 (BPS) Principles of Chemistry II (F,Sp,Su) 4
CHEM 1225 Chemical Principles Laboratory II (F,Sp) 1

PHYS 2110 The Physics of Living Systems I (4 cr) **and**
PHYS 2120 (BPS) The Physics of Living Systems II (4 cr).....8
OR
PHYS 2210 (QI) General Physics—Science and Engineering I (4 cr) **and**
PHYS 2220 (QI/BPS) General Physics—Science and Engineering II (4 cr) 8
(PHYS 2210 and 2220 are preferred.)
This program does not include many aspects of the Chemistry Core.

Required Courses:
CHEM 1210 Principles of Chemistry I (F,Sp) 4
CHEM 1215 Chemical Principles Laboratory I (F,Sp) 1
CHEM 1220 (BPS) Principles of Chemistry II (F,Sp,Su) 4
CHEM 1225 Chemical Principles Laboratory II (F,Sp) 1
CHEM 2300 Principles of Organic Chemistry (F) (3 cr) **or**
CHEM 2310 Organic Chemistry I (F) (4 cr) .....3 or 4
CHEM 2315 Organic Chemistry Laboratory I (F) 1
PHYS 1040 (BPS) Introductory Astronomy 3
PHYS 1080 (BPS)[4] Intelligent Life in the Universe (3 cr) **or**
PHYS 3030 (DSC/QI) The Universe (3 cr) 3

PHYS 2110 The Physics of Living Systems I (4 cr) **and**
PHYS 2120 (BPS) The Physics of Living Systems II (4 cr).....8
OR
PHYS 2210 (QI) General Physics—Science and Engineering I (4 cr) **and**
PHYS 2220 (QI/BPS) General Physics—Science and Engineering II (4 cr) 8

MATH 1210 (QL) Calculus I (F,Sp,Su) 4
MATH 1220 (QL) Calculus II (F,Sp,Su) 4
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su) 3
SCI 4300 Science in Society (F,Sp) 2
BIOL 1010 (BLS) Biology and the Citizen (F,Sp,Su).....3
GEO 1110 (BPS) The Dynamic Earth: Physical Geology (F,Sp) 4
BMET 2000 (BPS) The Atmosphere and Weather (F,Sp) 3
Teacher licensure courses from Secondary Education (35 cr) (see details on page 207).....35
A teaching minor is optional for the Composite Teaching Major in the Physical Sciences.

[4] PHYS 1080 is sometimes listed as USU 1360, ST: Intelligent Life in the Universe.

Secondary Teacher Education Program (STEP) (35 credits)

Prior to enrolling in these courses, students must be approved for admission to the STEP by the College of Education and Human Services. The teaching major advisor can assist with this process.

An overall 2.75 GPA in a minimum of 60 semester credits of approved University coursework is required for admission into the STEP. A minimum overall GPA of 2.75 is required for graduation. Specific for admission to any Chemistry Teaching program, a student must have *at least* a 2.75 GPA in CHEM 1210, 1215, 1220, and 1225.

Beginning in 2006, all USU teacher education candidates will be required to take and pass the content exam approved by the Utah State Office of Education in their major content area prior to student teaching.

Students who may wish to teach Integrated Science at the middle or junior high school level should talk to their advisor about completing the courses necessary for an Integrated Science endorsement.

Level 1 (11 credits)

INST 3500 Technology Tools for Secondary Teachers (F,Sp,Su).....1
SCED 3100 Motivation and Classroom Management (F,Sp).....3
SCED 3210 (CI/DSS) Educational and Multicultural Foundations (F,Sp).....3
SCED 3300 Clinical Experience I (40 hours minimum) (F,Sp).....1
SCED 3400* Teaching Science I (F,Sp).....3

Level 2 (12 credits)

SPED 4000 Education of Exceptional Individuals (may be taken anytime) (F,Sp,Su).....2
SCED 4200 (CI) Reading, Writing, and Technology (F,Sp).....3
SCED 4210 Cognition and Evaluation of Student Learning (F,Sp).....3
SCED 4300 Clinical Experience II (40 hours minimum) (F,Sp).....1
SCED 4400* Teaching Science II (F,Sp).....3

Level 3 (12 credits)

SCED 5500 Student Teaching Seminar (2 weeks) (F,Sp).....2
SCED 5630 Student Teaching in Secondary Schools (13 weeks, full-time) (F,Sp).....10

Note: The courses in nonscience majors may differ from those listed here.

*The science methods courses (SCED 3400 and 4400) may *only* be taught *once per year*. Therefore, students should take whichever one is taught during the semester they are in Level 1 or Level 2.

Biochemistry Major (121-134 credits)

The following curriculum is required for the BS degree in biochemistry. To complete the degree in eight semesters (four academic years), students must register for an average of 15-16 credits per semester.

Note: Students may satisfy the CHEM 1210 requirement with an AP score of 3 or 4. *Both* CHEM 1210 *and* 1220 may be satisfied with an AP score of 5.

Suggested Schedule

First Year (30-32 credits)

Fall Semester (15-16 credits)
CHEM 1210 Principles of Chemistry I.....4
CHEM 1215 Chemical Principles Laboratory I.....1
MATH 1210 (QL) Calculus I.....4
University Studies courses.....6-7

Spring Semester (15-16 credits)
CHEM 1220 (BPS) Principles of Chemistry II.....4
CHEM 1225 Chemical Principles Laboratory II.....1
MATH 1220 (QL) Calculus II.....4
University Studies courses.....6-7

Second Year (32 credits)

Fall Semester (16 credits)
CHEM 2310[5] Organic Chemistry I.....4
CHEM 2315[5] Organic Chemistry Laboratory I.....1
BIOL 1610[5] Biology I.....4
PHYS 2110 The Physics of Living Systems I (4 cr) **or**
PHYS 2210 (QI) General Physics—Science and Engineering I (4 cr).....4
University Studies course(s).....3

Spring Semester (16 credits)
CHEM 2320[6] Organic Chemistry II.....4
CHEM 2325[6] Organic Chemistry Laboratory II.....1
BIOL 1620 (BLS)[6] Biology II.....4
PHYS 2120 (BPS) The Physics of Living Systems II (4 cr) **or**
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II (4 cr).....4
University Studies course(s).....3

Third Year (30-36 credits)

Fall Semester (15-18 credits)
CHEM 3000 (QI) Quantitative Analysis.....3
CHEM 3005 Quantitative Analysis Laboratory.....1
CHEM 5700[5] General Biochemistry I.....3
Advanced Biology Electives (2000 level or higher).....3-4
University Studies courses.....5-7

Spring Semester (15-18 credits)
CHEM 5710[6] General Biochemistry II.....3
CHEM 5720[6] General Biochemistry Laboratory.....2
STAT 3000 (QI) Statistics for Scientists.....3
Advanced Biology Electives (2000 level or higher).....3-4
University Studies courses.....4-7

Fourth Year (29-34 credits)

Fall Semester (14-17 credits)
CHEM 4890 (CI)[5] Undergraduate Biochemistry Seminar I.....1
CHEM 5070 Biophysical Chemistry.....3
Advanced elective coursework.....6-12
University Studies course(s).....0-3

Spring Semester (12-16 credits)
CHEM 4891 (CI)[6] Undergraduate Biochemistry Seminar II.....1
Advanced elective coursework.....6-12
University Studies course(s).....0-3

Preapproved Course Options for Biochemistry Major Electives (18 credits required for major)

Of the 18 credits required, 14 must be at the 3000 level or higher. Other upper-division courses may be substituted if approved by the department.

ADVS 3020 Biotechnology in Agriculture (F).....3
BIOL 2320 Human Anatomy (Sp,Su).....4
BIOL 2420 Human Physiology (F,Sp,Su).....4
BIOL 3060 (QI) Principles of Genetics (F,Sp,Su).....4
BIOL 3065 Genetics Laboratory (F).....2
BIOL 3300 General Microbiology (F,Sp).....4
BIOL 4000 Human Dissection (F).....1
BIOL 5210 Cell Biology (F).....3

BIOL 5230 Developmental Biology (Sp) 3
BIOL 5330 Virology (Sp) 3
CHEM 4800 (CI) Research Problems (F,Sp,Su) 3
CHEM 6730 Principles of Enzymology (Sp) 3
CHEM 6740 Cellular Communication by Small Molecules and Proteins (Sp) 3
CHEM 6750 Principles of Structural Biology (F) 3
CHEM 6760 Principles of Bioenergetics (F) 3

BS Degree in Biochemistry with Honors

A BS degree in Biochemistry with honors can be earned by meeting the following requirements:

1. Minimum GPA of 3.50 in chemistry courses
2. Overall GPA of 3.30
3. Completion of 15 credits of honors work, as follows:

CHEM 4800H (CI) Research Problems (F,Sp,Su).....3-6
CHEM 4890H (CI)[5] Undergraduate Biochemistry Seminar I 1
CHEM 4891H (CI)[6] Undergraduate Biochemistry Seminar II 1
3-6 credits selected from Honors courses numbered 3000 or higher in chemistry or related subjects, as appropriate. Three credits may be selected from chemistry courses numbered 6000 or higher 3-6

In addition, select two courses from the following:
CHEM 2320H Organic Chemistry II (Sp).....4
CHEM 5070H Biophysical Chemistry (F) 3
CHEM 5700H General Biochemistry I (F) 3
CHEM 5710H General Biochemistry II (Sp) 3

[5] Offered fall semester only
[6] Offered spring semester only

Chemistry Minor

In addition to CHEM 1210, 1215, 1220, and 1225, 10 additional credits in Chemistry prefix courses at the 2000 level or higher, as approved by department, are required (either CHEM 2300 or 2310 may be included).

Chemistry Teaching Minor

In addition to CHEM 1210, 1215, 1220, 1225, CHEM 2300 or 2310, and CHEM 2315, 3-4 additional credits selected from the following are required:

CHEM 2320 Organic Chemistry II (Sp) (if CHEM 2310 has been previously selected) 4
CHEM 3000 (QI) Quantitative Analysis (F).....3
CHEM 3060 (QI) Physical Chemistry (F).....3
CHEM 3510 Intermediate Inorganic Chemistry (Sp) (2 cr) **and**
CHEM 3520 Inorganic Chemistry Laboratory (Sp) (1 cr) 3
CHEM 3650 (DSC) Environmental Chemistry (Sp) (3 cr) **or**
CHEM 3700 Introductory Biochemistry (Sp) (3 cr).....3
Enrollment in the Secondary Teacher Education Program (STEP) (see details on page 207).....35

Undergraduate Research Opportunities

The Chemistry and Biochemistry Department encourages students in all departmental majors to engage in undergraduate research. For information about how they can become involved in undergraduate research, students should contact Joan Hevel, the departmental undergraduate research coordinator, (435) 797-1622, jhevel@cc.usu.edu.

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.

The major in Biochemistry is appropriate both for students who wish to terminate their studies at the bachelor's degree and for those planning to continue their education at the graduate or professional level. For those who terminate at the bachelor's degree, career opportunities are available in research and development, sales, quality control, and analysis within a range of biochemical, pharmaceutical, and biotechnological industries. For those planning to pursue a career in the health professions, the biochemistry major provides an excellent and well-rounded background for medical, dental, and veterinary school admission. The biochemistry major also provides excellent preparation for students planning to pursue graduate work in a range of biological, environmental, and chemical sciences, including biochemistry, molecular biology, genetics, genomics, oncology, and bioinformatics. For those students interested in pursuing a legal career in areas such as patent law, bioethics, and environmental protection and regulation, the major is also excellent preparation for law school.

For further information about career opportunities for chemistry majors and biochemistry majors, students should contact their advisor.

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. Minimum GPA requirements for participation in departmental honors vary by department, but usually fall within the range of 3.30-3.50. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level. The campus-wide Honors Program, which is open to all qualified students regardless of major, offers a rich array of cultural and social activities, special classes, and the benefit of Honors early registration. Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@cc.usu.edu. Additional information can be found online at: **http://www.usu.edu/honors/**

Additional Information

For more information about requirements for the majors and minors within the Chemistry and Biochemistry Department, see the major requirement sheets, available from the department, or online at: **http://www.usu.edu/majorsheets/**

Graduate Programs

Admissions Requirements

See the general admission requirements for the School of Graduate Studies (pages 101-102). 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 106-108), 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 chairperson of the Graduate Recruiting and Admissions Committee to be certain of their eligibility for this program. The chairperson will then submit an application to the department head and to the School of Graduate Studies for approval. Students must earn a satisfactory score 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 at least four of the graduate biochemistry core courses (CHEM 6700, 6710, 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 $18,000 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.

Department of Chemistry and Biochemistry

Chemistry and Biochemistry Faculty

Professors
Steven D. Aust, biochemistry
Stephen E. Bialkowski, analytical chemistry
Alexander I. Boldyrev, physical chemistry
Scott A. Ensign, biochemistry
David Farrelly, physical chemistry
Alvan C. Hengge, organic chemistry
Vernon D. Parker, physical organic chemistry
Steve Scheiner, computational chemistry
Lance C. Seefeldt, biochemistry

Trustee Professor Emeritus
Ann E. Aust, 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
Lisa M. Berreau, inorganic chemistry
Robert S. Brown, analytical chemistry
Cheng-Wei Tom Chang, organic chemistry
Bradley S. Davidson, organic chemistry
John L. Hubbard, inorganic chemistry

Assistant Professors
Joan M. Hevel, biochemistry
Sean J. Johnson, biochemistry
Philip J. Silva, analytical chemistry

Research Assistant Professors
Brett Barney, biochemistry
Tapas Kar, physical chemistry

Lecturer
Douglas G. Harris

Course Descriptions

Chemistry and Biochemistry (CHEM), pages 592-595

Department of Civil and Environmental Engineering

Department Head: William J. Rahmeyer
Location: Engineering Laboratory 211
Phone: (435) 797-2938
FAX: (435) 797-1185
E-mail: beckyjh@cc.usu.edu
WWW: http://www.engineering.usu.edu/cee

Undergraduate Advisor:
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Engineering Advising Center, Engineering 314A, (435) 797-2705
kathy@engineering.usu.edu

Environmental Engineering:
Engineering Advising Center, Engineering 314A, (435) 797-2705
kathy@engineering.usu.edu

Undergraduate Division Heads:
Civil Engineering:
Kevin C. Womack, Engineering Laboratory 276, (435) 797-1144,
kevin.womack@usu.edu

Environmental Engineering:
David K. Stevens, Engineering 216, (435) 797-3229,
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Graduate Program Division Heads:
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Geotechnical Engineering:
James A. Bay, Engineering Laboratory 266, (435) 797-2947
jim.bay@usu.edu

Structural Engineering:
Marvin W. Halling, Engineering Laboratory 264, (435) 797-3179,
halling@cc.usu.edu

Water Engineering:
Jagath J. Kaluarachchi, Engineering 227 or Utah Water Research Laboratory 248, (435) 797-3918, jkalu@cc.usu.edu

Transportation Systems Engineering:
Anthony Chen, Engineering 231, (435) 797-7109,
achen@cc.usu.edu

Degrees offered: Bachelor of Science (BS) in Civil Engineering; BS in Environmental Engineering; Master of Engineering (ME), Master of Science (MS), Civil Engineer (CE) and Doctor of Philosophy (PhD) in Civil and Environmental Engineering

Graduate specializations: Environmental Engineering, Fluid Mechanics and Hydraulic Engineering, Geotechnical Engineering, Hazardous Waste Management, Structural Engineering and Mechanics, Transportation Engineering, Water Engineering, Water Resources Engineering and Hydrology

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 ABET.

The objectives of the undergraduate programs in Civil Engineering and Environmental Engineering are to graduate engineers who have a solid educational foundation with broad experiences in engineering, the sciences, and the humanities; 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 the importance of ethical conduct and will be qualified to assume roles of leadership in business, community, government, and the engineering profession and contribute significantly to global 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.

Department of Civil and Environmental Engineering

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, air quality, 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. For more details, see the CEE assessment website at: **http://www.engineering.usu.edu/cee/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 16-20. 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 122-123.

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 at 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 121-123. 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 (128 credits)[1]

Pre-engineering Program: Freshman and Sophomore

Freshman Year (31-34 credits)

Fall Semester (16 credits)

MATH 1210 (QL)[2] Calculus I 4
CHEM 1210[2] Principles of Chemistry I 4
CHEM 1215[2] Chemical Principles Laboratory I 1
CEE 1880[2] Civil and Environmental Engineering Orientation and Computer Applications 1
CEE 2240[2] Engineering Surveying 3
University Studies Breadth course 3

Department of Civil and Environmental Engineering

Spring Semester (15-18 credits)
MATH 1220 (QL)[2] Calculus II 4
GEO 1110 (BPS)[2] The Dynamic Earth: Physical Geology (4 cr) **or**
GEOG 1000 (BPS) Physical Geography (3 cr) ..... 3 or 4
ETE 2270[2] Computer Engineering Drafting 2
BIOL 1010 (BLS) Biology and the Citizen 3
PHYS 2200 Elements of Mechanics (prereq. to PHYS 2220) ..... (2)
University Studies Breadth course 3

Sophomore Year (32 credits)

Fall Semester (16 credits)
PHYS 2220 (BPS/QI)[2] General Physics—Science and Engineering II (prereq. AP Physics or PHYS 2200) 4
MATH 2250 (QI)[2] Linear Algebra and Differential Equations 4
ENGR 2010[2] Engineering Mechanics Statics 2
ENGR 2200[2] Engineering Numerical Methods I 3
University Studies Breadth course 3

Spring Semester (16 credits)
ENGL 2010 (CL2)[2] Intermediate Writing: Research Writing in a Persuasive Mode 3
ENGR 2030[2] Engineering Mechanics Dynamics 3
ENGR 2140[2] Strength of Materials 2
ENGR 2450[2] Engineering Numerical Methods II 2
CEE 2870[2] Sophomore Seminar 1
CEE 3030[3] Uncertainty in Engineering Analysis 2
University Studies Breadth course 3

[1]Passing the Fundamentals of Engineering Exam is required for graduation. The exam is offered in October and April. Application must be made 120 days in advance. The exam is usually taken during fall semester of the junior or senior year.
[2]These courses are required for admission to the Professional Engineering Program (PEP).
[3]Students must have permission to take this junior-level class prior to admission to the Professional Engineering Program.

Professional Engineering Program: Junior and Senior

Junior Year (31 credits)

Fall Semester (15 credits)
CEE 3010 Mechanics of Materials 2
CEE 3500 Civil and Environmental Engineering Fluid Mechanics 3
CEE 3610[4] Environmental Management 3
CEE 3870 (CI)[4] Professional/Technical Writing in Civil and Environmental Engineering 2
CEE 4200 Engineering Economics 2
Engineering Science Elective 3

Spring Semester (16 credits)
CEE 3020 Structural Analysis 2
CEE 3510 Civil and Environmental Engineering Hydraulics 3
CEE 3880 Civil Engineering Design I 1
CEE Group A course[5] 3
CEE Group A course[5] 4
Engineering Science Elective 3

[4]CEE 3610 and 3870 must be taken concurrently.

Senior Year (33-35 credits)

Fall Semester (17 credits)
CEE 4870 (CI) Civil Engineering Design II 2
CEE Senior Design elective course[6] 3
CEE Technical Elective course[6] 3
CEE Technical Elective course[6] 3
CEE Technical Elective Group B course[6] 3
University Studies Depth Social Sciences (DSS) course 3

Spring Semester (16-18 credits)
CEE 4880 (CI) Civil Engineering Design III 2
CEE Group A course[5] 3
CEE Group A course[5] 3-4
CEE Group A course[5] 3
CEE Technical Elective course[6] 3
University Studies Depth Humanities and Creative Arts (DHA) course 2-3

[5]Students must complete all five Group A Courses, listed below. The order in which they are taken will dictate the choice of technical elective courses (as they are prerequisites for various technical elective courses).

Engineering Science Electives (6 credits minimum)
Students in the Civil Engineering program must complete two engineering science electives chosen from the three courses below. The addition of two engineering science courses in place of one technical elective is required of all students entering the Civil Engineering Professional Program August 2007 and beyond.

ETE 2210 Electrical Engineering for Nonmajors (F,Sp,Su) 4
MAE 2160 Material Science (F,Sp) 3
MAE 2300 Thermodynamics I (Sp,Su) 3

Group A Courses
CEE 3080 Design of Reinforced Concrete Structures (Sp) 3
CEE 3210 Introduction to Transportation Engineering (Sp) 3
CEE 3430 Engineering Hydrology (Sp) 3
CEE 3640 Water and Wastewater Engineering (Sp) (4 cr) **or**
CEE 3780 Solid and Hazardous Waste Management (F) (3 cr) **or**
CEE 5860 Air Quality Management (F) (3 cr) ..... 3 or 4
CEE 4300 Engineering Soil Mechanics (Sp) 4

[6]Civil Engineering students are required to complete a Senior Design elective course concurrent with CEE 4870. In addition, they must complete four Technical Elective Courses (one of which must be selected from Group B), for a total of 12 credits. Following is a list of Technical Elective Courses and Senior Design Elective Courses.

Technical Elective Courses (15 credits minimum required)
Students in the Civil Engineering program must complete a senior design elective (see list below). They must also establish proficiency in *at least four* areas of Civil Engineering by taking a *minimum of two courses* in each area. Proficiency in **Environmental Engineering** is established by taking BIOL 1010; CEE 3610; and CEE 3640, 3780, or 5860. Proficiency in **Structures** is established by taking ENGR 2010, 2140; and CEE 3010, 3020, 3080. Proficiency in **Fluid Mechanics and Hydraulics** is established by taking ENGR 2030; and CEE 3430, 3500, 3510. Students will also demonstrate proficiency in *one of* Geotechnical Engineering, Transportation Engineering, or Water Resources Engineering by taking a Group B course (see list below).

Proficiency in **Geotechnical Engineering** is established by taking ENGR 2030; GEO 1110 or GEOG 1000; CEE 4300; and *either* CEE 5350 or 5380. Proficiency in **Transportation Engineering** is established by taking CEE 3210; and *one of* CEE 5190, 5220, 5230, or 5240. Proficiency in **Water Resources Engineering** is established by taking CEE 3430; and *one of* CEE 5450, 5460, or 5470.

The sum of the Group B class, the Senior Design Elective, and other technical electives from the approved list must be at least 15 credits.

CEE 3670 Transport Phenomena in Bio-Environmental Systems (Sp) . 3
CEE 3780 Solid and Hazardous Waste Management (F) 3
CEE 5010 Matrix Analysis/Finite Element (F) 3
CEE 5050 Design of Wood and Masonry Structures (Sp) 3
CEE 5070 Structural Steel Design (F) 3
CEE 5080 Numerical Methods in Elasticity (F) 3
CEE 5100 Infrastructure Evaluation and Renewal (Sp) 3
CEE 5190 Geographic Information Systems for Civil Engineers (Sp) ... 3

CEE 5220 Traffic Engineering (Sp) 3
CEE 5230 Geometric Design of Highways (Sp) 3
CEE 5240 Urban and Regional Transportation Planning (F) 3
CEE 5350 Foundation Analysis and Design (F) 3
CEE 5380 Earthquake Engineering (Sp) 3
CEE 5430 Groundwater Engineering (F) 3
CEE 5450 Hydrologic Modeling (Sp) 3
CEE 5460 Water Resources Engineering (F) 3
CEE 5470 Sedimentation Engineering (Sp) 3
CEE 5500 Open Channel Hydraulics with an Emphasis on Gradually Varied Flow (F) 3
CEE 5540 Hydraulic Structures Design (F) 3
CEE 5550 Hydraulics of Closed Conduits (Sp) 3
CEE 5690 Natural Systems Engineering (F) 3
CEE 5700 Field Sampling Techniques for Natural Systems Engineering (F) 2
CEE 5720 Natural Systems Modeling (Sp) 3
CEE 5860 Air Quality Management (F) 3
CEE 5870 Hazardous Waste Incineration (Sp) 2
CEE 5880 Remediation Engineering (F) 3
CEE 5900 Cooperative Practice (F,Sp,Su) 3
MAE 2160 Material Science (F,Sp) 3
MAE 2300 Thermodynamics I (Sp,Su) 3

Senior Design Elective Courses
CEE 3780 Solid and Hazardous Waste Management (F) 3
CEE 5070 Structural Steel Design (F) 3
CEE 5230 Geometric Design of Highways (Sp) 3
CEE 5350 Foundation Analysis and Design (F) 3
CEE 5460 Water Resources Engineering (F) 3
CEE 5470 Sedimentation Engineering (Sp) 3
CEE 5500 Open Channel Hydraulics with an Emphasis on Gradually Varied Flow (F) 3
CEE 5540 Hydraulic Structures Design (F) 3

Group B Elective Courses
CEE 5190 Geographic Information Systems for Civil Engineers (Sp) 3
CEE 5220 Traffic Engineering (Sp) 3
CEE 5230 Geometric Design of Highways (Sp) 3
CEE 5240 Urban and Regional Transportation Planning (F) 3
CEE 5350 Foundation Analysis and Design (F) 3
CEE 5380 Earthquake Engineering (Sp) 3
CEE 5450 Hydrologic Modeling (Sp) 3
CEE 5460 Water Resources Engineering (F) 3
CEE 5470 Sedimentation Engineering (Sp) 3

Undergraduate Course Requirements for Environmental Engineering

Pre-engineering Program: Freshman and Sophomore

Freshman Year (29-31 credits)

Fall Semester (15 credits)
MATH 1210[8] **(QL)** Calculus I 4
BIOL 1610 (BLS)[7,8] Biology I 4
CEE 1880[8] Civil and Environmental Engineering Orientation and Computer Applications 1
CEE 2240[8] Engineering Surveying 3
University Studies Breadth course 3

Spring Semester (14-16 credits)
CHEM 1210[8] Principles of Chemistry I 4
CHEM 1215[8] Chemical Principles Laboratory I 1
MATH 1220 (QL)[8] Calculus II 4
ETE 2270[8] Computer Engineering Drafting 2
PHYS 2200 Elements of Mechanics (prereq. to PHYS 2220) ..... (2)
University Studies Breadth course 3

Sophomore Year (32 credits)

Fall Semester (16 credits)
MATH 2250 (QI)[8] Linear Algebra and Differential Equations 4
ENGR 2010[8] Engineering Mechanics Statics 2
ENGR 2200[8] Engineering Numerical Methods I 3
CHEM 2300[8] Principles of Organic Chemistry 3
PHYS 2220 (BPS/QI)[8] General Physics—Science and Engineering II (prereq: AP Physics or PHYS 2200) 4

Spring Semester (16 credits)
ENGR 2030[8] Engineering Mechanics Dynamics 3
ENGR 2140[8] Strength of Materials 2
ENGL 2010 (CL2)[8] Intermediate Writing: Research Writing in a Persuasive Mode 3
MAE 2300[8] Thermodynamics I (3 cr) **or**
BIE 2400 Biological and Environmental Thermodynamics (3 cr) 3
CEE 2890[8] Environmental Engineering Sophomore Seminar 1
BIOL 3300 (BLS)[7] General Microbiology 4

[7]The Breadth Life Science (BLS) area in the University Studies Program is satisfied by the combination of BIOL 1610 and 3300.
[8]These courses are required for admission to the Professional Engineering Program (PEP).

Professional Engineering Program: Junior and Senior

Junior Year (34 credits)

Fall Semester (17 credits)
CEE 3030 Uncertainty in Engineering Analysis 2
CEE 3500 Civil and Environmental Engineering Fluid Mechanics 3
CEE 3610[9] Environmental Management 3
CEE 3780 Solid and Hazardous Waste Management 3
CEE 3870 (CI)[9] Professional/Technical Writing in Civil and Environmental Engineering 2
SOIL 3000 Fundamentals of Soil Science 4

Spring Semester (17 credits)
CEE 3430 Engineering Hydrology 3
CEE 3510 Civil and Environmental Engineering Hydraulics 3
CEE 3640 Water and Wastewater Engineering 4
CEE 3670 Transport Phenomena in Bio-Environmental Systems 3
CEE 3890 Environmental Engineering Design I 1
University Studies Breadth course 3

Senior Year (30-31 credits)

Fall Semester (16 credits)
PUBH 3310 Occupational Health and Safety 3
CEE 4200 Engineering Economics 2
CEE 4790 (CI)[10] Environmental Engineering Design II 2
CEE 5610 Environmental Quality Analysis 3
CEE 5860 Air Quality Management 3
CEE Senior Design Elective course[10] 3

Spring Semester (14-15 credits)
CEE 4890 (CI) Environmental Engineering Design III 2
Technical Elective course (Area 1, 2, or 3)[11] 2
Technical Elective course (Area 4 or 5)[11] 2
University Studies Breadth course 3
University Studies Depth Humanities and Creative Arts (DHA) and Depth Social Sciences (DSS) courses 5-6

[9]CEE 3610 and 3870 must be taken concurrently.
[10]Environmental Engineering students are required to complete a Senior Design elective course concurrent with CEE 4790. Available Senior Design elective courses are listed below.
[11]Environmental Engineering students must select at least two Technical Elective courses (totaling 4 credits) chosen from the specialty areas (options) listed below.

Senior Design Elective Courses
CEE 5690 Natural Systems Engineering (F) 3
CEE 5810 Biochemical Engineering (F) 3
CEE 5830 Management and Utilization of Biological Solids and Wastewater (F) 3
CEE 5880 Remediation Engineering (F) 3

Technical Elective Courses
Solids—Area 1
CEE 5670 Hazardous Chemicals Handling and Safety (Sp) 2
CEE 5680 Soil-based Waste Management (Sp) 2
CEE 5730 Analysis and Fate of Environmental Contaminants (Sp) 3
CEE 5830 Management and Utilization of Biological Solids and Wastewater (F) 3
CEE 5870 Hazardous Waste Incineration (Sp) 2
CEE 5880 Remediation Engineering (F) 3

Water—Area 2
CEE 5430 Groundwater Engineering (F) 3
CEE 5620 Aquatic Chemistry (F) 3
CEE 5720 Natural Systems Modeling (Sp) 3
CEE 5730 Analysis and Fate of Environmental Contaminants (Sp) 3
CEE 5810 Biochemical Engineering (F) 3

Air—Area 3
BMET 4300 General Meteorology (F) 3
CEE 5710 Pollution Prevention and Industrial Ecology (Sp, Alt Years) . 2
CEE 5750 Air Quality Measurements (Sp) 2
CEE 5790 Accident and Emergency Management (Sp) 3
CEE 5870 Hazardous Waste Incineration (Sp) 2

Natural Systems—Area 4
CEE 5690 Natural Systems Engineering (F) 3
CEE 5700 Field Sampling Techniques for Natural Systems Engineering (F) 2
WATS 4500 Limnology: Ecology of Inland Waters (Sp) 3
WATS 4530 Water Quality and Pollution (Sp) 3

Occupational Safety and Health—Area 5
PUBH 4310 Industrial Hygiene Recognition of Hazards (F) 4
PUBH 4320 Industrial Hygiene Chemical Hazard Evaluation (Sp) 3
PUBH 4330 Industrial Hygiene Physical Hazards (Sp) 3
PUBH 5330 (QI) Industrial Hygiene Chemical Hazard Control (F) 3
CEE 5670 Hazardous Chemicals Handling and Safety (Sp) 2
CEE 5710 Pollution Prevention and Industrial Ecology (Sp) 2
CEE 5790 Accident and Emergency Management (Sp) 3

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school.

In the Department of Civil and Environmental Engineering, 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.

Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@cc.usu.edu. Additional information can be found online at: **http://www.usu.edu/honors/**

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, or online at: **http://www.usu.edu/majorsheets/**

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, pages 123-124.)

Graduate Programs

The ME degree emphasizes professional practice 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 an area of specialization approved by the student's supervisory committee.

Admission Requirements

See general admission requirements, pages 101-102. 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 systems, 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; Watershed Sciences; Economics; Geology; Biological and Irrigation Engineering; Mechanical and Aerospace Engineering; and Plants, Soils, and Biometeorology. 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 fluid flow and transport of contaminants in the subsurface environment. It encompasses the theory of flow in porous media; groundwater hydrology; 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, capture zone analysis, well hydraulics, subsurface cleanup technologies, health risk assessment, 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.

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 representative 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 Engineering

The graduate program in Transportation 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.

Department of Civil and Environmental Engineering

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
Thomas B. Hardy, ecological system modeling, statistical analysis
Jagath J. Kaluarachchi, subsurface hydrology, water resources
Mac McKee, water resources planning and analysis
William J. Rahmeyer, hydraulics, hydraulic structures, scour and erosion
David K. Stevens, treatment process analysis
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 Emeritus
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
Elliot 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
Steve C. Chapra, water-quality modeling
George G. Goble, deep foundations and structural dynamics
Roger D. Hansen, water resources
Jeffrey R. Keaton, geotechnical engineering, engineering geology
Upmanu Lall, climate modeling, statistical hydrology, water resource systems
Christopher M. U. Neale, remote sensing, biological and irrigation engineering
Neil Parrett, performance and safety of dams
Norman E. Stauffer, Jr., engineering hydrology and computer modeling
Alan Steinberg, road maps for intelligence
Daniel A. Stone, environmental chemistry

Associate Professors
James A. Bay, geotechnical engineering
Joseph A. Caliendo, geotechnical engineering
Anthony Chen, network analysis and logistics, transportation planning
Marvin W. Halling, structural dynamics, earthquake engineering
Sonia S. Manuel-Dupont, technical communication
Randal S. Martin, environmental engineering (air pollution)
Michael J. McFarland, environmental engineering (biosolids)
Laurie S. McNeill, environmental engineering (drinking water)
Robert T. Pack, geomatics and engineering geology
Gilberto E. Urroz-Aguire, hydraulics, hydraulic structures

Research Associate Professor
Joan E. McLean, fate and behavior of metals in the subsurfaces

Adjunct Associate Professors
Danny Marks, snow hydrology
Eva C. Nieminski, water quality
Anthony Turhollow, transportation
Ross A. Woods, water

Associate Professor Emeritus
J. Derle Thorpe, engineering materials, measurements

Assistant Professors
Paul J. Barr, reinforced concrete, bridge design
Luis Bastidas, hydrology
Keri L. Ryan, structural dynamics, structural control
Blake P. Tullis, hydraulics, hydraulics structures, and hydromachinery

Research Assistant Professors
Sanjay Chauhan, dam safety, risk assessment, hydrologic modeling
Michael C. Johnson, hydraulics
Bethany T. Neilson, environmental engineering

Adjunct Assistant Professors
Steven L. Barfuss, hydraulics
Charles H. Luce, forest hydrology

Affiliate Faculty
Robert W. Hill, professor, Biological and Irrigation Engineering; irrigation and water resource extension
John E. Keith, professor, Economics
Jack Keller, professor emeritus, Biological and Irrigation Engineering; sprinkle and drip irrigation
Gary P. Merkley, professor, Biological and Irrigation Engineering; conveyance systems
Judith L. Sims, research associate professor, Biological and Irrigation Engineering; soil biology
Ronald C. Sims, Department Head and professor, Biological and Irrigation Engineering; biological process engineering
Wynn R. Walker, professor, Biological and Irrigation Engineering; Associate Dean, College of Engineering; surface irrigation

Course Descriptions

Civil and Environmental Engineering (CEE), pages 585-592

Classics Minor

Coordination: Mark L. Damen, Susan O. Shapiro, and Frances B. Titchener, Department of History
Location: Main 323
Phone: (435) 797-1290
FAX: (435) 797-3899
E-mail: mdamen@hass.usu.edu, shapiros@hass.usu.edu, f.b.titchener@usu.edu
WWW: http://www.usu.edu/history/classics/index.htm

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

Requirements for the three emphasis areas are as follows:

Classics Minor with Emphasis in Civilization

Twenty-one credits of coursework are required. All students must take:
HIST 3130 (CI/DHA) Greek History....3
HIST 3150 (CI) Roman History (Sp)....3

One of the following two courses in ancient archaeology is required:
HIST 3110 (CI/DHA) Ancient Near East....3
ANTH 2030 (BSS/CI) World Archeology (F,Sp)....3

One of the following three ancient literature courses is required:
CLAS 1100 The Latin and Greek Element in English (F,Sp)....3
CLAS 3210 Classical Mythology (F,Sp)....3
THEA 5290 Special Topics in Theatre History and Literature (F,Sp)....3

One of the following two ancient art courses is required:
HIST 4210 Celtic Europe (F,Sp)....3
ART 4710 Greek and Roman Art....3

One of the following three ancient thought courses is required:
HIST 3140 Greek Intellectual History: Tradition, Challenge, and Response....3
POLS 4310 (CI) History of Political Thought I (Sp)....3
PHIL 3100 (CI) Ancient Philosophy (F)....3

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 (Roman History) 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 Greek and Roman Art....3
CLAS 1100 The Latin and Greek Element in English (F,Sp)....3
CLAS 3210 Classical Mythology (F,Sp)....3
HIST 4210 Celtic Europe (F,Sp)....3
THEA 5290 Special Topics in Theatre History and Literature (F,Sp)....3

Classics Minor with Emphasis in Greek Language

Thirteen credits are required. All students must complete HIST 3130 (Greek History) 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 Greek and Roman Art....3
CLAS 1100 The Latin and Greek Element in English (F,Sp)....3
CLAS 3210 Classical Mythology (F,Sp)....3
HIST 3140 Greek Intellectual History: Tradition, Challenge, and Response....3
PHIL 3100 (CI) Ancient Philosophy (F)....3
THEA 5290 Special Topics in Theatre History and Literature (F,Sp)....3

Approved courses for the various minors are listed in the brochure titled *Classical Studies*. Brochures are available from the Department of History, Main 323.

Course Descriptions

Classics (CLAS), page 595
Greek (GRK), page 639
Latin (LATN), page 658

Department of Communicative Disorders and Deaf Education

Department Head: Beth E. Foley
Location: Lillywhite 103
Phone: (435) 797-3924
FAX: (435) 797-0221
E-mail: bethf@cc.usu.edu
WWW: http://www.cehs.usu.edu/comd

Assistant Department Head and Advisor for Speech-Language Pathology and Audiology:
Dee R. Child, Lillywhite 112, (435) 797-2318, deec@cc.usu.edu

Advisor for Deaf Education:
Jan Kelley-King, Lillywhite 40, (435) 797-5718, jankin@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*—Communicative Disorders, Education of the Deaf and Hard of Hearing

Graduate specializations: *MS, MA, MEd*—Speech-Language Pathology; *MEd*—Education of the Deaf and Hard of Hearing; *EdS*—Audiology

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 graduate programs in both Speech-Language Pathology and Clinical-Educational Audiology are accredited by the Council on Academic Accreditation in Audiology and Speech-Language Pathology (CAA) of the American Speech-Language Hearing Association. 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.

Undergraduate Programs

Requirements

Departmental Admissions Requirements (Audiology and Speech-Language Pathology)

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 and Human Services 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, the College of Education and Human Services Writing Examination 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.

Departmental Admissions Requirements (Education of the Deaf and Hard of Hearing)

Students admitted to the University in good standing may major in the composite degree in Deaf Education/Elementary Education (DEEE). Upon completion of 30 semester credits, students may apply for admission to the teacher education program. Admission criteria include a cumulative GPA of 2.75, a passing score on the College of Education and Human Services Writing Examination, a speech and hearing test, successful performance on the ACT exam, computer skills competency, and high potential as a teacher, as judged by performance in a small-group interview. Students must also complete the following courses prior to application: ELED 1010, ENGL 1010, FCHD 1500, MATH 1050, one Breadth American Institutions (BAI) course, one Breadth Physical Sciences (BPS) course, and one Breadth Humanities (BHU) or Breadth Creative Arts (BCA) course. Students who are accepted into the teacher education program may continue with the Deaf Education coursework, if they continue to improve in their use of American Sign Language, and if they continue to receive grades of no less than a *B-* in all of their COMD courses.

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.

Suggested Semester Schedule for Communicative Disorders and Deaf Education Majors (Audiology and Speech-Language Pathology)

Note: A minimum 3.0 overall GPA is required for admission to the professional program during the junior year. Prior to beginning the program, each student should meet with a departmental advisor to work out a specific academic plan, tailored to meet the individual student's needs.

Junior Year (28 credits)
Fall Semester (15 credits)
COMD 2400 Orientation and Observation 1
COMD 2500 Language, Speech, and Hearing Development 3
COMD 3100 Fundamentals of Anatomy for Speech and Language 3
COMD 3500 Phonetics/Developmental Phonology 3
SPED 4000 Education of Exceptional Individuals 2
Electives 3

Spring Semester (13 credits)
COMD 3120 Disorders of Articulation and Phonology 3
COMD 3400 Acoustics and Anatomy of the Ear 3
COMD 5100 Language Science 3
PSY 1100 Developmental Psychology: Infancy and Childhood 3
Elective 1

Senior Year (28 credits)
Fall Semester (16 credits)
COMD 2910 (CI) Sign Language I (Majors) 4
COMD 3700 Basic Audiology 3
COMD 5070 Speech Science 3
STAT 1040 (QL) Introduction to Statistics 3
Depth Humanities and Creative Arts (DHA) course 3

Spring Semester (12 credits)
COMD 3650 (CI) Clinical Processes and Behavior 2
COMD 5200 Language Assessment and Intervention for Preschool Children 4
COMD 5330 Aural Rehabilitation 3
Electives 3

Suggested Schedule for Deaf Education/ Elementary Education Composite Majors

Students wishing to obtain teacher certification in Elementary Education and Deaf Education must complete the undergraduate requirements for the composite major and complete a two-semester graduate program during which student teaching requirements are fulfilled. There is no certification available at the bachelors' degree level.

Freshman Year (34 credits)
Fall Semester (15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
Breadth American Institutions (BAI) course (major approved) 3
Breadth Humanities (BHU) course (major approved) 3
Breadth Life Sciences (BLS) course (major approved) 3
Breadth Physical Sciences (BPS) course (major approved) 3

Spring Semester (19 credits)
COMD 2910 (CI) Sign Language I 4
ELED 1010 Orientation to Elementary Education 3
FCHD 1500 (BSS) Human Development Across the Lifespan 3
MATH 1050 (QL) College Algebra 4
HEP 3500 Elementary School Health Education (2 cr) **or**
HEP 2000 First Aid and Emergency Care (2 cr) 2
Breadth Creative Arts (BCA) course (major approved) 3

Sophomore Year (36 credits)
Fall Semester (18 credits)
Level II Courses (Students must be admitted to the program.)
ELED 3000 (CI) Foundation Studies and Practicum in Teaching and Classroom Management Level II 8
SPED 4000 Education of Exceptional Individuals 2
PSY 3660 Educational Psychology for Teachers 2
INST 4010 Principles and Practices of Technology for Elementary Teachers 3
ELED 3100 Teaching Reading I 3

Spring Semester (18 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Breadth Physical Sciences (BPS) course (major approved) 3
Breadth Social Sciences (BSS) course (major approved) 3
MATH 2020 (QI) Introduction to Logic and Geometry (Prereq: MATH 1050; or ACT of 25 or higher) 3
MUSC 3260 Elementary School Music 2
COMD 3910 Sign Language II 4

Junior Year (34 credits)
Fall Semester (18 credits)
STAT 1040 (QL) Introduction to Statistics 3
COMD 2500 Language, Speech, and Hearing Development 3
PEP 3050 Physical Education in the Elementary School 3
COMD 5610 Introduction to Education of the Deaf and Hard of Hearing 3
Depth Humanities and Creative Arts (DHA) Course 3
Depth Life and Physical Sciences (DSC) Course 3

Spring Semester (16 credits)
COMD 3080 American Sign Language Practicum 1
Level III in Elementary Education:
ELED 4000 Teaching Science and Practicum Level III 3
ELED 4030 (CI) Teaching Language Arts and Practicum Level III 3
ELED 4040 (CI) Teaching Reading II and Practicum Level III 3
ELED 4050 Teaching Social Studies and Practicum Level III 3
ELED 4060 Teaching Mathematics and Practicum Level III 3

Senior Year (32 credits)
Fall Semester (16 credits)
COMD 4750 Teaching the English Language to Individuals who are Deaf and Hard of Hearing 3
COMD 4770 Audiology and Teachers of Children who are Deaf and Hard of Hearing 3
COMD 4780 Socio-Cultural Aspects of Deafness 3
COMD 4910 (CI) Sign Language III 4
COMD 5740 Teaching Reading to Deaf and Hard of Hearing Children 3

Spring Semester (16 credits)
COMD 4630 Teaching Speech to Deaf and Hard of Hearing Children 3
COMD 4790 Psychological Principles and Individuals who are Deaf and Hard of Hearing 3
COMD 4920 Sign Language IV 4
COMD 5600 Classroom Teaching Using American Sign Language 3
COMD 5620 Teaching School Subjects to Students who are Deaf and Hard of Hearing 3

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.

Department of Communicative Disorders and Deaf Education

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:

A. Lower-division Core Courses (12-13 credits)
MATH 1010 Intermediate Algebra (F,Sp,Su) (3 cr) **or**
MATH 1050 (QL) College Algebra (F,Sp,Su) (4 cr) 3-4
STAT 1040 (QL) Introduction to Statistics (F,Sp,Su) 3
CS 1030 (BPS) Foundations of Computer Science (F,Sp,Su) (3 cr) **or**
OSS 1400 Microcomputer Applications (F,Sp,Su) (3 cr) 3
PSY 1010 (BSS) General Psychology (F,Sp,Su) 3

B. Extra-departmental Core Courses (13 credits)
BIOL 1010 (BLS) Biology and the Citizen (F,Sp,Su) 3
BIOL 2320 Human Anatomy (Sp,Su) (4 cr) **or**
BIOL 2420 Human Physiology (F,Sp,Su) (4 cr) 4
PSY 1100 Developmental Psychology: Infancy and Childhood 3
SPCH 2110 (CI) Interpersonal Communication (F,Sp) 3

C. Course Required for State Licensure (2 credits)
SPED 4000 Education of Exceptional Individuals (F,Sp,Su) 2

D. Communicative Disorders Major Core Requirements (39-40 credits)
COMD 2400 Orientation and Observation (F,Sp) 1
COMD 2500 Language, Speech, and Hearing Development (F,Sp) 3
COMD 2910 (CI) Sign Language I (Majors) (F,Sp,Su) 4
COMD 3100 Fundamentals of Anatomy for Speech and Language (F) 3
COMD 3120 Disorders of Articulation and Phonology (Sp) 3
COMD 3400 Acoustics and Anatomy of the Ear (Sp) 3
COMD 3500 Phonetics/Developmental Phonology (F) 3
COMD 3650 (CI) Clinical Processes and Behavior (Sp) 2
COMD 3700 Basic Audiology (F) 3
COMD 4400 Clinical Practicum in Audiology (F,Sp,Su) 1-2
COMD 5070 Speech Science (F) 3
COMD 5100 Language Science (Sp) 3
COMD 5200 Language Assessment and Intervention for Preschool Children (Sp) 4
COMD 5330 Aural Rehabilitation (Sp) 3

E. Upper-division Electives, Preapproved by Department (12 credits)

Online Post-bachelor's Degree in Communicative Disorders

Nationally there is a critical need for master's-level or doctoral-level professionals in the field of communicative disorders. Many individuals already holding bachelor's degrees who would like to pursue these professions are lacking the required undergraduate prerequisites needed to be considered for admission into graduate programs. The Department of Communicative Disorders and Deaf Education at Utah State University has developed an online second bachelor's degree program to help fulfill this need. In order to be accepted into this program, students must have received a bachelor's degree from an accredited U.S. or Canadian university in another discipline.

This second bachelor's degree program consists of 12 COMD online courses. The entire program may be completed during three semesters, but can be "stretched out" over a longer period if desired. All courses will be taught on the Internet by independent study and distance education.

A 3.0 cumulative GPA within the first bachelor's degree is ***strongly recommended***. However, students having a GPA below 3.0 will still be considered for admission. All students should make note of the following policy:

Admission into graduate school programs is very competetive. A competitive grade point average from this second bachelor's degree program will greatly increase the likelihood of being admitted into graduate school. For this reason, students in USU's second bachelor's degree program must maintain at least a 3.0 GPA in order to continue in the program. Students who fall below the 3.0 GPA at the end of any semester will not be allowed to continue until they raise their GPA back to 3.0 or higher by retaking courses.

Applicants may transfer to USU up to 6 credits of undergraduate communicative disorders courses. These credits must have been completed as part of an ASHA accredited program. In order to use these courses to replace equivalent courses within USU's program, permission must be granted by USU's COMD advisor (Dee Child).

Required Courses

It is *strongly recommended* (but not required) that the following courses be taken in the order shown below.

Semester 1
COMD 2500 Language, Speech, and Hearing Development 3
COMD 3100 Fundamentals of Anatomy for Speech and Language 3
COMD 3500 Phonetics/Developmental Phonology 3
COMD 5100 Language Science 3

Semester 2
COMD 3120 Disorders of Articulation and Phonology 3
COMD 3400 Acoustics and Anatomy of the Ear 3
COMD 3650 (CI) Clinical Processes and Behavior 2
COMD 5330 Aural Rehabilitation 3

Semester 3
COMD 3700 Basic Audiology 3
COMD 5070 Speech Science 3
COMD 5200 Language Assessment and Intervention for Preschool Children 4
COMD 5900 Independent Study: Observation/Graduate Preparation 2

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. Minimum GPA requirements for participation in departmental honors vary by department, but usually fall within the range of 3.30-3.50. Students may enter the Honors Program at

almost any stage in their academic career, including at the junior (and sometimes senior) level. The campus-wide Honors Program, which is open to all qualified students regardless of major, offers a rich array of cultural and social activities, special classes, and the benefit of Honors early registration. Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@cc.usu.edu. Additional information can be found online at: **http://www.usu.edu/honors/**

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 online at: **http://www.usu.edu/majorsheets/**. Additional information may also be found at the departmental website:
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. (Students already having a bachelor's degree in another area must *either* complete a second bachelor's degree in Communicative Disorders *or* take the undergraduate Communicative Disorders courses as postbachelor's courses.) 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.

In addition to School of Graduate Studies admission requirements, students must demonstrate competency in American Sign Language, in order to be admitted to the education of the deaf and hard of hearing 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 have the skills 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 certification from ASHA and licensure from the State of Utah Board of Education. Additionally, these students will have met the academic and practicum requirements for professional licensure from the State of Utah. Upon graduation, students are prepared for employment in both educational and health care settings, where qualified providers of diagnostic and treatment services for individuals with communicative disorders are needed.

Education of the Deaf and Hard of Hearing

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 provided.

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 Language, Speech, and Hearing Development (F,Sp).....3
COMD 2910 (CI) Sign Language I (Majors) (F,Sp,Su).....4
COMD 3050 Practicum and Methods in Teaching Children who are Deaf and Hard of Hearing (F,Sp).....1-3
COMD 3080 American Sign Language Practicum (F,Sp).....1
COMD 3910 Sign Language II (F,Sp,Su).....4
COMD 4630 Teaching Speech to Deaf and Hard of Hearing Children (Sp).....3

COMD 4750 Teaching the English Language to Individuals who are Deaf and Hard of Hearing (F) 3
COMD 4760 Early Intervention for Children who are Deaf and Hard of Hearing (F) 3
COMD 4770 Audiology and Teachers of Children who are Deaf and Hard of Hearing (F) 3
COMD 4780 Socio-Cultural Aspects of Deafness (F) 3
COMD 4790 Psychological Principles and Individuals who are Deaf and Hard of Hearing (Sp) 3
COMD 4910 (CI) Sign Language III (F,Sp) 4
COMD 4920 Sign Language IV (Sp) 4
COMD 5610 Introduction to Education of the Deaf and Hard of Hearing (F) 3
COMD 5620 Teaching School Subjects to Students who are Deaf and Hard of Hearing (Sp) 3
COMD 6430 Speech Communication and Hearing Loss (F) 3
COMD 6640 Strategies for Teaching Children who are Deaf and Hard of Hearing (F) 3
COMD 6650 Strategies for Teaching English Language to Children who are Deaf and Hard of Hearing (F) 3
COMD 6700 Practicum in Education of Children who are Deaf and Hard of Hearing (F,Sp,Su) 1-3
COMD 6800 Student Teaching—Day-School Program (F) 6-12
COMD 6820 Principles of Intervention for Children who are Deaf and Hard of Hearing (Sp) 3
COMD 6830 Student Teaching—Residential (Sp) 6-12
COMD 6850 Seminar in Communicative Disorders and Deaf Education (F,Sp,Su) 1-3

Course Requirements

Graduate Courses in Speech-Language Pathology

Year One:

Fall Semester
COMD 6020 Language Assessment and Intervention for School-age Children and Adolescents 4
COMD 6030 Disorders of Fluency—Stuttering 3
COMD 6050 Professional Practice in Speech-Language Pathology 1
COMD 6100 Advanced Clinical Practicum in Speech-Language Pathology 1-4
COMD 6130 Neuropathologies of Speech and Language 4

Spring Semester
COMD 6040 Communication Disorders Related to Orofacial Anomalies 3
COMD 6100 Advanced Clinical Practicum in Speech-Language Pathology 1-4
COMD 6120 Adult Disorders of Motor Speech and Swallowing 4
COMD 6220 Severe Communication Impairments 3
COMD 6810 Disorders of Phonation 3

Summer Semester
EDUC 6550 Research for Classroom Teachers (3 cr) **or**
EDUC 6570 Introduction to Educational Psychological Research (3 cr) 3

Year Two:

Fall Semester
COMD 6050 Professional Practice in Speech-Language Pathology 1
COMD 6140 Pediatric Neurogenic Disorders 3
COMD 6200 Internship in Public Schools—Speech-Language Pathology 4-5
COMD 6210 Bilingual/Bicultural Services 2

Spring Semester
COMD 6300 Externship in Speech-Language Pathology 1-12
COMD 6970 Thesis 1-7

Graduate Courses in Audiology

Year One:

Fall Semester
COMD 7200 Introduction to Clinical Practice 2
COMD 7310 Psychoacoustics and Instrumentation 3
COMD 7380 Advanced Audiology 2
COMD 7820 Research Seminar in Audiology 1

Spring Semester
COMD 5330 Aural Rehabilitation (3 cr) **or**
EDUC 6570 Introduction to Educational and Psychological Research (3 cr) 3
COMD 7200 Introduction to Clinical Practice 2
COMD 7320 Amplification I 3
COMD 7340 Pediatric Audiology 3
COMD 7490 Medical Aspects of Audiology 3

Summer Semester
EDUC 6570 Introduction to Educational and Psychological Research . 3

Year Two:

Fall Semester
COMD 7300 Intermediate Clinical Practicum 2
COMD 7420 Amplification II 3
COMD 7430 Electrophysiology 3
EDUC 6600 Measurement, Design, and Analysis I 3

Spring Semester
COMD 6370 Educational Audiology 3
COMD 7300 Intermediate Clinical Practicum 2
COMD 7460 Adult Aural Rehabilitation 3
COMD 7530 Balance Evaluation and Management 3
COMD 7820 Research Seminar in Audiology 1

Summer Semester (Optional)
COMD 7300 Intermediate Clinical Practicum 2

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 1** is followed by students who have obtained their bachelor's degree in Deaf Education/ Elementary Education. **Track 2** is followed by students coming into the program without the required background in Deaf Education, but who have received a bachelor's degree in Elementary Education, Secondary Education, or Special Education. **Track 3** follows the program outlined for those students who do not want a teaching license, but who wish to work with families of deaf children in an early intervention program. This track provides students with an early intervention endorsement, for serving families who have deaf children, ages birth to three years.

Track 1 (one-year program)

For students who have obtained their bachelor's degree in Deaf Education/Elementary Education.

Fall Semester (18 credits)
COMD 6640 Strategies for Teaching Children who are Deaf and Hard of Hearing 3

COMD 6650 Strategies for Teaching English Language to Children who are Deaf and Hard of Hearing....3
COMD 6800 Student Teaching—Day-School Program (8 weeks at the Utah School for the Deaf) 10
COMD 6850 Seminar: Education of Children who are Deaf and Hard of Hearing....2

Spring Semester (18 credits)
COMD 6820 Principles of Intervention for Children who are Deaf and Hard of Hearing....3
COMD 6830 Student Teaching—Residential (6 weeks at one level and 6 weeks at a different level)....12
COMD 6850 Seminar in Communicative Disorders and Deaf Education 3

Track 2 (two-year program)
For students coming into the program without the required background in Deaf Education, but who have received a bachelor's degree in Elementary Education, Secondary Education, or Special Education.

Year One:
Fall Semester (19 credits)
COMD 5610 Introduction to Education of the Deaf and Hard of Hearing....3
COMD 6740 Teaching Reading to Deaf and Hard of Hearing Children 3
COMD 6750 Teaching the English Language to Individuals who are Deaf and Hard of Hearing 3
COMD 6770 Audiology and Teachers of Children who are Deaf and Hard of Hearing....3
COMD 6780 Socio-Cultural Aspects of Deafness 3
COMD 6910 Sign Language III 4

Spring Semester (19 credits)
COMD 2500 Language, Speech, and Hearing Development (must be taken sometime)....3
COMD 5600 Classroom Teaching Using American Sign Language....3
COMD 5620 Teaching School Subjects to Students who are Deaf and Hard of Hearing 3
COMD 6630 Teaching Speech to Deaf and Hard of Hearing Children..3
COMD 6790 Psychological Principles and Individuals who are Deaf and Hard of Hearing....3
COMD 6920 Sign Language IV....4

Year Two:
Fall Semester (14 credits)
COMD 6640 Strategies for Teaching Children who are Deaf and Hard of Hearing....3
COMD 6650 Strategies for Teaching English Language to Children who are Deaf and Hard of Hearing....3
COMD 6800 Student Teaching—Day-School Program (8 weeks at the Utah School for the Deaf) 8

Spring Semester (15 credits)
COMD 6830 Student Teaching—Residential 12
COMD 6850 Seminar in Communicative Disorders and Deaf Education 3

Track 3
Early Childhood Focus (one-year program)
This early intervention program is for students wishing to work with families who have deaf children who are between birth and 3 years of age. Students must have completed the necessary background in Early Childhood and Family, Consumer, and Human Development.

Fall Semester (16 credits)
COMD 3910 Sign Language II 4
COMD 5610 Introduction to Education of the Deaf and Hard of Hearing....3
COMD 6760 Early Intervention for Children who are Deaf and Hard of Hearing....3
COMD 6770 Audiology and Teachers of Children who are Deaf and Hard of Hearing (3 cr) **or**
COMD 7340 Pediatric Audiology (instructor's permission required) (3 cr)....3
COMD 6780 Socio-Cultural Aspects of Deafness 3

Spring Semester (15 credits)
COMD 4910 (CI) Sign Language III 4
COMD 6630 Teaching Speech to Deaf and Hard of Hearing Children..3
COMD 6960 Master's Project....2
SPED 5060 Consulting with Parents and Teachers (instructor's permission required)....3
SPED 5730 Intervention Strategies for Young Children with Disabilities (instructor's permission required)....3

Summer Semester (8 credits)
COMD 6700 Practicum in Education of Children who are Deaf and Hard of Hearing....3
COMD 6960 Master's Project....2
SPED 5710 Young Children with Disabilities: Characteristics and Services (taught online; register through Extension)....3

In order to earn the MEd from the Education of the Deaf and Hard of Hearing program, the student must (a) pass a sign language competency examination, (b) complete a creative project, or (c) pass a comprehensive written and oral examination. The candidate must also demonstrate the ability to teach children who are deaf and/or hard of hearing in a variety of settings.

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 or speech-language pathology and with foci 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.

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.

Department of Communicative Disorders and Deaf Education

Course Requirements

A. Required Courses

All requirements for the undergraduate major in Communicative Disorders and Deaf Education must be taken in addition to the following graduate courses:

COMD 6370 Educational Audiology (F) 3
COMD 6780 Socio-Cultural Aspects of Deafness (F) 3
COMD 7200[1] Introduction to Clinical Practice (F,Sp,Su)....4
COMD 7300[1] Intermediate Clinical Practicum (F,Sp,Su)....4
COMD 7310 Psychoacoustics and Instrumentation (F) 3
COMD 7320 Amplification I (Sp) 3
COMD 7340 Pediatric Audiology (Sp)....3
COMD 7380 Advanced Audiology (F) 2
COMD 7400 Advanced Clinical Practicum (F,Sp,Su)....2
COMD 7410 Noise and Hearing Conservation (F)....2
COMD 7420 Amplification II (F)....3
COMD 7430 Electrophysiology (F)....3
COMD 7460 Adult Aural Rehabilitation (Sp)....3
COMD 7470 Educational Audiological Management (F)....3
COMD 7490 Medical Aspects of Audiology (Sp) 3
COMD 7530 Balance Evaluation and Management (Sp)....3
COMD 7800[1] Clinical Externship in Audiology (F,Sp,Su) 12
COMD 7820[1] Research Seminar in Audiology (F) 4
COMD 7850[1] Externship Seminar (F,Sp,Su)....6
COMD 7860 Practice Management in Audiology (Sp) 3
COMD 7870[1] Audiology Capstone Project (F,Sp,Su)....12
EDUC 6570 Introduction to Educational and Psychological Research (F,Sp,Su)....3
EDUC 6600 Measurement, Design, and Analysis I (F,Sp,Su)....3

B. Elective Courses

COMD 6680 SKI*HI Training (F,Sp,Su)....1-3
SPED 6500 Interdisciplinary Workshop (F,Sp,Su)....1-3

[1]In order to earn the required number of credits, students must take this course, which is repeatable for credit, during more than one semester.

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 student 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 graduate 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 age 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, rehabilitation, and educational 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, Dean, College of Education and Human Services; language development, language assessment and intervention, language disorders in school-age students, research methodology in communicative disorders, narrative assessment and literature-based language intervention

Lillywhite Endowed Chair and Professor

Ron Gillam, language development, language assessment and intervention, narrative development, memory, phonological representation

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
Jeffrey Bennion, MD, otolaryngologist
James Blotter, MD, otolaryngologist
Jeffrey Keyser, MD, otolaryngologist
Bryan R. Larsen, MD, gastroenterologist
Gordon S. Wood, MD, otolaryngologist

Associate Professors
Kim Corbin-Lewis, diagnosis and management of voice disorders, laryngeal imaging, speech science, 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
Sandi Gillam, language assessment and intervention, evidence-based practice, text comprehension, memory, language difference, phonology
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, hearing conservation, balance studies

Adjunct Associate Professor
Douglas W. Laws, clinical audiology

Assistant Professors
Jeffery Larsen, classroom acoustics, speech perception
Jaclyn Littledike, orofacial anomalies, professional practice issues, and clinical supervision
Susan Watkins, early intervention programs, sensory impaired infants and toddlers
Julie Wolter, school-age language, literacy

Assistant Clinical Professor
Vicki Simonsmeier, pediatric neurogenic disorders, oral-motor dysphagia, early intervention programs, audiology, auditory processing, 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
Heather Jo Jensen, clinical supervision, amplification, medical audiology
Jan Kelley-King, American Sign Language, deaf education

Course Descriptions

Communicative Disorders and Deaf Education (COMD), pages 595-599

Department of Computer Science

Department Head: Donald H. Cooley
Location: Main 414
Phone: (435) 797-2451
FAX: (435) 797-3265
E-mail: usucs@cs.usu.edu
WWW: http://www.cs.usu.edu/

Associate Head and Coordinator for Graduate Programs in Computer Science:
Stephen J. Allan, Main 420, (435) 797-2587, steve.allan@usu.edu

Undergraduate Advisor:
Myra Cook, Main 424, (435) 797-8019, myra.cook@usu.edu

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, Information Systems, Parallel Systems, Software Engineering

Accreditation: The Computer Science undergraduate program (Science, Digital Systems, Bioinformatics, and Information Systems emphases) 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 website: **http://www.cs.usu.edu/**. The outcome objectives for undergraduates are as follows.

Learning Objectives: Undergraduate Outcomes

All students graduating with a bachelor's degree in Computer Science from Utah State University will be expected to show mastery in the following.

1. Graduates will be proficient in programming in at least two programming languages that 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 that 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.

Assessment

The Computer Science Department has an ongoing assessment process that it highly values. Faculty members devote much of their time and resources to frequent assessment of the level or degree to which stated objectives are being met, the objectives themselves, and the departmental mission statement. The department then uses these results to establish priorities and guide the program. For further information, go to **http://www.cs.usu.edu/**, and click on **assessment**.

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 that 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. This emphasis might be termed the "typical" computer science degree.

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.

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 that straddle information technology and business, in both the private and public sectors.

Information Systems Emphasis
The Information Systems Emphasis (IS) is designed for students interested in careers as computer scientists specializing in information systems. Majors in this option are trained in all phases of the analysis, design, and implementation of information systems. They also gain an understanding of business fundamentals. Students are, thus, prepared to apply their computing expertise in a business environment.

The Information Systems program at Utah State University offers a common core of courses through two department majors: (1) **Computer Science** and (2) **Management Information Systems**. The curricula of the individual departments differ substantially in emphasis.

The Computer Science major with an Information Technology emphasis is designed for students interested in a career as a Computer Scientist with a background in Information Systems and Technology. Majors in this emphasis are trained in all phases of the analysis, design, and implementation of information systems. They also gain an understanding of business fundamentals. Thus, students are prepared to apply their computing expertise in a business environment. 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 Management Information Systems major, Managerial emphasis, is offered in the Management Information Systems Department, College of Business (see page 391). 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. MIS 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 Management Information Systems with a specialization in Management Information Systems. See page 392 for additional details.

Undergraduate Research

The Computer Science Department provides opportunities for undergraduates to participate in research projects. Additionally, a student may register for CS 4950 (Undergraduate Research, 1-4 credits) to receive credit for their research. To learn about research opportunities, students should contact Computer Science faculty members. Students may work on a project of their own under faculty supervision, or they may do research as part of a faculty member's research team. For further information, contact Dan Watson, the department's coordinator of undergraduate research, at (435) 797-2440 or dan.watson@usu.edu.

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 may substitute MATH 1100.*

2. MATH 3310 (Discrete Mathematics). *Not required for students in the Information Technology Emphasis.*

3. One of the following year-long science sequences: (1) BIOL 1610, 1620 (required for Bioinformatics Emphasis); (2) CHEM 1210, 1215, 1220, 1225; (3) PHYS 2210, 2220 (required for Digital Systems Emphasis); (4) PHYS 2110, 2120 (available for Information Technology Emphasis only); or (5) GEO 1110, 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 16-20. 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 classes 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

Department of Computer Science

standing or written permission to register for Computer Science courses or Electrical and Computer Engineering courses at the 3000-level or above.

In addition to completing the required courses listed below, students must comply with the following regulations, in order to graduate with a bachelor's degree in Computer Science.

1. Students must maintain a minimum cumulative GPA of 2.5. The cumulative GPA will be computed using all USU credits, as well as transfer credits (if those transfer credits are applied to any USU requirements, including major requirements).

2. Students must attain a minimum grade of *C-* in all courses fulfilling Computer Science major requirements.

3. Students may have *no more than six* repeats among courses fulfilling Computer Science major requirements. A grade of *WF* is considered as a repeat. If a course is repeated, the final grade achieved will be used in determining a student's advanced standing GPA.

4. Students may have *no more than one* 5000-level Computer Science course with a grade less than *C-* on their transcript.

Courses Required for Advanced Standing
Students must achieve a minimum cumulative GPA of 2.5, a minimum GPA of 2.5 (or grade of *C-* or better) among courses in one of the following core emphasis course sequences, or their equivalent, as determined by the Computer Science Department:

Science Emphasis
CS 1400 Introduction to Computer Science—CS 1 (F,Sp,Su) 3
CS 1405 Introduction to Computer Science—CS 1 Lab (F,Sp,Su) 1
CS 1410 (QI) Introduction to Computer Science—CS 2 (F,Sp,Su) 3
CS 2420 (QI) Algorithms and Data Structures—CS 3 (F,Sp,Su).....3
CS 2450 (CI) Software Engineering (F,Sp) 3
CS 2550 Computer Organization (F,Sp).....3
CS 3000 Undergraduate Seminar (F,Sp) 1
MATH 1210 (QL) Calculus I (F,Sp,Su) 4
MATH 1220 (QL) Calculus II (F,Sp,Su) 4
MATH 3310 Discrete Mathematics (F,Sp,Su).....3

Digital Systems Emphasis
CS 1400 Introduction to Computer Science—CS 1 (F,Sp,Su) 3
CS 1405 Introduction to Computer Science—CS 1 Lab (F,Sp,Su) 1
CS 1410 (QI) Introduction to Computer Science—CS 2 (F,Sp,Su) 3
CS 2420 (QI) Algorithms and Data Structures—CS 3 (F,Sp,Su).....3
CS 2450 (CI) Software Engineering (F,Sp) 3
CS 3000 Undergraduate Seminar (F,Sp) 1
ECE 2700 Digital Circuits (F,Sp) 4
MATH 1210 (QL) Calculus I (F,Sp,Su) 4
MATH 1220 (QL) Calculus II (F,Sp,Su) 4
MATH 3310 Discrete Mathematics (F,Sp,Su).....3

Information Systems Emphasis
CS 1400 Introduction to Computer Science—CS 1 (F,Sp,Su) 3
CS 1405 Introduction to Computer Science—CS 1 Lab (F,Sp,Su) 1
CS 1410 (QI) Introduction to Computer Science—CS 2 (F,Sp,Su) 3
CS 2420 (QI) Algorithms and Data Structures—CS 3 (F,Sp,Su).....3
CS 2450 (CI) Software Engineering (F,Sp) 3
CS 2550 Computer Organization (F,Sp).....3
CS 3000 Undergraduate Seminar (F,Sp) 1
MATH 1210 (QL) Calculus I (F,Sp,Su) 4
MATH 1220 (QL) Calculus II (F,Sp,Su) 4
MATH 3310 Discrete Mathematics (F,Sp,Su).....3

Bioinformatics Emphasis
CS 1400 Introduction to Computer Science—CS 1 (F,Sp,Su) 3
CS 1405 Introduction to Computer Science—CS 1 Lab (F,Sp,Su) 1
CS 1410 (QI) Introduction to Computer Science—CS 2 (F,Sp,Su) 3
CS 2420 (QI) Algorithms and Data Structures—CS 3 (F,Sp,Su).....3
CS 2450 (CI) Software Engineering (F,Sp) 3
CS 2550 Computer Organization (F,Sp).....3
CS 3000 Undergraduate Seminar (F,Sp) 1
MATH 1210 (QL) Calculus I (F,Sp,Su) 4
MATH 1220 (QL) Calculus II (F,Sp,Su) 4
MATH 3310 Discrete Mathematics (F,Sp,Su).....3

Information Technology Emphasis
CS 1030 (BPS) Foundations of Computer Science (F,Sp,Su) 3
CS 1400 Introduction to Computer Science—CS 1 (F,Sp,Su) 3
CS 1405 Introduction to Computer Science—CS 1 Lab (F,Sp,Su) 1
CS 1410 (QI) Introduction to Computer Science—CS 2 (F,Sp,Su) 3
CS 2420 (QI) Algorithms and Data Structures—CS 3 (F,Sp,Su).....3
CS 2450 (CI) Software Engineering (F,Sp) 3
CS 2550 Computer Organization (F,Sp).....3
CS 3000 Undergraduate Seminar (F,Sp) 1
MATH 1100 (QL) Calculus Techniques (F,Sp,Su) 3

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.

First Semester Schedule (15 credits)
Depending upon emphasis, a new student's first semester schedule is configured from the following:
CS 1400 Introduction to Computer Science—CS 1 3
CS 1405 Introduction to Computer Science—CS 1 Lab 1
MATH 1210 (QL) Calculus I *(for Science, IS, DS, or BI Emphasis)* (4 cr) **or**
MATH 1100 (QL) Calculus Techniques *(for IT Emphasis)* (3 cr) ....3 or 4
University Studies courses 7-8

COMPUTER SCIENCE REQUIRED COURSES
Science Emphasis
CS 1400 Introduction to Computer Science—CS 1 (F,Sp,Su) 3
CS 1405 Introduction to Computer Science—CS 1 Lab (F,Sp,Su) 1
CS 1410 (QI) Introduction to Computer Science—CS 2 (F,Sp,Su) 3
CS 2420 (QI) Algorithms and Data Structures—CS 3 (F,Sp,Su).....3
CS 2450 (CI) Software Engineering (F,Sp) 3
CS 2550 Computer Organization (F,Sp).....3
CS 3000 Undergraduate Seminar (F,Sp) 1
CS 3100 Operating Systems and Concurrency (F,Sp).....3
CS 4700 Programming Languages (F,Sp) 3
CS 5050 Advanced Algorithms (F,Sp) 3
CS 5070 Computer Science Capstone (F,Sp,Su) 1
MATH 1210 (QL) Calculus I (F,Sp,Su) 4
MATH 1220 (QL) Calculus II (F,Sp,Su) 4
MATH 2210 (QI) Multivariable Calculus (F,Sp,Su) 3
MATH 2250 (QI) Linear Algebra and Differential Equations (F,Sp,Su)..4
MATH 3310 Discrete Mathematics (F,Sp,Su).....3

MATH 5610 Computational Linear Algebra and Solution of Systems of Equations (F) 3
PHIL 1120 (BHU) Social Ethics (F) (3 cr) **or**
PHIL 2400 (BHU) Ethics (Sp) (3 cr) **or**
PHIL 3520 (DHA) Business Ethics (Sp) (3 cr) **or**
PHIL 4530 (DSC) Ethics and Biotechnology (Sp) (3 cr) **or**
PHIL 4540 (DHA) Human Values and Information Technology (Sp) (3 cr) 3
SPCH 1020 (CI) Public Speaking (F,Sp) 3
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su) (3 cr) **or**
MATH 5710 Introduction to Probability (F,Sp) (3 cr) 3
Advisor-approved computer science classes numbered 5000 or above 13
In addition, students must complete 6 credits at the 3000 level or higher, appropriate to the degree.

Digital Systems Emphasis
CS 1400 Introduction to Computer Science—CS 1 (F,Sp,Su) 3
CS 1405 Introduction to Computer Science—CS 1 Lab (F,Sp,Su) 1
CS 1410 (QI) Introduction to Computer Science—CS 2 (F,Sp,Su) 3
CS 2420 (QI) Algorithms and Data Structures—CS 3 (F,Sp,Su) 3
CS 2450 (CI) Software Engineering (F,Sp) 3
CS 3000 Undergraduate Seminar (F,Sp) 1
CS 3100 Operating Systems and Concurrency (F,Sp) 3
CS 4700 Programming Languages (F,Sp) 3
CS 5050 Advanced Algorithms (F,Sp) 3
CS 5070 Computer Science Capstone (F,Sp,Su) 1
ECE 2270 Electrical Circuits (F,Sp) 4
ECE 2700 Digital Circuits (F,Sp) 4
ECE 3710 Microcomputer Hardware and Software (F,Sp) 4
ECE 3720 Microcomputer Systems Programming (Sp) 3
MATH 1210 (QL) Calculus I (F,Sp,Su) 4
MATH 1220 (QL) Calculus II (F,Sp,Su) 4
MATH 2250 (QI) Linear Algebra and Differential Equations (F,Sp,Su) .. 4
MATH 3310 Discrete Mathematics (F,Sp,Su) 3
PHIL 1120 (BHU) Social Ethics (F) (3 cr) **or**
PHIL 2400 (BHU) Ethics (Sp) (3 cr) **or**
PHIL 3520 (DHA) Business Ethics (Sp) (3 cr) **or**
PHIL 4530 (DSC) Ethics and Biotechnology (Sp) (3 cr) **or**
PHIL 4540 (DHA) Human Values and Information Technology (Sp) (3 cr) 3
SPCH 1020 (CI) Public Speaking (F,Sp) 3
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su) 3
Advisor-approved computer science classes numbered 5000 or above 13
In addition, students must complete 6 credits at the 3000 level or higher, appropriate to the degree.

Information Systems Emphasis
ACCT 2010 Survey of Accounting I (F,Sp,Su) 3
ACCT 2020 Survey of Accounting II (F,Sp,Su) 3
BA 3080 (QI) Operations Research (F) 3
CS 1400 Introduction to Computer Science—CS 1 (F,Sp,Su) 3
CS 1405 Introduction to Computer Science—CS 1 Lab (F,Sp,Su) 1
CS 1410 (QI) Introduction to Computer Science—CS 2 (F,Sp,Su) 3
CS 2420 (QI) Algorithms and Data Structures—CS 3 (F,Sp,Su) 3
CS 2450 (CI) Software Engineering (F,Sp) 3
CS 2550 Computer Organization (F,Sp) 3
CS 2810 Computer Organization and Architecture (F,Sp) 3
CS 3000 Undergraduate Seminar (F,Sp) 1
CS 3100 Operating Systems and Concurrency (F,Sp) 3
CS 4700 Programming Languages (F,Sp) 3
CS 5050 Advanced Algorithms (F,Sp) 3
CS 5070 Computer Science Capstone (F,Sp,Su) 1
ECON 1500 (BAI)[1] Introduction to Economic Institutions, History, and Principles (F,Sp) 3
MATH 1210 (QL) Calculus I (F,Sp,Su) 4
MATH 1220 (QL) Calculus II (F,Sp,Su) 4
MATH 3310 Discrete Mathematics (F,Sp,Su) 3
MHR 3110 (DSS)[2] Managing Organizations and People (F,Sp,Su) 3
PHIL 1120 (BHU) Social Ethics (F) (3 cr) **or**
PHIL 2400 (BHU) Ethics (Sp) (3 cr) **or**
PHIL 3520 (DHA) Business Ethics (Sp) (3 cr) **or**
PHIL 4530 (DSC) Ethics and Biotechnology (Sp) (3 cr) **or**
PHIL 4540 (DHA) Human Values and Information Technology (Sp) (3 cr) 3
SPCH 1020 (CI) Public Speaking (F,Sp) 3
STAT 2300 (QL) Business Statistics (F,Sp,Su) 4
Advisor-approved computer science classes numbered 5000 or above 13

In addition, the IS Emphasis requires CS 5800 and one course selected from the following list. These courses will be counted among the CS 5000 or above elective courses.
CS 5370 Advanced Software Engineering (F) 3
CS 5700 Object-Oriented Software Development (F) 3
CS 5850 Systems Analysis (Sp) 3

[1] ECON 1500 fulfills the University Studies Breadth American Institutions (BAI) requirement.
[2] MHR 3110 fulfulls the University Studies Depth Social Science (DSS) requirement.

Bioinformatics Emphasis
CS 1400 Introduction to Computer Science—CS 1 (F,Sp,Su) 3
CS 1405 Introduction to Computer Science—CS 1 Lab (F,Sp,Su) 1
CS 1410 (QI) Introduction to Computer Science—CS 2 (F,Sp,Su) 3
CS 2420 (QI) Algorithms and Data Structures—CS 3 (F,Sp,Su) 3
CS 2450 (CI) Software Engineering (F,Sp) 3
CS 2550 Computer Organization (F,Sp) 3
CS 2810 Computer Organization and Architecture (F,Sp) 3
CS 3000 Undergraduate Seminar (F,Sp) 1
CS 3100 Operating Systems and Concurrency (F,Sp) 3
CS 4700 Programming Languages (F,Sp) 3
CS 5050 Advanced Algorithms (F,Sp) 3
CS 5070 Computer Science Capstone (F,Sp,Su) 1
CS 5660 Bioinformatics I (F) 3
CS 5670 Bioinformatics II (Sp) 3
CS 5800 Introduction to Database Systems (F) 3
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su) 3
MATH 1210 (QL) Calculus I (F,Sp,Su) 4
MATH 1220 (QL) Calculus II (F,Sp,Su) 4
MATH 2250 (QI) Linear Algebra and Differential Equations (F,Sp,Su) (4 cr) **or**
MATH 2270 (QI) Linear Algebra (F) (3 cr) ..... 3 or 4
MATH 3310 Discrete Mathematics (F,Sp,Su) 3
BIOL 3100 (CI) Bioethics (Sp) 3
BIOL 3060 (QI) Principles of Genetics (F,Sp,Su) 4
CHEM 1110 (BPS) General Chemistry I (F,Sp) (4 cr) **or**
CHEM 1210 Principles of Chemistry (F,Sp) (4 cr) 4
SPCH 1020 (CI) Public Speaking (F,Sp) 3
Statistical Methods in Bioinformatics course (currently being developed)
Advisor-approved computer science classes numbered 5000 or above 3
Advisor-approved electives 12-13
Students are strongly encouraged to take BIOL 5730 and its prerequisites to fill this elective requirement.

Information Technology Emphasis
ACCT 2010 Survey of Accounting I (F,Sp,Su) 3
ACCT 2020 Survey of Accounting II (F,Sp,Su) 3
BA 3080 (QI) Operations Research (F) 3

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BA 3400 (QI) Corporate Finance (F,Sp,Su) 3
BA 3500 Fundamentals of Marketing (F,Sp,Su) 3
CS 1030 (BPS) Foundations of Computer Science (F,Sp,Su) 3
CS 1400 Introduction to Computer Science—CS 1 (F,Sp,Su) 3
CS 1405 Introduction to Computer Science—CS 1 Lab (F,Sp,Su) 1
CS 1410 (QI) Introduction to Computer Science—CS 2 (F,Sp,Su) 3
CS 2420 (QI) Algorithms and Data Structures—CS 3 (F,Sp,Su) 3
CS 2450 (CI) Software Engineering (F,Sp) 3
CS 2550 Computer Organization (F,Sp) 3
CS 2810 Computer Organization and Architecture (F,Sp) 3
CS 3000 Undergraduate Seminar (F,Sp) 1
CS 3010 (DSC/CI/QI) Information Acquisition, Analysis, and Presentation (F,Sp,Su) 3
CS 3100 Operating Systems and Concurrency (F,Sp) 3
CS 4700 Programming Languages (F,Sp) 3
CS 4720 Computer Networking I (F) 3
CS 5050 Advanced Algorithms (F,Sp) 3
CS 5070 Computer Science Capstone (F,Sp,Su) 1
CS 5800 Introduction to Database Systems (F) 3
CS 5850 Systems Analysis (Sp) 3
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp) 3
MATH 1100 (QL) Calculus Techniques (F,Sp,Su) 3
MHR 3110 (DSS) Managing Organizations and People (F,Sp,Su) 3
MHR 3710 Developing Team and Interpersonal Skills (F,Sp) 3
PHIL 1120 (BHU) Social Ethics (F) (3 cr) **or**
PHIL 2400 (BHU) Ethics (Sp) (3 cr) **or**
PHIL 3520 (DHA) Business Ethics (Sp) (3 cr) **or**
PHIL 4530 (DSC) Ethics and Biotechnology (Sp) (3 cr) **or**
PHIL 4540 (DHA) Human Values and Information Technology (Sp) (3 cr) 3
STAT 2300 (QL) Business Statistics (F,Sp,Su) 4
Advisor-approved computer science classes numbered 5000 or above 10
Advisor-approved electives 1-2

Suggested Four-year Plan for Science Emphasis

Freshman Year (32 credits)

Fall Semester (16 credits)
CS 1400 Introduction to Computer Science—CS 1 3
CS 1405 Introduction to Computer Science—CS 1 Lab 1
MATH 1210 (QL) Calculus I 4
USU 1010 University Connections 2
Two University Studies breadth courses 6

Spring Semester (16 credits)
CS 1410 Introduction to Computer Science—CS 2 3
MATH 1220 (QL) Calculus II 4
SPCH 1020 (CI) Public Speaking 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
One University Studies breadth course 3

Sophomore Year (29-31 credits)

Fall Semester (16-17 credits)
CS 2420 (QI) Algorithms and Data Structures—CS 3 3
CS 2550 Computer Organization 3
MATH 2210 (QI) Multivariable Calculus 3
Science Sequence I course 4-5
One University Studies breadth course 3

Spring Semester (13-14 credits)
CS 2450 (CI) Software Engineering 3
CS 2810 Computer Organization and Architecture 3
CS 3000 Undergraduate Seminar 1
MATH 3310 Discrete Mathematics 3
Science Sequence II course, having BLS or BPS designation 3-4

Junior Year (30-32 credits)

Fall Semester (16 credits)
CS 3100 Operating Systems and Concurrency 3
CS 4700 Programming Languages 3
MATH 2250 (QI) Linear Algebra and Differential Equations 4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
One University Studies breadth course 3

Spring Semester (14-16 credits)
CS 5050 Advanced Algorithms 3
CS 5000-level elective course 3-4
Upper-division MATH or STAT course 3
One University Studies depth course 3
One extra science course 2-3

Senior Year (28-31 credits)

Fall Semester (13-15 credits)
CS 5070 Computer Science Capstone 1
CS 5000-level elective courses 9-11
One University Studies depth course 3

Spring Semester (15-16 credits)
CS 3000-level elective course 3
CS 5000-level elective course 3-4
Upper-division MATH or STAT course 3
Extra University Studies course 3
Advisor-approved elective course 3

Suggested Four-year Plan for Digital Systems Emphasis

Freshman Year (32 credits)

Fall Semester (16 credits)
CS 1400 Introduction to Computer Science—CS 1 3
CS 1405 Introduction to Computer Science—CS 1 Lab 1
MATH 1210 (QL) Calculus I 4
USU 1010 University Connections 2
Two University Studies breadth courses 6

Spring Semester (16 credits)
CS 1410 Introduction to Computer Science—CS 2 3
MATH 1220 (QL) Calculus II 4
SPCH 1020 (CI) Public Speaking 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
One University Studies breadth course 3

Sophomore Year (31 credits)

Fall Semester (17 credits)
CS 2420 (QI) Algorithms and Data Structures—CS 3 3
ECE 2700 Digital Circuits 4
MATH 3310 Discrete Mathematics 3
PHYS 2210 (QI) General Physics—Science and Engineering I 4
One University Studies breadth course 3

Spring Semester (14 credits)
CS 2450 (CI) Software Engineering 3
CS 3000 Undergraduate Seminar 1
PHYS 2220 (QI/BPS) General Physics—Science and Engineering II .. 4
CS 3100 Operating Systems and Concurrency 3
One University Studies breadth course 3

Junior Year (31-34 credits)
Fall Semester (15-17 credits)
CS 4700 Programming Languages 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
MATH 2250 (QI) Linear Algebra and Differential Equations 4
One extra science course 2-3
CS 5000-level elective course 3-4

Spring Semester (16-17 credits)
CS 5050 Advanced Algorithms 3
ECE 2270 Electrical Circuits 4
CS 5000-level elective course 3-4
One University Studies depth course 3
CS 3000-level elective course course 3

Senior Year (26-28 credits)
Fall Semester (14-15 credits)
ECE 3710 Microcomputer Hardware and Software 4
CS 5070 Computer Science Capstone 1
STAT 3000 (QI) Statistics for Scientists 3
CS 5000-level elective course 3-4
Extra University Studies course 3

Spring Semester (12-13 credits)
ECE 3720 Microcomputer Systems Programming 3
CS 5000-level elective course 3-4
One University Studies depth course 3
Advisor-approved elective course 3

Suggested Four-year Plan for Information Systems Emphasis

Freshman Year (32 credits)
Fall Semester (16 credits)
CS 1400 Introduction to Computer Science—CS 1 3
CS 1405 Introduction to Computer Science—CS 1 Lab 1
MATH 1210 (QL) Calculus I 4
USU 1010 University Connections 2
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles 3
One University Studies breadth course 3

Spring Semester (16 credits)
CS 1410 Introduction to Computer Science—CS 2 3
MATH 1220 (QL) Calculus II 4
SPCH 1020 (CI) Public Speaking 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
One University Studies breadth course 3

Sophomore Year (29-31 credits)
Fall Semester (16-17 credits)
CS 2420 (QI) Algorithms and Data Structures—CS 3 3
CS 2550 Computer Organization 3
MATH 3310 Discrete Mathematics 3
Science Sequence I course 4-5
One University Studies breadth course 3

Spring Semester (13-14 credits)
CS 2450 (CI) Software Engineering 3
CS 2810 Computer Organization and Architecture 3
CS 3000 Undergraduate Seminar 1
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Science Sequence II course, having BLS or BPS designation 3-4

Junior Year (30-31 credits)
Fall Semester (15 credits)
CS 4700 Programming Languages 3
CS 5800 Introduction to Database Systems 3
ACCT 2010 Survey of Accounting I 3
MHR 3110 (DSS) Managing Organizations and People 3
One University Studies breadth course 3

Spring Semester (15-16 credits)
CS 5050 Advanced Algorithms 3
CS 3100 Operating Systems and Concurrency 3
ACCT 2020 Survey of Accounting II 3
STAT 2300 (QL) Business Statistics 4
One extra science course 2-3

Senior Year (28-31 credits)
Fall Semester (13-15 credits)
CS 5070 Computer Science Capstone 1
CS 3000-level elective course 3
CS 5000-level elective courses 6-8
One Depth Humanities and Creative Arts (DHA) course 3

Spring Semester (15-16 credits)
BA 3080 (QI) Operations Research 3
CS 3000-level elective course 3
CS 5000-level elective course 3-4
Extra University Studies course 3
Advisor-approved elective course 3

Suggested Four-year Plan for Bioinformatics Emphasis

Freshman Year (34 credits)
Fall Semester (17 credits)
CS 1400 Introduction to Computer Science—CS 1 3
CS 1405 Introduction to Computer Science—CS 1 Lab 1
MATH 1210 (QL) Calculus I 4
BIOL 1610 Biology I 4
USU 1010 University Connections 2
One University Studies breadth course 3

Spring Semester (17 credits)
CS 1410 Introduction to Computer Science—CS 2 3
MATH 1220 (QL) Calculus II 4
BIOL 1620 (BLS) Biology II 4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
One University Studies breadth course 3

Sophomore Year (29 credits)
Fall Semester (14 credits)
CS 2420 (QI) Algorithms and Data Structures—CS 3 3
CS 2550 Computer Organization 3
MATH 3310 Discrete Mathematics 3
CHEM 1210 Principles of Chemistry I 4
CHEM 1215 Chemical Principles Laboratory I 1

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Spring Semester (15 credits)
CS 2450 (CI) Software Engineering 3
CS 3000 Undergraduate Seminar 1
CHEM 1220 (BPS) Principles of Chemistry II 4
CHEM 1225 Chemical Principles Laboratory II 1
STAT 3000 (QI) Statistics for Scientists 3
One University Studies breadth course 3

Junior Year (31-32 credits)
Fall Semester (16 credits)
CS 3100 Operating Systems and Concurrency 3
CS 5800 Introduction to Database Systems 3
BIOL 3060 Principles of Genetics 4
CHEM 2300 Principles of Organic Chemistry 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3

Spring Semester (15-16 credits)
CS 2810 Computer Organization and Architecture 3
CS 4700 Programming Languages 3
CHEM 3700 Introductory Biochemistry 3
CS 5000-level elective course 3-4
One University Studies breadth course 3

Senior Year (32-33 credits)
Fall Semester (16-17 credits)
CS 5050 Advanced Algorithms 3
CS 5070 Computer Science Capstone 1
CS 5660 Bioinformatics I 3
MATH 2250 (QI) Linear Algebra and Differential Equations (4 cr) **or**
MATH 2270 (QI) Linear Algebra (3 cr) ..... 3 or 4
SPCH 1020 (CI) Public Speaking 3
One University Studies depth course 3

Spring Semester (16 credits)
CS 5670 Bioinformatics II 3
CHEM 5730 Genomic Technologies 4
BIOL 3100 (CI) Bioethics 3
One University Studies Depth course 3
Extra University Studies course 3

Suggested Four-year Plan for Information Technology Emphasis

Freshman Year (30 credits)
Fall Semester (15 credits)
CS 1400 Introduction to Computer Science—CS 1 3
CS 1405 Introduction to Computer Science—CS 1 Lab 1
MATH 1100 (QL) Calculus Techniques 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles 3
USU 1010 University Connections 2

Spring Semester (15 credits)
CS 1410 Introduction to Computer Science—CS 2 3
SPCH 1020 (CI) Public Speaking 3
Three University Studies breadth courses 9

Sophomore Year (29-31 credits)
Fall Semester (16-17 credits)
CS 2420 (QI) Algorithms and Data Structures—CS 3 3
CS 2550 Computer Organization 3
ACCT 2010 Survey of Accounting I 3
Science Sequence I course 4-5
One University Studies breadth course 3

Spring Semester (13-14 credits)
CS 2450 (CI) Software Engineering 3
CS 2810 Computer Organization and Architecture 3
CS 3000 Undergraduate Seminar 1
ACCT 2020 Survey of Accounting II 3
Science Sequence II course, having BLS or BPS designation 3-4

Junior Year (31 credits)
Fall Semester (16 credits)
CS 4700 Programming Languages 3
CS 5800 Introduction to Database Systems 3
MHR 3110 (DSS) Managing Organizations and People 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
STAT 2300 (QL) Business Statistics 4

Spring Semester (15 credits)
CS 3100 Operating Systems and Concurrency 3
CS 4720 Computer Networking I 3
CS 5850 Systems Analysis 3
BA 3080 Operations Research 3
MHR 3710 Developing Team and Interpersonal Skills 3

Senior Year (28-31 credits)
Fall Semester (13-15 credits)
CS 5070 Computer Science Capstone 1
BA 3500 Fundamentals of Marketing 3
CS 5000-level elective courses 6-8
One Depth Humanities and Creative Arts (DHA) course 3

Spring Semester (15-16 credits)
CS 5050 Advanced Algorithms 3
BA 3400 (QI) Corporate Finance 3
CS 5000-level elective course 3-4
Extra University Studies course 3
Advisor-approved elective course 3

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 (16-18 credits)
A. Required Courses (10 credits)
CS 1400 Introduction to Computer Science—CS 1 (F,Sp,Su) 3
CS 1405 Introduction to Computer Science—CS 1 Lab (F,Sp,Su) 1
CS 1410 (QI) Introduction to Computer Science—CS 2 (F,Sp,Su) 3
CS 2420 (QI) Algorithms and Data Structures—CS 3 (F,Sp,Su) 3

B. Computer Science Electives (6-8 credits)
Two additional CS classes must be selected from the following:
CS 2450 (CI) Software Engineering (F,Sp) 3
CS 2550 Computer Organization (F,Sp) 3
CS 2810 Computer Organization and Architecture (F,Sp) 3
CS 3100 Operating Systems and Concurrency (F,Sp) 3
CS 4700 Programming Languages (F,Sp) 3
Any CS class numbered 5000 or above ..... 3 or 4
At least one of these two electives must be numbered at the 3000 level or above.

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through

original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. Minimum GPA requirements for participation in departmental honors vary by department, but usually fall within the range of 3.30-3.50. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level. The campus-wide Honors Program, which is open to all qualified students regardless of major, offers a rich array of cultural and social activities, special classes, and the benefit of Honors early registration. Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@cc.usu.edu. Additional information can be found online at: **http://www.usu.edu/honors/**

Additional Information

For more information about requirements for the Computer Science major and minor, see the major requirement sheet, available from the Computer Science Department, or online at:
http://www.usu.edu/majorsheets/

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 in the master's degree programs 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:

1. Pass the placement exam in Algorithms and Data Structures, as well as two of the following five placement exams: Computer Architecture and Organization, Operating Systems, Automata, Programming Languages/Compilers, and Software Engineering.

2. Complete CS 2420 (algorithms and data structures) and CS 5050 (advanced algorithms) with a grade of at least *B*-. Also complete with a grade of at least *B*- two of the following courses: CS 2810 or ECE 5750 (architecture); CS 3100 (operating systems); CS 4700 or 5300 (programming languages); and CS 2450, 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 6000 and above. 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 CS 5950, 6950, and 7950 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 thesis 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. CS 6970 *cannot* be included

2. Successfully meet the departmental placement requirement.

3. Successfully complete *one pair of courses* representing a sequence offered by the department. The sequences include: CS 5050 and 6050; CS 5200 and 6200; CS 5300 and 6300; CS 5600 and 6600; CS 5650 and 6650; CS 5700 and 6700; CS 5800 and 7670; CS 6100 and 7100; CS 6450 and 7450; *two* of CS 5370 or 6370, CS 7350, and 7380; *two* of CS 5500, 6500, 6550, and 7550; *two of* CS 5650, 6630, 6650, 7650, and 7680; and *two of* CS 5660, 5670, and 6670.

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 (including at least 27 credits of dissertation research) beyond an MS/CS with a minimum class grade of *B* and a minimum cumulative GPA of 3.5.

2. 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.

3. Complete at least 12 credits of 7000-level computer science coursework.

4. Complete 2 credits of PhD Seminar (CS 7900).

5. Complete 9 credits of department-approved courses outside the department.

6. 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.

7 Successfully complete and defend a research proposal.

8. Successfully complete and defend a dissertation (CS 7970, for at least 27 credits).

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 R. 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

Professor Emeritus

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

Nicholas S. Flann, machine learning, artificial intelligence

Daniel W. Watson, parallel and heterogeneous computing, interconnection networks

Department of Computer Science

Associate Professors Emeritus
Nelson T. Dinerstein, analysis and construction of information systems, database management systems, applications of small computers
Larre N. Egbert, scientific computing, computer graphics
Gregory W. Jones, theory of computing, software engineering

Assistant Professors
Robert F. Erbacher, computer graphics, visualization, computer security, bioinformatics, GUIs, systems
Jerry James, concurrency, formal methods, distributed systems, operating systems
Minghui Jiang, bioinformatics and computer biology, design and analysis of algorithms, computational geometry
Vladimir Kulyukin, assistive technology, robotics
Seungjin Lim, data mining, semi-structured databases, bioinformatics
Chad D. Mano, computer security
Supratik Mukhopadhyay, software engineering
Xiaojun Qi, image processing, data mining
Changhui Yan, bioinformatics, data mining, machine learning, computational biology

Lecturers
Linda Duhadway, computer science education
Dean Mathias, computer graphics

Course Descriptions

Computer Science (CS), pages 600-603

Interdepartmental Program in Ecology

Director: James A. MacMahon
Location: Natural Resources 314A
Phone: (435) 797-2555
FAX: (435) 797-3872
E-mail: jam@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: Biology; Plants, Soils, and Biometeorology; Watershed Sciences; and Wildland Resources

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 Biology; Environment and Society; Geology; Plants, Soils, and Biometeorology; Watershed Sciences; and Wildland Resources. 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 (BIOL/ENVS/WATS/WILD/ 6870) is required each semester in residence, but students should only register each fall.
2. A one-semester course in Graduate General Ecology (BIOL/ENVS/WATS/WILD 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 (BIOL/ENVS/WATS/WILD 6870) is required each semester in residence, but students should only register each fall.
2. A one-semester course in Graduate General Ecology (BIOL/ENVS/WATS/WILD 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 on the following page.

Functional (Core) Blocks

1. Biophysical and Physiological Ecology
   (BIOL 6600, BMET 6500, BMET/GEO/WATS 6680, BMET 6800, GEO/WATS 6150, SOIL 6130, SOIL/WILD 6350, WILD 7200)

2. Organismic, Population, and Evolutionary Ecology
   (BIOL 6260, 6380, WATS 6230/7230, WILD 6400, 6720/7720, 7400)

3. Community, Ecosystem, and Landscape Ecology
   (BIOL 6010, BIOL/SOIL/WILD 6200, BIOL 6590, WATS 6820/7820, WILD 6710/7710)

Department of Economics

Interim Department Head: DeeVon Bailey
Location: Business 615
Phone: (435) 797-2310
FAX: (435) 797-2701
E-mail: info@econ.usu.edu
WWW: http://www.econ.usu.edu

Undergraduate Advisor:
Katrina Nye, Business 615, (435) 797-2290, trina.n@usu.edu

Graduate Program Director:
Steven S. Vickner, Business 616, (435) 797-2963,
svickner@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, 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 sector and in businesses and institutions 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, and STAT 2300 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.

Agribusiness Major Requirements

All courses required for the Agribusiness Major should be taken for a letter grade. Students must earn a grade of *C* or better in each course.

Required Courses:

ACCT 2010 Survey of Accounting I (F,Sp,Su) 3
ACCT 2020 Survey of Accounting II (F,Sp,Su) 3
ASTE 3090 Computer Applications in Agriculture (F) (3 cr) **or**
BIS 2100 Principles of Management Information Systems (F,Sp,Su) (3 cr) 3
ASTE 3050 (CI) Technical and Professional Communication Principles in Agriculture (F,Sp) (3 cr) **or**
BIS 2200 (CI) Business Communication (F,Sp,Su) (3 cr) 3
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su) 3
ECON 2010 (BSS) Introduction to Microeconomics (F,Sp) 3
ECON 3030 (DSS) Introduction to Agribusiness Marketing (F) 3
ECON 3050 (DSS) Introduction to Agribusiness Management (Sp) 3
ECON 4010 (DSS) Managerial Economics (F,Sp) 3
ECON 4030 (CI) Agribusiness Finance (F) 3
ECON 5030 Agricultural Marketing and Price Analysis (F) 3
ECON 5050 Farm and Ranch Planning and Analysis (Sp) 3
ECON 5350 (CI) Agribusiness, Cooperatives, and Management (Sp) .. 3
MATH 1050 (QL) College Algebra (F,Sp,Su) 4
MATH 1100 (QL) Calculus Techniques (F,Sp,Su) 3
MHR 2050 Legal and Ethical Environment of Business (F,Sp,Su) 3
STAT 2300 (QL) Business Statistics (F,Sp,Su) 4
College of Agriculture electives[1] 12

For a suggested four-year plan, see page 244.

Agribusiness Major, Business Option

All courses required for the Agribusiness Major, Business Option should be taken for a letter grade. Students must earn a grade of *C* or better in each course. Students may be eligible for a second major in Business. For further information, contact an advisor. **Note:** Student transcripts and diplomas will list *only* the Agribusiness Major, not the Business Option.

Required Courses:

ACCT 2010 Survey of Accounting I (F,Sp,Su)....3
ACCT 2020 Survey of Accounting II (F,Sp,Su)....3
BA 3400 (QI) Corporate Finance (F,Sp,Su)....3
BA 3500 Fundamentals of Marketing (F,Sp,Su)....3
BA 3700 Operations Management (F,Sp,Su)....3
BIS 2100 Principles of Management Information Systems (F,Sp,Su)....3
BIS 2200 (CI) Business Communication (F,Sp,Su)....3
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su)....3
ECON 2010 (BSS) Introduction to Microeconomics (F,Sp)....3
ECON 3030 (DSS) Introduction to Agribusiness Marketing (F)....3
ECON 3050 (DSS) Introduction to Agribusiness Management (Sp)....3
ECON 3400 (DSS) International Economics for Business (F,Sp,Su)....3
ECON 4010 (DSS) Managerial Economics (F,Sp)....3
ECON 4030 (CI) Agribusiness Finance (F)....3
ECON 5030 Agricultural Marketing and Price Analysis (F)....3
ECON 5050 Farm and Ranch Planning and Analysis (Sp)....3
ECON 5350 (CI) Agribusiness, Cooperatives, and Management (Sp)....3
MATH 1050 (QL) College Algebra (F,Sp,Su)....4
MATH 1100 (QL) Calculus Techniques (F,Sp,Su)....3
MHR 2050 Legal and Ethical Environment of Business (F,Sp,Su)....3
MHR 3110 (DSS) Managing Organizations and People (F,Sp,Su)....3
STAT 2300 (QL) Business Statistics (F,Sp,Su)....4

For a suggested four-year plan, see pages 244-245.

Agribusiness Major, Agricultural Systems Option

All courses required for the Agribusiness Major, Agricultural Systems Option should be taken for a letter grade. Students must earn a grade of *C* or better in each course. Students who complete this option are eligible to earn a dual major in Agricultural Systems Technology. Note: Student transcripts and diplomas will list only the Agribusiness Major, not the Agricultural Systems Option.

Required Courses:

ACCT 2010 Survey of Accounting I (F,Sp,Su)....3
ACCT 2020 Survey of Accounting II (F,Sp,Su)....3
ASTE 1010 Introduction to Agricultural Systems Technology (F)....3
ASTE 2200 Electricity in Agricultural Systems (Sp)....3
ASTE 3030 Metal Welding Processes and Technology in Agriculture (F) (3 cr) **or**
ASTE 4100 Agricultural Structures and Environment (Sp) (3 cr)....3
ASTE 3050 (CI) Technical and Professional Communication Principles in Agriculture (F,Sp)....3
ASTE 3080 Compact Power Units for Agricultural and Turfgrass Applications (Sp) (3 cr) **or**
ASTE 3200 Irrigation Principles and Practices (Sp) (3 cr)....3
ASTE 3090 Computer Applications in Agriculture (F)....3
ASTE 3600 (QI) Management of Agricultural Machinery Systems (Sp)....3
ASTE 5260 (CI) Environmental Impacts of Agricultural Systems (F)....3
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su)....3
ECON 2010 (BSS) Introduction to Microeconomics (F,Sp)....3
ECON 3030 (DSS) Introduction to Agribusiness Marketing (F)....3
ECON 3050 (DSS) Introduction to Agribusiness Management (Sp)....3
ECON 4010 (DSS) Managerial Economics (F,Sp)....3
ECON 4030 (CI) Agribusiness Finance (F)....3
ECON 5030 Agricultural Marketing and Price Analysis (F)....3
ECON 5050 Farm and Ranch Planning and Analysis (Sp)....3
ECON 5350 (CI) Agribusiness, Cooperatives, and Management (Sp)....3
MATH 1050 (QL) College Algebra (F,Sp,Su)....4
MATH 1100 (QL) Calculus Techniques (F,Sp,Su)....3
MHR 2050 Legal and Ethical Environment of Business (F,Sp,Su)....3
STAT 2300 (QL) Business Statistics (F,Sp,Su)....4

For a suggested four-year plan, see page 245.

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 desirous of 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.

Agricultural Economics Major Requirements

All courses required for the Agricultural Economics Major should be taken for a letter grade. Students must earn a grade of C or better in each course.

Required Courses:

ACCT 2010 Survey of Accounting I (F,Sp,Su)....3
ACCT 2020 Survey of Accounting II (F,Sp,Su)....3
ASTE 3090 Computer Applications in Agriculture (F) (3 cr) **or**
BIS 2100 Principles of Management Information Systems (F,Sp,Su) (3 cr)....3
ASTE 3050 (CI) Technical and Professional Communication Principles in Agriculture (F,Sp) (3 cr) **or**
BIS 2200 (CI) Business Communication (F,Sp,Su) (3 cr)....3
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su)....3
ECON 2010 (BSS) Introduction to Microeconomics (F,Sp)....3
ECON 3030 (DSS) Introduction to Agribusiness Marketing (F)....3
ECON 3050 (DSS) Introduction to Agribusiness Management (Sp)....3
ECON 3400 (DSS) International Economics for Business (F,Sp,Su)....3
ECON 4030 (CI) Agribusiness Finance (F)....3
ECON 5000 Macroeconomics (F)....3
ECON 5010 Microeconomics (Sp)....3
ECON 5030 Agricultural Marketing and Price Analysis (F)....3
ECON 5310 (QI) Mathematical Methods for Economics (F)....3
ECON 5330 (QI) Applied Econometrics (Sp)....3
MATH 1050 (QL) College Algebra (F,Sp,Su)....4
MATH 1100 (QL)[2] Calculus Techniques (F,Sp,Su)....3
STAT 2300 (QL) Business Statistics (F,Sp,Su)....4

Select three of the following courses:

ECON 5020 (CI) Economics and Public Policy (Sp)....3
ECON 5050 Farm and Ranch Planning and Analysis (Sp)....3
ECON 5350 (CI) Agribusiness, Cooperatives, and Management (Sp)....3
ECON 5560 Natural Resource and Environmental Economics (Sp)....3
ECON 5950 (CI) Senior Project (Sp)....3

For a suggested four-year plan, see pages 245-246.

Department of Economics

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.

International Agribusiness Major Requirements

For this major, students must score three or better on the Federal FSI Test or complete a language minor. All the following courses should be taken for a letter grade. Students must earn a grade of *C* or better in each course.

Required Courses:

ACCT 2010 Survey of Acounting I (F,Sp,Su) 3
BIS 2100 Principles of Management Information Systems (F,Sp,Su) ... 3
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su) 3
ECON 2010 (BSS) Introduction to Microeconomics (F,Sp) 3
ECON 3030 (DSS) Introduction to Agribusiness Marketing (F) 3
ECON 3050 (DSS) Introduction to Agribusiness Management (Sp) 3
ECON 3400 (DSS) International Economics for Business (F,Sp,Su) 3
ECON 4010 (DSS) Managerial Economics (F,Sp) 3
ECON 4020 Macroeconomics for Managers (F,Sp) 3
ECON 4030 (CI) Agribusiness Finance (F) 3
ECON 5030 Agricultural Marketing and Price Analysis (F) 3
ECON 5050 Farm and Ranch Planning and Analysis (Sp) (3 cr) **or**
ECON 5950 (CI) Senior Project (Sp) (3 cr) 3
ECON 5120 Economics of Russia and Eastern Europe, 9th Century to 21st Century (F) 3
ECON 5350 (CI) Agribusiness, Cooperatives, and Management (Sp) .. 3
ECON 5400 International and Development Economics (F) 3
MATH 1050 (QL) College Algebra (F,Sp,Su) 4
MATH 1100 (QL) Calculus Techniques (F,Sp,Su) 3
NFS 5510 Food Laws and Regulations (Sp) 2
STAT 2300 (QL) Business Statistics (F,Sp,Su) 4

For a suggested four-year plan, see page 246.

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, and STAT 2300 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. For information regarding elective requirements, students should contact their academic advisor.

Economics Major:

ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su) 3
ECON 2010 (BSS) Introduction to Microeconomics (F,Sp) 3
ECON 3400 (DSS) International Economics for Business (F,Sp,Su) 3
ECON 4010 (DSS) Managerial Economics (F,Sp) (3 cr) **or**
ECON 5010 Microeconomics (Sp) (3 cr) 3
ECON 4020 Macroeconomics for Managers (F,Sp) (3 cr) **or**
ECON 5000 Macroeconomics (F) (3 cr) 3
MATH 1050 (QL) College Algebra (F,Sp,Su) 4
MATH 1100 (QL)[2] Calculus Techniques (F,Sp,Su) 3
STAT 2300 (QL) Business Statistics (F,Sp,Su) 4
Upper-division ECON electives[3] 6

For a suggested four-year plan, see pages 246-247.

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.

Economics Major (Economic Theory Emphasis):

ACCT 2010 Survey of Accounting I (F,Sp,Su) 3
ACCT 2020 Survey of Accounting II (F.Sp,Su) 3
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su) 3
ECON 2010 (BSS) Introduction to Microeconomics (F,Sp) 3
ECON 3400 (DSS) International Economics for Business (F,Sp,Su) 3
ECON 5000 Macroeconomics (F) 3
ECON 5010 Microeconomics (Sp) 3
ECON 5100 History of Economic Thought (Sp) 3
ECON 5310 (QI) Mathematical Methods for Economics (F) 3
ECON 5330 (QI) Applied Econometrics (Sp) 3
ECON 5950 (CI) Senior Project (Sp) 3
MATH 1050 (QL) College Algebra (F,Sp,Su) 4
MATH 1100 (QL)[2] Calculus Techniques (F,Sp,Su) 3
STAT 2300 (QL) Business Statistics (F,Sp,Su) 4
ECON electives (3000-level or above)[3] 12

For a suggested four-year plan, see page 247.

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):
ACCT 2010 Survey of Accounting I (F,Sp,Su)....3
ACCT 2020 Survey of Accounting II (F.Sp,Su)....3
BA 3400 (QI) Corporate Finance (F,Sp,Su) 3
BA 3500 Fundamentals of Marketing (F,Sp,Su)....3
BA 3700 Operations Management (F,Sp,Su)....3
BIS 2100 Principles of Management Information Systems (F,Sp,Su) ...3
BIS 2200 (CI) Business Communication (F,Sp,Su)....3
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su)....3
ECON 2010 (BSS) Introduction to Microeconomics (F,Sp)....3
ECON 3400 (DSS) International Economics for Business (F,Sp,Su) 3
ECON 4010 (DSS) Managerial Economics (F,Sp) 3
ECON 4020 Macroeconomics for Managers (F,Sp) 3
ECON 5310 (QI) Mathematical Methods for Economics (F) 3
ECON 5330 (QI) Applied Econometrics (Sp) 3
ECON 5950 (CI) Senior Project (Sp)....3
MATH 1050 (QL) College Algebra (F,Sp,Su)....4
MATH 1100 (QL)[2] Calculus Techniques (F,Sp,Su) 3
MHR 2050 Legal and Ethical Environment of Business (F,Sp,Su)....3
MHR 3110 (DSS) Managing Organizations and People (F,Sp,Su) 3
STAT 2300 (QL) Business Statistics (F,Sp,Su) 4
ECON electives (3000-level and above)[3]....6

For a suggested four-year plan, see pages 247-248.

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 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su)....3
ECON 2010 (BSS) Introduction to Microeconomics (F,Sp)....3
ECON 3170 Law and Economics (F) (3 cr) **or**
POLS 3170 Law and Economics (F) (3 cr) 3
ECON 3400 (DSS) International Economics for Business (F,Sp,Su) 3
ECON 4010 (DSS) Managerial Economics (F,Sp) (3 cr) **or**
ECON 5010 Microeconomics (Sp) (3 cr)....3
ECON 4020 Macroeconomics for Managers (F,Sp) (3 cr) **or**
ECON 5000 Macroeconomics (F) (3 cr)....3
ECON 5950 (CI) Senior Project (Sp)....3
MATH 1050 (QL) College Algebra (F,Sp,Su)....4
MATH 1100 (QL)[2] Calculus Techniques (F,Sp,Su) 3
POLS 1100 (BAI) United States Government and Politics (F,Sp)....3
STAT 2300 (QL) Business Statistics (F,Sp,Su) 4
ECON electives (3000-level or above)[3]....6
POLS electives (3000-level or above)....3

For a suggested four-year plan, see page 248.

Minor Requirements

Economics Minor:
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su)....3
ECON 2010 (BSS) Introduction to Microeconomics (F,Sp)....3
ECON 4010 (DSS) Managerial Economics (F,Sp) (3 cr) **or**
ECON 5010 Microeconomics (Sp) (3 cr)....3
ECON electives (3000-level or above)[3]....6

Agribusiness Management Minor:
ACCT 2010 Survey of Accounting I (F,Sp,Su)....3
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su)....3
ECON 3030 (DSS) Introduction to Agribusiness Marketing (F)....3
ECON 3050 (DSS) Introduction to Agribusiness Management (Sp) 3
ECON 4030 (CI) Agribusiness Finance (F) 3

Agricultural Economics Minor:
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su)....3
ECON 2010 (BSS) Introduction to Microeconomics (F,Sp,Su) 3
ECON 4010 (DSS) Managerial Economics (F,Sp) (3 cr) **or**
ECON 5010 Microeconomics (Sp) (3 cr)....3
ECON 4030 (CI) Agribusiness Finance (F) 3
ECON 5030 Agricultural Marketing and Price Analysis (F) 3

[1]These 12 credits must be selected from courses offered by departments within the College of Agriculture, excluding courses offered by the Department of Economics. Six of the 12 credits must be chosen from upper-division courses (i.e., courses numbered 3000 or above).
[2]The regular calculus series (MATH 1210 and 1220) is recommended for students contemplating graduate studies in economics. MATH 1210 will fulfill the MATH 1100 requirement.
[3]For a list of acceptable electives, students should contact their advisor.

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. Minimum GPA requirements for participation in departmental honors vary by department, but usually fall within the range of 3.30-3.50. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level. The campus-wide Honors Program, which is open to all qualified students regardless of major, offers a rich array of cultural and social activities, special classes, and the benefit of Honors early registration. Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@cc.usu.edu. Additional information can be found online at: **http://www.usu.edu/honors/**

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.

Additional Information

For more information about undergraduate programs in the Department of Economics, see the major requirement sheets, available from the department, or accessed online at:
http://www.usu.edu/majorsheets/

Department of Economics

Four-year Degree Plans (8 semesters)

The following are suggested four-year plans for majors offered by the Department of Economics. Students will need to meet with their advisor periodically to ensure all requirements are being met.

Suggested Four-year Course of Study for Agribusiness Major

The following curriculum is required for the BS degree in agribusiness. Students enrolled in the agribusiness major should consult with their advisor to determine which breadth, depth, and elective courses they should complete. Each student should also consult with his or her advisor to develop an individualized plan of study that is applicable to his or her own interests.

Freshman Year (30 credits)[4]
Fall Semester (15 credits)
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles 3
MATH 1050 (QL) College Algebra 4
USU 1010 University Connections 2
Breadth Creative Arts (BCA) course[5] 3
Elective course(s) 3

Spring Semester (15 credits)
ACCT 2010 Survey of Accounting I 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MATH 1100 (QL) Calculus Techniques 3
Breadth Humanities (BHU) course[5] 3
Elective course(s) 3

Sophomore Year (31 credits)
Fall Semester (16 credits)
ASTE 3090 Computer Applications in Agriculture (3 cr) **or**
BIS 2100 Principles of Management Information Systems (3 cr) 3
ECON 2010 (BSS) Introduction to Microeconomics 3
MHR 2050 Legal and Ethical Environment of Business 3
STAT 2300 (QL) Business Statistics 4
Breadth Life Sciences (BLS) course[5] 3

Spring Semester (15 credits)
ACCT 2020 Survey of Accounting II 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Breadth Physical Sciences (BPS) course[5] 3
Elective courses 6

Junior Year (29 credits)
Fall Semester (14 credits)
ASTE 3050 (CI) Technical and Professional Communication Principles in Agriculture (3 cr) **or**
BIS 2200 (CI) Business Communication (3 cr) 3
ECON 3030 Introduction to Agribusiness Marketing 3
Elective course from the College of Agriculture[6] 3
Elective courses 5

Spring Semester (15 credits)
ECON 3050 Introduction to Agribusiness Management 3
ECON 4010 Managerial Economics 3
Quantitative Intensive (QI) course 3
Elective course from the College of Agriculture[6] 3
Elective course(s) 3

Senior Year (30 credits)
Fall Semester (15 credits)
ECON 4030 (CI) Agribusiness Finance 3
ECON 5030 Agricultural Marketing and Price Analysis 3
Depth Humanities and Creative Arts (DHA) course 3
Elective course from the College of Agriculture[6] 3
Elective course(s) 3

Spring Semester (15 credits)
ECON 5050 Farm and Ranch Planning and Analysis 3
ECON 5350 (CI) Agribusiness, Cooperatives, and Management 3
Depth Life and Physical Sciences (DSC) course 3
Elective course from the College of Agriculture[6] 3
Elective course(s) 3

Suggested Four-year Course of Study for Agribusiness Major, Business Option[8]

The following curriculum is required for the BS degree in agribusiness with a business option. Students enrolled in the agribusiness major should consult with their advisor to determine which breadth, depth, and elective courses they should complete. Each student should also consult with his or her advisor to develop an individualized plan of study that is applicable to his or her own interests.

Freshman Year (30 credits)[4]
Fall Semester (15 credits)
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles 3
MATH 1050 (QL) College Algebra 4
USU 1010 University Connections 2
Breadth Creative Arts (BCA) course[5] 3
Elective course(s) 3

Spring Semester (15 credits)
ECON 2010 (BSS) Introduction to Microeconomics 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MATH 1100 (QL) Calculus Techniques 3
Breadth Humanities (BHU) course[5] 3
Elective course(s) 3

Sophomore Year (31 credits)
Fall Semester (16 credits)
ACCT 2010 Survey of Accounting I 3
BIS 2100 Principles of Management Information Systems 3
ECON 3400 (DSS) International Economics for Business 3
STAT 2300 (QL) Business Statistics 4
Breadth Life Sciences (BLS) course[5] 3

Spring Semester (15 credits)
ACCT 2020 Survey of Accounting II 3
BA 3400 (QI) Corporate Finance 3
BIS 2200 (CI) Business Communication 3
Breadth Physical Sciences (BPS) course[5] 3
Elective course(s) 3

Junior Year (29 credits)
Fall Semester (14 credits)
BA 3500 Fundamentals of Marketing 3
ECON 3030 Introduction to Agribusiness Marketing 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Elective courses 5

Spring Semester (15 credits)
BA 3700 Operations Management....3
ECON 3050 Introduction to Agribusiness Management....3
ECON 4010 Managerial Economics....3
MHR 2050 Legal and Ethical Environment of Business....3
Elective course(s)....3

Senior Year (30 credits)
Fall Semester (15 credits)
ECON 4030 (CI) Agribusiness Finance....3
ECON 5030 Agricultural Marketing and Price Analysis....3
MHR 3110 Managing Organizations and People....3
Depth Humanities and Creative Arts (DHA) course....3
Elective course(s)....3

Spring Semester (15 credits)
ECON 5050 Farm and Ranch Planning and Analysis....3
ECON 5350 (CI) Agribusiness, Cooperatives, and Management....3
Depth Life and Physical Sciences (DSC) course....3
Elective courses....6

Suggested Four-year Course of Study for Agribusiness Major, Agricultural Systems Option

The following curriculum is required for the BS degree in agribusiness with an agricultural systems option. Students enrolled in the agribusiness major should consult with their advisor to determine which breadth, depth, and elective courses they should complete. Each student should also consult with his or her advisor to develop an individualized plan of study that is applicable to his or her own interests.

Freshman Year (30 credits)[4]
Fall Semester (15 credits)
ASTE 1010 Introduction to Agricultural Systems Technology....3
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles....3
MATH 1050 (QL) College Algebra....4
USU 1010 University Connections....2
Elective course(s)....3

Spring Semester (15 credits)
ACCT 2010 Survey of Accounting I....3
ASTE 2200 Electricity in Agricultural Systems....3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose....3
MATH 1100 (QL) Calculus Techniques....3
Breadth Humanities (BHU) course[5]....3

Sophomore Year (31 credits)
Fall Semester (16 credits)
ASTE 3090 Computer Applications in Agriculture....3
ECON 2010 (BSS) Introduction to Microeconomics....3
MHR 2050 Legal and Ethical Environment of Business....3
STAT 2300 (QL) Business Statistics....4
Breadth Life Sciences (BLS) course[5]....3

Spring Semester (15 credits)
ACCT 2020 Survey of Accounting II....3
ECON 3050 Introduction to Agribusiness Management....3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode....3
Breadth Creative Arts (BCA) course[5]....3
Elective course(s)....3

Junior Year (29 credits)
Fall Semester (14 credits)
ASTE 3050 (CI) Technical and Professional Communication Principles in Agriculture....3
ECON 3030 Introduction to Agribusiness Marketing....3
Depth Humanities and Creative Arts (DHA) course....3
Elective courses....5

Spring Semester (15 credits)
ASTE 3600 (QI) Management of Agricultural Machinery Systems....3
ECON 4010 Managerial Economics....3
ASTE 3080 Compact Power Units for Agricultural and Turfgrass Applications (3 cr) **or**
ASTE 3200 Irrigation Principles and Practices (3 cr)....3
Breadth Physical Sciences (BPS) course[5]....3
Elective course(s)....3

Senior Year (30 credits)
Fall Semester (15 credits)
ASTE 3030[9] Metal Welding Processes and Technology in Agriculture....3
ECON 4030 (CI) Agribusiness Finance....3
ECON 5030 Agricultural Marketing and Price Analysis....3
Elective courses....6

Spring Semester (15 credits)
ASTE 4100[9] Agricultural Structures and Environment....3
ASTE 5260 (CI) Environmental Impacts of Agricultural Systems....3
ECON 5050 Farm and Ranch Planning and Analysis....3
ECON 5350 (CI) Agribusiness, Cooperatives, and Management....3
Depth Life and Physical Sciences (DSC) course....3

Suggested Four-year Course of Study for Agricultural Economics Major

The following curriculum is required for the BS degree in agricultural economics. Students enrolled in the agricultural economics major should consult with their advisor to determine which breadth, depth, and elective courses they should complete. Each student should also consult with his or her advisor to develop an individualized plan of study that is applicable to his or her own interests.

Freshman Year (30 credits)[4]
Fall Semester (15 credits)
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles....3
MATH 1050 (QL) College Algebra....4
USU 1010 University Connections....2
Breadth Creative Arts (BCA) course[5]....3
Elective course(s)....3

Spring Semester (15 credits)
ACCT 2010 Survey of Accounting I....3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose....3
MATH 1100 (QL)[13] Calculus Techniques....3
Breadth Humanities (BHU) course[5]....3
Elective course(s)....3

Sophomore Year (31 credits)
Fall Semester (16 credits)
ASTE 3090 Computer Applications in Agriculture (3 cr) **or**
BIS 2100 Principles of Management Information Systems (3 cr)....3
ECON 2010 (BSS) Introduction to Microeconomics....3
STAT 2300 (QL) Business Statistics....4
Breadth Life Sciences (BLS) course[5]....3
Elective course(s)....3

Spring Semester (15 credits)
ACCT 2020 Survey of Accounting II 3
ECON 3400 International Economics for Business 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Breadth Physical Sciences (BPS) course[5] 3
Elective course(s) 3

Junior Year (29 credits)
Fall Semester (14 credits)
ASTE 3050 (CI) Technical and Professional Communication Principles in Agriculture (3 cr) **or**
BIS 2200 (CI) Business Communication (3 cr) 3
ECON 3030 Introduction to Agribusiness Marketing 3
ECON 5000 Macroeconomics 3
Elective courses 5

Spring Semester (15 credits)
ECON 3050 Introduction to Agribusiness Management 3
ECON 4310 (QI) Mathematical Methods for Economics 3
ECON 5010 Microeconomics 3
Elective courses 6

Senior Year (30 credits)
Fall Semester (15 credits)
ECON 4030 (CI) Agribusiness Finance 3
ECON 5030 Agricultural Marketing and Price Analysis 3
Depth Humanities and Creative Arts (DHA) course 3
Elective courses 6

Spring Semester (15 credits)
ECON 5330 (QI) Applied Econometrics 3
Depth Life and Physical Sciences (DSC) course 3
Elective courses from Economics[10] 9

Suggested Four-year Course of Study for International Agribusiness Major

The following curriculum is required for the BA degree in international agribusiness. Students enrolled in the international agribusiness major should consult with their advisor to determine which breadth, depth, and elective courses they should complete. Each student should also consult with his or her advisor to develop an individualized plan of study that is applicable to his or her own interests.

Freshman Year (30 credits)[4]
Fall Semester (15 credits)
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles 3
MATH 1050 (QL) College Algebra 4
USU 1010 University Connections 2
Breadth Creative Arts (BCA) course[5] 3
Elective course(s)[11] 3

Spring Semester (15 credits)
ACCT 2010 Survey of Accounting I 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MATH 1100 (QL) Calculus Techniques 3
Breadth Humanities (BHU) course[5] 3
Elective course(s)[11] 3

Sophomore Year (28 credits)
Fall Semester (16 credits)
BIS 2100 Principles of Management Information Systems 3
ECON 2010 (BSS) Introduction to Microeconomics 3
STAT 2300 (QL) Business Statistics 4
Breadth Life Sciences (BLS) course[5] 3
Elective course(s)[11] 3

Spring Semester (12 credits)
ECON 3400 (DSS) International Economics for Business 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Breadth Physical Sciences (BPS) course[5] 3
Elective course(s)[11] 3

Junior Year (26 credits)
Fall Semester (15 credits)
ECON 3030 Introduction to Agribusiness Marketing 3
ECON 4010 Managerial Economics 3
ECON 4020 Macroeconomics for Managers 3
ECON 5120 Economics of Russia and Eastern Europe, 9th Century to 21st Century 3
Elective course(s)[11] 3

Spring Semester (11 credits)
ECON 3050 Introduction to Agribusiness Management 3
NFS 5510 Food Laws and Regulations 2
Quantitative Intensive (QI) course 3
Elective course(s)[11] 3

Senior Year (30 credits)
Fall Semester (15 credits)
ECON 4030 (CI) Agribusiness Finance 3
ECON 5030 Agricultural Marketing and Price Analysis 3
ECON 5400 International and Development Economics 3
Depth Humanities and Creative Arts (DHA) course 3
Elective course(s)[11] 3

Spring Semester (15 credits)
ECON 5050 Farm and Ranch Planning and Analysis (3 cr) **or**
ECON 5950 (CI) Senior Project (3 cr) 3
ECON 5350 (CI) Agribusiness, Cooperatives, and Management 3
Depth Life and Physical Sciences (DSC) course 3
Elective courses[11] 6

Suggested Four-year Course of Study for Economics Major

The following curriculum is required for the BS degree in economics. Students enrolled in the economics major should consult with their advisor to determine which breadth, depth, and elective courses they should complete. Each student should also consult with his or her advisor to develop an individualized plan of study that is applicable to his or her own interests.

Freshman Year (30 credits)[4]
Fall Semester (15 credits)
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles 3
MATH 1050 (QL) College Algebra 4
USU 1010 University Connections 2
Breadth Life Sciences (BLS) course[5] 3
Elective course(s) 3

Spring Semester (15 credits)
ECON 2010 (BSS) Introduction to Microeconomics 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MATH 1100 (QL)[13] Calculus Techniques 3
Breadth Humanities (BHU) course[5] 3
Elective course(s) 3

Sophomore Year (31 credits)

Fall Semester (16 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
STAT 2300 (QL) Business Statistics 4
Breadth Creative Arts (BCA) course[5] 3
Elective courses 6

Spring Semester (15 credits)
ECON 3400 International Economics for Business 3
Breadth Physical Sciences (BPS) course[5] 3
Communications Intensive (CI) course 3
Elective courses 6

Junior Year (29 credits)

Fall Semester (14 credits)
ECON 4020 Macroeconomics for Managers (3 cr) **or**
ECON 5000 Macroeconomics (3 cr) 3
Communications Intensive (CI) course 3
Elective courses 8

Spring Semester (15 credits)
ECON 4010 (DSS) Managerial Economics (3 cr) **or**
ECON 5010 Microeconomics (3 cr) 3
Quantitative Intensive (QI) course 3
Elective courses 9

Senior Year (30 credits)

Fall Semester (15 credits)
Depth Humanities and Creative Arts (DHA) course 3
Economics upper-division elective course[12] 3
Elective courses 9

Spring Semester (15 credits)
Depth Life and Physical Sciences (DSC) course 3
Economics upper-division elective course[12] 3
Elective courses 9

Suggested Four-year Course of Study for Economics Major, Economic Theory Emphasis

The following curriculum is required for the BS degree in economics with an economic theory emphasis. Students enrolled in the economics major should consult with their advisor to determine which breadth, depth, and elective courses they should complete. Each student should also consult with his or her advisor to develop an individualized plan of study that is applicable to his or her own interests.

Freshman Year (30 credits)[4]

Fall Semester (15 credits)
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles 3
MATH 1050 (QL) College Algebra 4
USU 1010 University Connections 2
Breadth Creative Arts (BCA) course[5] 3
Elective course(s) 3

Spring Semester (15 credits)
ECON 2010 (BSS) Introduction to Microeconomics 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MATH 1100 (QL)[13] Calculus Techniques 3
Breadth Humanities (BHU) course[5] 3
Elective course(s) 3

Sophomore Year (31 credits)

Fall Semester (16 credits)
ACCT 2010 Survey of Accounting I 3
ECON 3400 International Economics for Business 3
STAT 2300 (QL) Business Statistics 4
Breadth Life Sciences (BLS) course[5] 3
Elective course(s) 3

Spring Semester (15 credits)
ACCT 2020 Survey of Accounting II 3
ECON 5010 Microeconomics 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Breadth Physical Sciences (BPS) course[5] 3
Elective course(s) 3

Junior Year (29 credits)

Fall Semester (14 credits)
ECON 5000 Macroeconomics 3
Economics upper-division elective course[12] 3
Communications Intensive (CI) course 3
Elective courses 5

Spring Semester (15 credits)
ECON 5100 History of Economic Thought 3
ECON 5330 (QI) Applied Econometrics 3
Economics upper-division elective course[12] 3
Elective courses 6

Senior Year (30 credits)

Fall Semester (15 credits)
ECON 4310/5310 (QI) Mathematical Methods for Economics 3
Economics upper-division elective course[12] 3
Depth Humanities and Creative Arts (DHA) course 3
Elective courses 6

Spring Semester (15 credits)
ECON 5950 (CI) Senior Project 3
Economics upper-division elective course[12] 3
Depth Life and Physical Sciences (DSC) course 3
Elective courses 6

Suggested Four-year Course of Study for Economics Major, Managerial Economics Emphasis

The following curriculum is required for the BS degree in economics with a managerial economics emphasis. Students enrolled in the economics major should consult with their advisor to determine which breadth, depth, and elective courses they should complete. Each student should also consult with his or her advisor to develop an individualized plan of study that is applicable to his or her own interests.

Department of Economics

Freshman Year (27 credits)[4]
Fall Semester (15 credits)
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles 3
MATH 1050 (QL) College Algebra 4
USU 1010 University Connections 2
Breadth Creative Arts (BCA) course[5] 3
Elective course(s) 3

Spring Semester (12 credits)
ECON 2010 (BSS) Introduction to Microeconomics 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MATH 1100 (QL)[13] Calculus Techniques 3
Breadth Humanities (BHU) course[5] 3

Sophomore Year (31 credits)
Fall Semester (16 credits)
ACCT 2010 Survey of Accounting I 3
BIS 2100 Principles of Management Information Systems 3
MHR 2050 Legal and Ethical Environment of Business 3
STAT 2300 (QL) Business Statistics 4
Breadth Life Sciences (BLS) course[5] 3

Spring Semester (15 credits)
ACCT 2020 Survey of Accounting II 3
BA 3400 (QI) Corporate Finance 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Breadth Physical Sciences (BPS) course[5] 3
Elective course(s) 3

Junior Year (29 credits)
Fall Semester (14 credits)
BA 3500 Fundamentals of Marketing 3
BIS 2200 (CI) Business Communication 3
ECON 3400 International Economics for Business 3
Elective courses 5

Spring Semester (15 credits)
BA 3700 Operations Management 3
ECON 4010 Managerial Economics 3
ECON 4020 Macroeconomics for Managers 3
Elective courses 6

Senior Year (30 credits)
Fall Semester (15 credits)
ECON 4310/5310 (QI) Mathematical Methods for Economics 3
MHR 3110 Managing Organizations and People 3
Economics upper-division elective course[12] 3
Depth Humanities and Creative Arts (DHA) course 3
Elective course(s) 3

Spring Semester (15 credits)
ECON 5330 (QI) Applied Econometrics 3
ECON 5950 (CI) Senior Project 3
Economics upper-division elective course[12] 3
Depth Life and Physical Sciences (DSC) course 3
Elective course(s) 3

Suggested Four-year Course of Study for Economics Major, Prelaw Economics Emphasis

The following curriculum is required for the BS degree in economics with a prelaw economics emphasis. Students enrolled in the economics major should consult with their advisor to determine which breadth, depth, and elective courses they should complete. Each student should also consult with his or her advisor to develop an individualized plan of study that is applicable to his or her own interests.

Freshman Year (30 credits)[4]
Fall Semester (15 credits)
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles 3
MATH 1050 (QL) College Algebra 4
POLS 1100 (BAI) United States Government and Politics 3
USU 1010 University Connections 2
Elective course(s) 3

Spring Semester (15 credits)
ECON 2010 (BSS) Introduction to Microeconomics 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MATH 1100 (QL)[13] Calculus Techniques 3
Breadth Humanities (BHU) course[5] 3
Elective course(s) 3

Sophomore Year (31 credits)
Fall Semester (16 credits)
ECON 3400 International Economics for Business 3
ECON/POLS 3170 Law and Economics 3
STAT 2300 (QL) Business Statistics 4
Breadth Life Sciences (BLS) course[5] 3
Elective course(s) 3

Spring Semester (15 credits)
ECON 4010 Managerial Economics (3 cr) **or**
ECON 5010 Microeconomics (3 cr) 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Breadth Physical Sciences (BPS) course[5] 3
Elective courses 6

Junior Year (29 credits)
Fall Semester (14 credits)
ECON 4020 Macroeconomics for Managers (3 cr) **or**
ECON 5000 Macroeconomics (3 cr) 3
Breadth Creative Arts (BCA) course[5] 3
Communications Intensive (CI) course 3
Elective courses 5

Spring Semester (15 credits)
Quantitative Intensive (QI) course 3
Political Science upper-division elective course 3
Elective courses 9

Senior Year (30 credits)
Fall Semester (15 credits)
Depth Humanities and Creative Arts (DHA) course 3
Economics upper-division elective course[12] 3
Elective courses 9

Spring Semester (15 credits)
ECON 5950 (CI) Senior Project 3
Depth Life and Physical Sciences (DSC) course 3
Economics upper-division elective course[12] 3
Elective courses 6

[4]Students should complete the CIL exams during their freshman year.
[5]At least *two* of the required Breadth Courses *must* be University Studies courses having a USU prefix.
[6]These 12 credits must be chosen from courses offered by departments (*other than* the Department of Economics) within the College of Agriculture. Of these 12 credits, 6 credits must be completed in upper-division courses (i.e., courses numbered at the 3000-level or above).
[7]This course will be taught during the 2006-2007 academic year.
[8]Students who complete the business core requirements, along with MHR 4880 or 4890, with a minimum GPA of 2.67 may earn a dual major in Business, *in addition to* a major in Agribusiness. Agribusiness students interested in a dual major in Business must apply for admission to the major through the College of Business, as well as satisfy graduation requirements for *both* majors.
[9]Students are required to complete *either* ASTE 3030 *or* ASTE 4100. Three elective credits must be substituted for whichever course is not taken.
[10]Students must complete three of the following five courses: ECON 5020, 5050, 5350, 5560, and 5950. All of these courses (with the *exception* of ECON 5560) are offered during spring semester. Students selecting ECON 5560 should take ECON 5560 during the fall semester of their senior year, and take an elective course during spring semester of their senior year.
[11]A language minor *must* be completed as part of the requirements for the International Agribusiness major. To fulfill this requirement, students may substitute language courses for some of the elective courses.
[12]Any upper-division economics course will meet this requirement, *except* for ECON 3900, 4250, 4950, 4990, and 5950.
[13]The regular calculus series (MATH 1210 and 1220) is recommended for students contemplating graduate studies in economics. MATH 1210 will fulfill the MATH 1100 requirement.

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 the Graduate Record Exam (GRE). The Graduate Management Admission Test (GMAT) is required for the International MBA in Food and Agribusiness. 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, 7950); (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 5300, 6030, 6040, 6250; ACCT 6350; BA 6520; MHR 5640), (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 6060, 7130, 7140, 7230, 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

A student may receive a College of Business Master of Business Administration degree with a specialization in an economic field by completing the MBA advanced core (see the MBA program description on pages 202-203) and 9 specialization credits. These specialization credits should be coordinated with the MBA Program director.

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

Department of Economics

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 2100; ECON 1500, 2010; MATH 1100; STAT 2300; and MHR 2050 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 6030, 6040, 6330; and BA 4590. During spring semester, courses in finance, marketing and advertising, human resource management, macroeconomics, business strategy, agricultural food policy, and food chain industry are taught at the RAC. Participating students pay USU tuition and are expected to complete the program in 12-18 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
DeeVon Bailey, agricultural economics
Basudeb Biswas, international trade and economic development
Christopher Fawson, public finance and econometrics; Associate Dean for International Affairs
Dillon Feuz, production and finance, marketing and price analysis
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 environmenal 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 Emeritus
Roice H. Anderson
Larry K. Bond
Rondo A. Christensen
Lynn H. Davis
Reed R. Durtschi
Herbert H. Fullerton
Gary B. Hansen
Allen D. LeBaron
Darwin B. Nielsen
Morris D. Whitaker

Associate Professors
Tyler J. Bowles, econometrics and international economics
Arthur J. Caplan, environmental economics and applied microeconomic theory
John P. Gilbert, international trade theory and policy, applied general equilibrium modeling, development economics
Steven S. Vickner, agribusiness, econometrics, water economics
Ruby A. Ward, agribusiness management and operations research

Associate Professor Emeritus
Glenn F. Marston

Assistant Professors
Gholamreza Oladi, international economics, econometrics
Rimma Shiptsova, international trade, food safety, econometrics

Human Resources Specialist
Marion T. Bentley, manpower economics

Course Descriptions

Economics (ECON), pages 608-610

Interdepartmental Doctoral Program in Education (EdD, PhD)

Chairman:
Carol J. Strong, 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.cehs.usu.edu/idp/

Faculty: Faculty are listed with participating departments.

Degrees offered: Doctorate of Education (EdD) and Doctorate of Philosophy (PhD)

Graduate specializations: PhD or EdD—Management Information Systems, Curriculum and Instruction, and Research and Evaluation

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.

General Information

Students may select from one of three specializations within the Interdepartmental Doctoral Program: Management Information Systems (MIS), Curriculum and Instruction (C & I), and Research and Evaluation (R & E).

Both the **Doctorate of Education (EdD)** and the **Doctorate of Philosophy (PhD)** degrees are offered through the Interdepartmental Doctoral Program (IDP) in the College of Education and Human Services (CEHS). The IDP is an interdepartmental faculty effort.

The EdD degree program is intended for students who wish to be better prepared to (1) understand and deal effectively with curricular and instructional problems as administrators, supervisors, and curriculum specialists in public or private educational institutions and settings; and (2) teach in community colleges, four-year colleges, and universities. The PhD degree program is intended for students who wish to be better prepared to (1) fulfill roles in teaching and research in colleges, universities, and education-related fields; and (2) conduct and direct research and development activities in public and private educational settings or in the corporate sector.

Specializations

Management Information Systems

The MIS specialization offers PhD and EdD degrees to graduate students interested in higher education, public education, or research-related careers. Specialization emphases can be pursued in Management Information Systems, Marketing Education, Business Education, and Business Communications. Other subject-matter emphases are also available. MIS students acquire expertise in management of information systems, database design and implementation, e-commerce systems, and office productivity.

Curriculum and Instruction

The C & I specialization prepares graduates for leadership, teaching, and research positions in curriculum and instruction. The PhD degree prepares graduates for academic careers in institutions that demand research expertise and an understanding of the theoretical foundations of curriculum and instruction. The EdD degree prepares graduates to serve as curriculum and instruction leaders in public or private educational institutions and to teach in education and education-related programs in colleges and universities. 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 with the research and evaluation knowledge and skills necessary for developing and validating new programs, comparing the strengths and weaknesses of alternative programs, and revising, updating, and possibly redirecting established programs. The PhD program typically focuses on research and evaluation methodologies that will prepare candidates for university or college teaching or research assignments that emphasize program evaluation. The EdD program is designed primarily for students who are practicing educators, and typically focuses on research and evaluation methodologies needed in educational settings.

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.

Doctoral Residency

The PhD requires three full-time academic semesters of residency, two of which must be consecutive. It is the responsibility of the student's doctoral committee to provide guidance, supervision, and review of the doctoral residency requirement. The purpose of residency is to provide the doctoral student with significant time for sustained contact with faculty members and intense attention to coursework, projects, research, and participation in academic life. Residency is a time for socialization into the shared community of professional life. It should include opportunities for the student to engage in activities outside of coursework that serve to transition the student to the new role of future colleague.

Each student's residency experience should be considered on an individual basis and should include many varied activities. Quality of participation is important, but so is variety. Experiences that meet the goals of the residency requirement may include such opportunities as:

1. Collaborative research or grants with faculty or peers
2. Working with faculty on scholarly publications
3. Participation in non course-related scholarly groups (e.g., book or writing groups)
4. College teaching internships or assistantships
5. Research assistantships
6. Attendance at local, regional, or national professional meetings
7. Involvement in graduate student organizations (e.g., Graduate Student Senate)
8. Committee and/or service work within the department, college, or university
9. Assisting faculty with course development and teaching
10. Advanced coursework beyond the minimum
11. Attendance at departmental colloquia
12. Considerable out-of-class interaction with faculty and/or students, especially on substantive issues
13. Organizing program events, such as brown bags, consortia, orientation programs, etc.

It is difficult to accomplish these outcomes while physically distant from the campus. Thus, doctoral programs nationwide include "residency" requirements to assure that doctoral students, upon graduation, will be prepared for full professional participation in academic life.

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 are processed through department offices. For a listing of fellowships and scholarships, see the *Graduate Financial Assistance* section of this catalog (pages 100-101).

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 sector; 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 will 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, pages 610-612

Department of 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 Advising:
Engineering Advising Center, Engineering 314A, (435) 797-2705, isobel.roskelley@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 Science (MS), and Doctor of Philosophy (PhD) in Electrical Engineering; BS and MS in Computer Engineering; Master of Engineering (ME)

Graduate specializations: *ME*—Electrical Engineering, Computer Engineering

Undergraduate Programs

Department Mission Statement

The mission of the Department of Electrical and Computer Engineering is to serve society through excellence in learning, discovery, and outreach. Undergraduate and graduate students are provided with an education in electrical and computer engineering, while developing attitudes, values, and vision preparing them for lifetimes of continued learning and leadership in their chosen careers. Through research the department strives to generate and disseminate new knowledge and technology for the benefit of the State of Utah, the nation, and beyond.

Program Description

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 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.

Program Objectives

The educational objectives of the Electrical Engineeering and Computer Engineering programs at Utah State University are as follows:

To provide students with:

1. Education in the fundamental sciences and mathematics that underlie engineering, with a general breadth and depth in engineering analysis and design.

2. Awareness of current technology and the fundamental background to enable them to stay informed and become adept at new technologies.

3. The ability to put ideas into practice through effective analysis, problem solving, requirements development, design, and implementation.

4. A broad awareness of the world around them through general education, preparing them to achieve their potential and contribute through their professional and personal lives.

5. The foundation of communications and teamwork skills, as well as professional attitudes and ethics.

Electrical Engineering

Each Electrical Engineering student is given a solid foundation in electricity, electronics, signals, and systems, with individual practical experience. Upon this basic foundation, the students then build expertise in advanced areas, stressing actual design practice, to prepare them for productive engineering careers. The focus areas can be categorized into the following: analog and digital electronics, controls, signal processing, communications, electromagnetics, microwaves, and space systems.

Computer Engineering

Building on a solid curriculum in computing hardware and software, the Computer Engineering 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 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 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 122-123). It is the responsibility of students to be aware of these rules and procedures; however, advisor assistance is available.

Department of Electrical and Computer Engineering

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 page 121), *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 focus, 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 focus, communication skills, and University Studies complete the program and prepare students for productive and rewarding careers in the computer engineering profession.

Required Courses

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

Pre-professional Program

Suggested Semester Schedule (126 credits)

Freshman Year (30 credits)

Fall Semester (15 credits)

MATH 1210 (QL)* Calculus I 4
CS 1400* Introduction to Computer Science—CS 1 3
ECE 1000* Introduction to Electrical and Computer Engineering 2
University Studies Breadth courses 6

Spring Semester (15 credits)

MATH 1220 (QL)* Calculus II 4
CS 1410 (QI)* Introduction to Computer Science—CS 2 3
PHYS 2210 (QI)* General Physics—Science and Engineering I 4
ECE 2700* Digital Circuits 4

Sophomore Year (33 credits)

Fall Semester (16 credits)

MATH 2210 (QI)* Multivariable Calculus 3
PHYS 2220 (BPS/QI)* General Physics—Science and Engineering II 4
University Studies Breadth courses 9

Spring Semester (17 credits)

MATH 2250 (QI)* Linear Algebra and Differential Equations 4
ECE 2250* Electrical Circuits 4
ENGL 2010 (CL2)* Intermediate Writing: Research Writing in a Persuasive Mode 3
Technical Elective course 3
University Studies Depth Social Sciences (DSS) course 3

*These classes are required for admission to the Professional Engineering Program (PEP). Courses are listed under the semesters in which they best fit.

Professional Program

Because of the variations in schedules, it is recommended that students meet with an advisor to work out a schedule for their junior and senior years. The following courses are required for students selecting the **Professional Program in Electrical Engineering**.

Suggested Semester Schedule

Junior Year (31credits)[1]

Fall Semester (16 credits)

ECE 3620 Circuits and Signals 3
ECE 3710 Microcomputer Hardware and Software 4
ECE 5530 Digital System Design 3
MATH 5710 Introduction to Probability 3
Technical elective course 3

Spring Semester (15 credits)

ECE 3410 Microelectronics I 4
ECE 3640 Signals and Systems 3
ECE 3820 (CI) Design I 2
ECE 3870 Electromagnetics I 3
Math/Science elective course 3

Senior Year (31-32 credits)

Fall Semester (15 credits)

ECE 4840 (CI) Design II 3
Technical elective course 3
ECE elective courses 9

Spring Semester (16-17 credits)

ECE 4850 (CI) Design III 2
ECE Elective Courses 12
University Studies Depth Humanities and Creative Arts (DHA) course 2-3

[1]Some of the junior classes can be delayed until the senior year, but this may limit a student's choice of electives during his or her senior year.

Technical Elective Courses (select 33 or more credits)

Electrical Engineering Electives (select 21-30 credits)

ECE 3720 Microcomputer Systems Programming (Sp) 3
ECE 4650[4] Optics I (F) 3
ECE 4680[4] Optics II (Sp) 3
ECE 4740 Computer and Data Communications (F) 3

Also, any ECE 5000-level course (including ECE 5930 when topic relates to electrical engineering) may be counted as an Electrical Engineering Elective.

Department of Electrical and Computer Engineering

Math and Science Electives (select 3-12 credits)
MATH 3310 Discrete Mathematics (F,Sp,Su) 3
MATH 4200 (CI) Foundations of Analysis (F,Sp) 3
MATH 4310 (CI) Introduction to Algebraic Structures (F,Sp) 3
MATH 5210 Introduction to Analysis I (F) 3
MATH 5220 Introduction to Analysis II (Sp) 3
MATH 5270 Complex Variables (Sp) 3
MATH 5310 Introduction to Modern Algebra (Sp) 3
MATH 5340 Theory of Linear Algebra (Sp) 3
MATH 5420 Partial Differential Equations (Sp) 3
MATH 5460 Introduction to the Theory and Application of Nonlinear Dynamical Systems (Sp) 3
MATH 5510 Introduction to Topology (F) 3
MATH 5610 Computational Linear Algebra and Solution of Systems of Equations (F) 3
MATH 5620 Numerical Solution of Differential Equations (Sp) 3
MATH 5720 Introduction to Mathematical Statistics (Sp) 3
MATH 5760 Stochastic Processes (F) 3
AP Biology 4
BIOL 1610 Biology I (F) 4
BIOL 2420 Human Physiology (F,Sp,Su) 4
BIOL 3300 General Microbiology (F,Sp) 4
AP Chemistry 8
CHEM 1210 Principles of Chemistry I (F,Sp) 4
CHEM 1215 Chemical Principles Laboratory I (F,Sp) 1
CHEM 1220 (BPS) Principles of Chemistry II (F,Sp,Su) 4
CHEM 2310 Organic Chemistry I (F) 4
CHEM 3700 Introductory Biochemistry (Sp) 3
CHEM 3710 Introductory Biochemistry Laboratory (Sp) 1
PHYS 2710 Introductory Modern Physics 3
PHYS 3550[2] Intermediate Classical Mechanics 3
PHYS 3600 Intermediate Electromagnetism 3
PHYS 3700[3] Thermal Physics 3
PHYS 3750 Foundations of Wave Phenomena 3
PHYS 4550 Advanced Classical Mechanics 3
PHYS 4600 Advanced Electromagnetism 3
PHYS 4650 Optics I 3
PHYS 4680 Optics II 3
PHYS 4700 Quantum Mechanics I 3
PHYS 4710 Quantum Mechanics II 3
WILD 2200 (BLS) Ecology of Our Changing World (F,Sp) 3

Technical Electives (select 0-9 credits)
CS 2420 (QI) Algorithms and Data Structures—CS 3 (F,Sp,Su) 3
CS 2450 (CI) Software Engineering (F,Sp) 3
CS 2810 Computer Organization and Architecture (F,Sp) 3
CS 3100 Operating Systems and Concurrency (F,Sp) 3
CS 4700 Programming Languages (F,Sp) 3
CS 5000 Theory of Computability (Sp) 3
CS 5050 Advanced Algorithms (F,Sp) 3
CS 5100 Graphical User Interfaces and Windows Programming (Sp) 4
CS 5200 Distributed and Network Programming (F) 4
CS 5300 Compiler Construction (F) 4
CS 5370 Advanced Software Engineering (F) 3
CS 5400 Computer Graphics I (F) 4
CS 5450 Multimedia Systems (Sp) 4
CS 5500 Parallel Algorithms (Sp) 3
CS 5600 AI: Problem Solving and Expert Systems (F) 3
CS 5650 CVPRIP I: Computer Vision, Pattern Recognition, and Image Processing (F) 3
CS 5700 Object-Oriented Software Development (F) 3
CS 5800 Introduction to Database Systems (F) 3
CS 5850 Systems Analysis (Sp) 3
CEE 4200 Engineering Economics (F) 2
ECE 3260 (QI) Science of Sound (F) 3
ECE 4250 Internship/Co-op (F,Sp,Su) 3
ENGR 2010[2] Engineering Mechanics Statics (F,Sp) 2
ENGR 2030 Engineering Mechanics Dynamics (F,Sp) 3
ENGR 2140 Strength of Materials (F,Sp) 2
ENGR 5500 High Performance Computing for Engineers (F) 3
MAE 2160 Material Science (F,Sp) 3
MAE 2300[3] Thermodynamics I (Sp,Su) 3

[2]Students cannot receive credit for both Engineering Mechanics *and* Analytical Mechanics.
[3]Students cannot receive credit for both Engineering Thermodynamics *and* Thermal Physics.
[4]Students cannot receive credit for both ECE Optics *and* PHYS Optics.

Computer Engineering

Pre-professional Program

Suggested Semester Schedule

Freshman Year (30-31 credits)

Fall Semester (15-16 credits)
MATH 1210 (QL)** Calculus I 4
CS 1400** Introduction to Computer Science—CS 1 3
CS 1405[5] Introduction to Computer Science—CS 1 Lab ..... (1)
ECE 1000** Introduction to Electrical and Computer Engineering 2
University Studies Breadth courses 6

Spring Semester (15 credits)
MATH 1220 (QL)** Calculus II 4
CS 1410 (QI)** Introduction to Computer Science—CS 2 3
PHYS 2210 (QI)** General Physics—Science and Engineering I 4
ECE 2700** Digital Circuits 4

Sophomore Year (34-35 credits)

Fall Semester (17 credits)
ENGL 2010 (CL2)** Intermediate Writing: Research Writing in a Persuasive Mode 3
CS 2420 (QI)** Algorithms and Data Structures—CS 3 3
MATH 2250 (QI)** Linear Algebra and Differential Equations 4
PHYS 2220 (BPS/QI)** General Physics—Science and Engineering II 4
University Studies Breadth course 3

Spring Semester (17-18 credits)
MATH 3310 Discrete Mathematics 3
ECE 2250** Electrical Circuits 4
CS 2450 (CI) Software Engineering 3
Technical Elective course 4-5
University Studies Breadth course 3

[5]Students desiring a Computer Science minor must take CS 1405 as a freshman. The rest of the minor is built into the curriculum. This lab is *not required* for the Computer Engineering major.
**These classes are required for admission to the Professional Engineering Program (PEP). Courses are listed under the semesters in which they best fit.

Professional Program

Suggested Semester Schedule

Because of the variation in schedules, it is recommended that students meet with an advisor to work out a schedule for their junior and senior years. The following courses are required for students selecting the **Professional Program in Computer Engineering**.

Suggested Semester Schedule

Junior Year (31 credits)[6]

Fall Semester (16 credits)
CS 3100 Operating Systems and Concurrency 3
ECE 3620 Circuits and Signals 3
ECE 3710 Microcomputer Hardware and Software 4
ECE 5530 Digital System Design 3
University Studies Breadth course 3

Spring Semester (15 credits)
ECE 3410 Microelectronics I 4
ECE 3640 Signals and Systems 3
ECE 3720 Microcomputer Systems Programming 3
ECE 3820 (CI) Design I 2
MATH 5710 Introduction to Probability 3

Senior Year (30-31 credits)

Fall Semester (15-16 credits)
ECE 4740 Computer and Data Communications 3
ECE 4840 (CI) Design II 3
Computer Science elective course 4
Computer Engineering elective course 3
University Studies Depth Humanities and Creative Arts (DHA) course 2-3

Spring Semester (15 credits)
ECE 4850 (CI) Design III 2
High-Level Technical Elective courses 7
Math/Science elective course 3
University Studies Depth Social Sciences (DSS) course 3

[6]Some of the junior classes can be delayed until the senior year, but this may limit a student's choice of electives during his or her senior year.

High-Level Technical Elective Courses (select 14-19 credits)

Students must complete a total of *at least* 14 credits within high-level technical electives. Courses listed in this departmental section as Computer Engineering Electives *or* Computer Science Electives may be used to fulfill this requirement. Also, courses having an ECE *or* CS prefix, which are numbered at the 5000 level, may be used as high-level technical electives.

Technical Elective Courses (select 23 or more credits)

Computer Engineering Electives (select 3-16 credits)
ECE 5320 Mechatronics (Sp) 4
ECE 5640 Real-Time Processors (Sp) 4
ECE 5740 Concurrent Programming (F) 3
ECE 5750 High-Performance Microprocessor Architecture (Sp) 3
ECE 5770 Microcomputer Interfacing (Sp) 4
ECE 5780 Real-Time Systems (F) 4

Computer Science Electives (select 4-13 credits)
CS 5100 Graphical User Interfaces and Windows Programming (Sp) .. 4
CS 5200 Distributed and Network Programming (F) 4
CS 5400 Computer Graphics I (F) 4

Math and Science Electives (select 3-9 credits)
MATH 2210 (QI) Multivariable Calculus (F,Sp,Su) 3
MATH 4200 (CI) Foundations of Analysis (F,Sp) 3
MATH 4310 (CI) Introduction to Algebraic Structures (F,Sp) 3
MATH 5210 Introduction to Analysis I (F) 3
MATH 5220 Introduction to Analysis II (Sp) 3
MATH 5270 Complex Variables (Sp) 3
MATH 5310 Introduction to Modern Algebra (Sp) 3
MATH 5340 Theory of Linear Algebra (Sp) 3
MATH 5420 Partial Differential Equations (Sp) 3
MATH 5460 Introduction to the Theory and Application of Nonlinear Dynamical Systems (Sp) 3
MATH 5510 Introduction to Topology (F) 3
MATH 5610 Computational Linear Algebra and Solution of Systems of Equations (F) 3
MATH 5620 Numerical Solution of Differential Equations (Sp) 3
MATH 5720 Introduction to Mathematical Statistics (Sp) 3
MATH 5760 Stochastic Processes (F) 3
AP Biology 4
BIOL 1610 Biology I (F) 4
BIOL 2420 Human Physiology (F,Sp,Su) 4
BIOL 3300 General Microbiology (F,Sp) 4
AP Chemistry 8
CHEM 1210 Principles of Chemistry I (F,Sp) 4
CHEM 1215 Chemical Principles Laboratory I (F,Sp) 1
CHEM 1220 (BPS) Principles of Chemistry II (F,Sp,Su) 4
CHEM 2310 Organic Chemistry I (F) 4
CHEM 3700 Introductory Biochemistry (Sp) 3
CHEM 3710 Introductory Biochemistry Laboratory (Sp) 1
PHYS 2710 Introductory Modern Physics 3
PHYS 3550[7] Intermediate Classical Mechanics 3
PHYS 3600 Intermediate Electromagnetism 3
PHYS 3700[8] Thermal Physics 3
PHYS 3750 Foundations of Wave Phenomena 3
PHYS 4550 Advanced Classical Mechanics 3
PHYS 4600 Advanced Electromagnetism 3
PHYS 4650[9] Optics I 3
PHYS 4680[9] Optics II 3
PHYS 4700 Quantum Mechanics I 3
PHYS 4710 Quantum Mechanics II 3
WILD 2200 (BLS) Ecology of Our Changing World (F,Sp) 3

Technical Electives (select 0-7 credits)
CS 2810 Computer Organization and Architecture (F,Sp) 3
CS 4700 Programming Languages (F,Sp) 3
CEE 4200 Engineering Economics (F) 2
ECE 4250 Internship/Co-op (F,Sp,Su) 3
ENGR 2010 Engineering Mechanics Statics (F,Sp) 2
ENGR 2030 Engineering Mechanics Dynamics (F,Sp) 3
ENGR 2140 Strength of Materials (F,Sp) 2
MAE 2160 Material Science (F,Sp) 3
MAE 2300 Thermodynamics I (Sp,Su) 3
ENGR 5500 High Performance Computing for Engineers (F) 3

Any upper-division (3000, 4000, or 5000 level) ECE class not required by the major may also be used as a Technical Elective course. However, specific courses must be approved in writing before the student registers for the course.

[7]Students cannot receive credit for both Engineering Mechanics *and* Physics Mechanics.
[8]Students cannot receive credit for both Engineering Thermodynamics *and* Physics Thermodynamics.
[9]Students cannot receive credit for both ECE Optics *and* PHYS Optics.

Minors

Students should have all minors approved by the minor department. Minors may be filled by using the Technical Electives credits for courses in the chosen minor area. All courses required for the minors must be completed with grades of *C-* or better.

Mathematics Minor

Required courses include:
MATH 1210 (QL) Calculus I (F,Sp,Su) 4
MATH 1220 (QL) Calculus II (F,Sp,Su) 4
MATH 2210 (QI) Multivariable Calculus (F,Sp,Su) 3
MATH 2270 (QI) Linear Algebra (F) 3
MATH 2280 (QI) Ordinary Differential Equations (Sp) 3
Two additional courses (6 credits) numbered above 4000, excluding MATH 4300, 4400, 4500, 4620, 5570, and 5580, are also required. MATH 2250 may substitute for MATH 2270 and 2280.

Physics Minor

PHYS 2210 (QI) General Physics–Science and Engineering I 4
PHYS 2220 (BPS/QI) General Physics–Science and Engineering II....4
Students must also select 10 credits from courses in Physics numbered 2710 or above.

Computer Science Minor

A minimum of 16 credits (with a cumulative GPA of 2.5 or higher and a *C-* or better in each class) is required. Students must complete the following courses:
CS 1400 Introduction to Computer Science—CS 1 (F,Sp,Su) 3
CS 1405 Introduction to Computer Science—CS 1 Lab (F,Sp,Su) 1
CS 1410 (QI) Introduction to Computer Science—CS 2 (F,Sp,Su) 3
CS 2420 (QI) Algorithms and Data Structures—CS 3 (F,Sp,Su).....3
Students must also complete two additional computer science classes. One of these two classes must be numbered at the 3000 level or above. Students should contact the Computer Science Department for information about classes that may not be used toward the Computer Science Minor.

Other minors should be approved by the minor department.

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 258).

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. Minimum GPA requirements for participation in departmental honors vary by department, but usually fall within the range of 3.30-3.50. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level. The campus-wide Honors Program, which is open to all qualified students regardless of major, offers a rich array of cultural and social activities, special classes, and the benefit of Honors early registration. Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@cc.usu.edu. Additional information can be found online at: **http://www.usu.edu/honors/**

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 in five 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. Both the BS and the master's degree can generally be earned with 150 total credits. The department requires that students have a minimum GPA of 3.3, both overall and during the last 60 semester credits, in order to qualify for acceptance into the concurrent BS/Master's program. (For more information, see the *College of Engineering* section of this catalog, pages 123-124.)

Additional Information

For more information about Bachelor of Science requirements and the sequence in which courses should be taken, see the major requirement sheet, available from the Electrical and Computer Engineering Department, or online at:
http://www.usu.edu/majorsheets/

Graduate Programs

Admission Requirements

See general admission requirements on pages 101-102. Applicants with a bachelor's degree in Electrical or Computer Engineering from an ABET accredited program and having a 3.1 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 high-level computer language (preferably C or C++).

Applications will be considered throughout the year. However, students desiring financial aid should submit application materials by January 1 to be considered for the following fall semester and July 1 to be considered for the following spring 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, and PhD degrees are outlined below; these are in addition to the general requirements of the School of Graduate Studies.

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 initially 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 (Electrical Engineering)

1. At least 3 credits of ECE coursework must be completed at the 7000 level.
2. At least 12 credits of ECE coursework must be completed at or above the 6000 level.
3. MS Plan A students must complete 6 credits of Thesis Research (ECE 6970).
4. MS Plan B students must complete 3 credits of Thesis Research (ECE 6970) and 3 credits of Design Project (ECE 6950).
5. No more than three 5000-level ECE courses or non-ECE courses may be applied toward the MS degree.
6. 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 Science (Computer Engineering)

1. At least 12 credits (excluding thesis and ECE 6800 seminar) must be completed in Electrical or Computer Engineering.
2. At least two sequences in Electrical or Computer Engineering or Computer Science, with at least one of the sequences in core Computer Engineering courses, must be completed.
3. MS Plan A students must complete 6 credits of Thesis Research (ECE 6970).
4. MS Plan B students must complete 3 credits of Thesis Research (ECE 6970) and 3 credits of Design Project (ECE 6950).
5. No more than four 5000-level ECE courses or CS courses, or non-ECE/CS courses, may be applied toward the MS degree.

Master of Engineering (Electrical Engineering *or* Computer Engineering Specialization)

1. At least 18 credits of ECE coursework must be completed at or above the 5000 level.
2. At least one ECE depth course (having a graduate-level prerequisite) is required.
3. At least 15 credits of 6000-level or above coursework (excluding ECE 6800) are required.
4. At least 3 credits of Professional Experience (ECE 6250 Internship or a lab-intensive course) are required. Up to 6 credits of ECE 6250 Internship are allowed.
5. A maximum of 12 credits outside of the Electrical and Computer Engineering Department may be allowed, based upon a comprehensive academic plan. Courses must be approved by the Master of Engineering advisor.

All Master's Students

1. One credit of ECE 6800 (Electrical Engineering Colloquium) must be completed as soon as possible.
2. Each master's student must form a committee and have a program of study approved by the end of his or her first semester.
3. 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. This may be fulfilled as a requirement for a bachelor's degree. MS students may, at the discretion of their supervisors, be required to hire an editor to bring the thesis or paper into acceptable form.

Doctor of Philosophy

To qualify for a PhD degree, a student is expected *either* to complete at least 51 credits beyond the requirements for a BS degree; *or* to complete at least 21 credits beyond the requirements for an MS degree, *plus* complete enough credits of dissertation research to have a total of 90 credits beyond the BS degree or 60 credits beyond the MS degree. Completion of this coursework generally requires three semesters of study beyond the MS degree, with up to 18 credits beyond the BS degree being taken in courses outside the Electrical and Computer Engineering Department.

After a student has completed at least 18 credits of coursework beyond the MS degree, he or she must pass a comprehensive examination based on graduate-level courses, as well as pass a dissertation research proposal defense. The comprehensive examination will be given *only* after a student has applied and received permission to take the exam. Near the end of the program, the results of the original (publishable) research work will be presented and publicly defended as a dissertation.

For further information, visit the departmental website at:
http://www.engineering.usu.edu/ece/

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 Imagery 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.

Department of Electrical and Computer Engineering

Financial Assistance

All applicants who are accepted academically are automatically considered for financial aid. Many 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
H. Scott Hinton, photonic switching
Todd K. Moon, communications and signal processing
Krishna Shenai, electronic systems
Charles M. Swenson, space science and space engineering

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
Gardiner S. "Dyke" Stiles, concurrent systems
Ronald L. Thurgood, computers, database systems
Clair L. Wyatt, infrared, electro-optical systems

Associate Professors
Scott E. Budge, signal processing, image processing
Jacob H. Gunther, communications and signal processing
Paul A. Wheeler, microprocessors, acoustics

Research Associate Professors
Paul D. Israelsen, integrative services, digital systems design
Robert T. Pack, geological and geomatics engineering

Adjunct Associate Professors
R. Rees Fullmer, control systems, space engineering
Ronald J. Huppi, space research
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
Reyhan Baktur, electromagnetics
Yang Quan Chen, control systems
Aravind Dasu, computer engineering
Brandon K. Eames, computer engineering
Wei Ren, controls
Edmund Spencer, space science and engineering
Chris Winstead, analog VLSI

Principal Lecturer
Donald L. Cripps, control systems, robotics

Research Assistant Professor
Hui Fang Dou, precision instruments, mechatronics

Adjunct Research Assistant Professor
Randy J. Jost, electromagnetic fields, solid state, microwaves

Course Descriptions

Electrical and Computer Engineering (ECE), pages 604-607

Department of Elementary Education

Interim Department Head: James T. Dorward
Location: Emma Eccles Jones Education 385A
Phone: (435) 797-0374
FAX: (435) 797-0372
E-mail: elemeduc@cc.usu.edu
WWW: http://elementaryeducation.usu.edu

Student Teaching Director:
Vesna Jenkins, Education 371, (435) 797-0371, vesna.jenkins@usu.edu

Undergraduate Advisors:
Dawn D. Black, Education 383, (435) 797-0383, dawn.black@usu.edu
Sylvia Robinson, Education 377, (435) 797-0377, sylvia.robinson@usu.edu
Denise E. Taylor, Education 375, (435) 797-0375, denise.taylor@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 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 eight programs leading to licensure as a teacher. In the following list, each program name is followed by the licensure obtained (shown in parentheses). (1) Elementary Education (grades 1 through 6); (2) Early Childhood Education (preschool through grade 3); (3) Dual Elementary and Early Childhood Education (preschool through grade 6); (4) Composite Elementary Education/Special Education—Mild/Moderate (grades 1 through 6, and Special Education grades kindergarten through 12); (5) Composite Elementary Education/Special Education—Severe (grades 1 through 6, and Special Education grades kindergarten through 12); (6) Composite Early Childhood Education/Special Education—Early Childhood (preschool through grade 3, and Special Education birth through age 5); (7) Composite Elementary Education/Deaf Education (grades 1-6, and Master's in Deaf Education); (8) Composite Early Childhood Education/Deaf Education (preschool through grade 3, and Master's in Deaf Education).

Undergraduate Research

Undergraduate research opportunities are available with many departmental faculty members. Interested students should contact Francine Johnson, Associate Dean in the College of Education and Human Services, (435) 797-2714, francine.johnson@usu.edu.

Assessment

To review Department of Elementary Education assessment information, visit **http://elementaryeducation.usu.edu** and click on the assessment link.

University Studies Requirements

Elementary Education Majors and Early Childhood Education Majors are required to take certain classes to fulfill the University Studies requirements. The following sections list the specific courses to choose from:

Computer and Information Literacy (0-3 credits)
Passing grade on six computer and information literacy related examinations. Although no specific course is required, USU 1000 and OSS 1400 teach the required skills.

Quantitative Literacy (QL) (3 credits)
(A grade lower than a *C-* will not be accepted in this course.)
STAT 1040 (QL) Introduction to Statistics (F,Sp,Su) 3
(MATH 1050 or Math ACT score of 25 or higher is required to apply to the Teacher Education Program.)

Breadth Requirements (22 credits)
Choose one course from the following to meet the BAI requirement:
ECON 1500, HIST 1700, POLS 1100, USU 1300 3

Choose one course from the following to meet the BCA requirement:
MUSC 1010, USU 1330 3

Choose one course from the following to meet the BHU requirement:
ANTH 2210, HIST 1110, HIST 1510, PHIL 1000, PHIL 1120, PHIL 1200, PHIL 2400, USU 1320 3

Choose one course from the following to meet the BSS requirement:
ANTH 1010, ANTH 2010, ASTE 2900, ENVS 2340, GEOG 1300, GEOG 1400, JCOM 1500, NR 1010, POLS 2200, SOC 1010, USU 1340 3

Choose one course from the following to meet the BLS requirement:
AWER 1200, BIOL 1010, FRWS 2200, NFS 1020, PLSC 2100, USU 1350 3

All students are required to complete PHYS 1200 (BPS) (4 cr). In addition, students must choose *one* course from the following:
BMET 2000, GEOG 1000, GEO 1010, GEO 1150, CHEM 1010, PHYS 1040, SOIL 2000, USU 1360 7

Depth Education Requirements

Communications Intensive (CI) (2 courses) (included in major)
ELED 3000 (CI) Foundation Studies and Practicum in Teaching and Classroom Management Level II (F,Sp) 4-6
ELED 4030 (CI) Teaching Language Arts and Practicum Level III (F,Sp,Su) 3

Quantitative Intensive (QI) (1 course)
(A grade lower than a *C-* will not be accepted in this course.)
MATH 2020 (QI)[1] Introduction to Logic and Geometry (F,Sp,Su) 3

Depth Course Requirements (2 courses)
Choose two approved University Studies depth courses designated DSC, DHA, or DSS (outside of area of emphasis).

[1]Prerequisite: MATH 1050 or Math ACT score of 25 or higher (also required to apply to the Teacher Education Program).

Requirements

Provisional Admission Process and Requirements

More students major in Elementary Education at USU than in any other major. Therefore, competition for admission into the program is very keen. Due to increased demands for admission, coupled with limited resources, a ceiling of 180 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 or PPST test results, (3) the number of credits a student has taken, and (4) successful completion of a group assessment interview. (Additional factors to be weighted may be gender and/or minority status consistent with applicable law.) Additional requirements for application to the program are the CIL (Computer and Information Literacy) exams, a speech and hearing test, a Teacher Education Writing Exam, and a background check through the Utah State Office of Education. 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 Education 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 1010) 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 earns 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 phase of the program. Student teaching constitutes full days of actual teaching experience for the entire semester.

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 Principles also receive major emphasis through SODIA's levels of progression. These principles 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 Principles) 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 visit the Elementary Education Department website: **http://elementaryeducation.usu.edu**

Prior to applying for student teaching, students are *required* to take and pass the Praxis II content test (10014) with a score of 150 or higher.

Each student completes a professional semester of student teaching. An application for student teaching must be made at least one semester in advance, and credentials are reevaluated at that time. Since not all student teachers can be accommodated by the schools located within Cache Valley, placements are made on a first-come, first-served basis. 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.

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Students who carefully select their elective courses may also qualify for a special endorsement to the basic professional teaching license. Additional Praxis exams may be necessary for teaching minors and endorsements. All students complete an area of emphasis in a subject matter field, in addition to the teaching support courses. 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.

Course Requirements

Elementary Education Major (78-80 credits) (includes Teaching Support Courses and Emphasis)

Students majoring in Elementary Education should complete all the following courses as indicated.

Note: Teaching License requires 2.75 cumulative Grade Point Average (GPA). (Grades lower than a *C* will not be accepted in the major.)

Level I (6 credits) (2.75 GPA required in Level I courses)
ELED 1010 Orientation to Elementary Education (F,Sp,Su) 3
FCHD 1500 (BSS) Human Development Across the Lifespan (F,Sp) ... 3

Level II (17 credits) (courses taken concurrently)
Students must be admitted to the Teacher Education Program prior to taking these classes.

ELED 3000 (CI) Foundation Studies and Practicum in Teaching and Classroom Management Level II (F,Sp) 6
ELED 3005 Beginning Classroom Management (F,Sp) 1
SPED 4000 Education of Exceptional Individuals (F,Sp,Su) 2
PSY 3660 Educational Psychology for Teachers (F,Sp) 2
INST 4010 Principles and Practices of Technology for Elementary Teachers (F,Sp,Su) 3
ELED 3100[2] Classroom Reading Instruction (F,Sp,Su) 3

[2]ELED 3100 may be taken after Level II, but is required before Level III.

Level III (16 credits; must follow Level II) (courses taken concurrently)
ELED 4000 Teaching Science and Practicum Level III (F,Sp,Su) 3
ELED 4005 Intermediate Classroom Management (F,Sp,Su) 1
ELED 4030 (CI) Teaching Language Arts and Practicum Level III (F,Sp,Su) 3
ELED 4040 (CI) Assessment and Instruction for Struggling Readers (F,Sp,Su) 3
ELED 4050 Teaching Social Studies and Practicum Level III (F,Sp,Su) 3
ELED 4060 Teaching Mathematics and Practicum Level III (F,Sp,Su) .. 3

Level IV (15 credits; must follow Level III)
ELED 5100 Student Teaching—Primary Grades (1-3) (F,Sp) 6
ELED 5150 Student Teaching—Elementary (Grades 4-6) (F,Sp) 6
ELED 5250 Student Teaching—Seminar: Classroom Management (F,Sp) 3

Teaching Support Courses (Elementary Education Major, 13-15 credits; Early Childhood and Elementary Education Dual Major, 10-11 credits)
(Grade of *C-* or better is required.)
Required Courses (5 credits)
MUSC 3260 Elementary School Music (F,Sp,Su) 2
PEP 3050 Physical Education in the Elementary School (F,Sp,Su) 3

Teaching Support Electives
(two or three courses, depending on major)
Choose *one* course from the following:
HEP 2000 First Aid and Emergency Care (F,Sp) 2
HEP 2500 Health and Wellness (F,Sp,Su) 2
HEP 3000 Drugs and Human Behavior (F,Su) 3
HEP 3500 Elementary School Health Education (F,Sp) 2

From the following, Elementary Education Majors choose *two* courses; Early Childhood and Elementary Education Dual Majors choose *one* course:
ART 3700 Elementary Art Methods (F,Sp) 3
ELED 4410 Gifted Education in the Regular Classroom (F) 3
ELED 4480 Early Childhood Education Kindergarten through Grade 3 (F,Sp) 3
ELED 4710 Diversity in Education (Sp,Su) 3
ELED 4730 Educational Linguistics (F) 3
ELED 4740 Second Language Acquisition in the Classroom (Sp) 3
ENGL 3530 Children's Literature (Sp) 3
ENVS 5110 Environmental Education (Sp) 3
FCHD 2610 Child Guidance (F,Sp) 3
THEA 4030 (DHA) Storytelling (F,Sp,Su) 3
THEA 4330 Drama and Theatre for Youth: Grades K-6 (F,Sp,Su) 3

Emphasis (12 credits) (*C-* or better required)
Refer to page 263 for a listing of available Emphasis areas. For a listing of required and recommended courses, students should contact their advisor.

Suggested Four-year Course of Study for Elementary Education Major

This is a model of the requirements and possible sequence of courses. However, students may progress through the program or have more flexibility if they have high ACT scores, CLEP credit, concurrent enrollment credit, AP credit, and/or transfer credit; or if they attend during summer semesters.

Freshman Year (32 credits)
Fall Semester (16 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MATH 1050 (QL)[3] College Algebra 4
Breadth American Institutions (BAI) course[4] 3
Breadth Humanities (BHU) course[4] 3
Breadth Life Sciences (BLS) course[4] 3

Spring Semester (16 credits)
PHYS 1200 (BPS) Introduction to Physics by Hands-on Exploration ... 4
STAT 1040 (QL) Introduction to Statistics 3
Breadth Creative Arts (BCA) course[4] 3
Note: Apply to the program by the July 1 deadline.

Level I courses:
FCHD 1500 (BSS) Human Development Across the Lifespan 3
ELED 1010 Orientation to Elementary Education 3

Sophomore Year (32 credits)
Fall Semester (15 credits)
MATH 2020 (QI) Introduction to Logic and Geometry 3
Breadth Physical Sciences (BPS) course[4] 3
Breadth Social Sciences (BSS) course[4] 3
Emphasis courses 6

Spring Semester (17 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Emphasis courses 6
HEP elective course 2
Teaching Support elective course 3
Unviersity Studies Depth course 3

Junior Year (28 credits)
Fall Semester (14 credits)
Level II courses:
Students must be admitted to the Teacher Education Program prior to enrolling in Level II courses.
ELED 3000 (CI) Foundation Studies and Practicum in Teaching and Classroom Management Level II 6
ELED 3005 Beginning Classroom Management 1
SPED 4000 Education of Exceptional Individuals 2
PSY 3660 Educational Psychology for Teachers 2
INST 4010 Principles and Practices of Technology for Elementary Teachers 3

Spring Semester (14 credits)
ELED 3100 Classroom Reading Instruction 3
PEP 3050 Physical Education in the Elementary School 3
MUSC 3260 Elementary School Music 2
University Studies Depth course 3
Teaching Support elective 3

Senior Year (31 credits)
Fall Semester (16 credits)
Level III courses:
ELED 4000 Teaching Science and Practicum Level III 3
ELED 4005 Intermediate Classroom Management 1
ELED 4030 (CI) Teaching Language Arts and Practicum Level III 3
ELED 4040 (CI) Assessment and Instruction for Struggling Readers 3
ELED 4050 Teaching Social Studies and Practicum Level III 3
ELED 4060 Teaching Mathematics and Practicum Level III 3

Spring Semester (15 credits)
Level IV courses:
ELED 5250 Student Teaching—Seminar: Classroom Management 3
ELED 5100 Student Teaching—Primary Grades (1-3) 6
ELED 5150 Student Teaching—Elementary (Grades 4-6) 6

[3]The MATH 1050 requirement (or its equivalent) must be completed prior to application to the Teacher Education Program.
[4]At least *two* of the *seven* breadth courses *must* have a USU prefix.

Early Childhood Education Major (80 credits) *or* Early Childhood and Elementary Education Dual Major (89-91 credits)

(includes Teaching Support Courses and Emphasis)
Note: Grades lower than a *C* will not be accepted toward major requirements.

Level I (6 credits) (2.75 GPA required in Level I courses)
ELED 1010 Orientation to Elementary Education (F,Sp,Su) 3
FCHD 1500 (BSS) Human Development Across the Lifespan (F,Sp) ... 3

Level II (14 credits) (courses taken concurrently)
Students must be admitted to the Teacher Education Program prior to taking these classes.

ELED 3000 (CI) Foundation Studies and Practicum in Teaching and Classroom Management Level II (F,Sp) 4
ELED 3005 Beginning Classroom Management (F,Sp) 1
FCHD 2600 Seminar in Early Childhood Education (F,Sp) 2
FCHD 2630 Practicum in Early Childhood Education (F,Sp) 2
PSY 3660 Educational Psychology for Teachers (F,Sp) 2
ELED 3100 Classroom Reading Instruction (F,Sp,Su) 3
(ELED 3100 may be taken during transition semester, if desired.)

Transition (11 credits)
SPED 4000 Education of Exceptional Individuals (F,Sp,Su) 2
INST 4010 Principles and Practices of Technology for Elementary Teachers (F,Sp,Su) 3
FCHD 4550[5] Preschool Methods and Curriculum (F,Sp) 3
ELED 4480[5] Early Childhood Education Kindergarten through Grade 3 (F,Sp) 3

Level III (16 credits; must follow Level II) (courses taken concurrently during fall, spring, or summer semester)
ELED 4000 Teaching Science and Practicum Level III 3
ELED 4005 Intermediate Classroom Management 1
ELED 4030 (CI) Teaching Language Arts and Practicum Level III 3
ELED 4040 (CI) Assessment and Instruction for Struggling Readers ... 3
ELED 4050 Teaching Social Studies and Practicum Level III 3
ELED 4060 Teaching Mathematics and Practicum Level III 3

Level IV (21 credits) (taken during two semesters)
ELED 5050[6] Student Teaching—Kindergarten (F,Sp) 6
ELED 5100[6] Student Teaching—Primary Grades (1-3) (F,Sp) 6
ELED 5250[6] Student Teaching—Seminar: Classroom Management (F,Sp) 3
FCHD 4960[7] Practice Teaching in Child Development Laboratories (F,Sp) 6

[5]Level II must be completed prior to taking this course.
[6]Level III and ELED 4480 must be completed prior to taking this course.
[7]FCHD 4550 must be completed prior to taking this course.

Emphasis (12 credits) (*C*- or better required)
A listing of available Emphasis areas is shown below. For a listing of required and recommended courses, students should contact their advisor.

Electives (to complete 120 credits)
The following courses are recommended to be taken as electives.

ART 3700 Elementary Art Methods (F,Sp) 3
MUSC 3260 Elementary School Music (F,Sp,Su) 2
PEP 3050 Physical Education in the Elementary School (F,Sp,Su) 3
HEP 3500 Elementary School Health Education (F,Sp) 2
FCHD 2610 Child Guidance (F,Sp) 3

Elementary/Early Childhood Areas of Emphasis

Students majoring in Elementary Education or Early Childhood Education are required to complete an area of Emphasis. All students majoring in Elementary Education, Early Childhood Education, or Dual Elementary Education and Early Childhood Education must complete an area of Emphasis consisting of 12 credits. The area of Emphasis must be chosen from the following fields: Language Arts, Social Studies, Mathematics, Mathematics/General Science, General Science, Fine Arts, Art, Music, Physical Education, Health/Wellness/Nutrition, School Library Media, a Foreign Language, or an English as a Second Language (ESL) Endorsement.

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Suggested Four-year Course of Study for Early Childhood Education Major *or* Early Childhood and Elementary Education Dual Major

This is a model of the requirements and possible sequence of courses. However, students may progress through the program or have more flexibility if they have high ACT scores, CLEP credit, concurrent enrollment credit, AP credit, and/or transfer credit; or if they attend during summer semesters.

Freshman Year (32 credits)
Fall Semester (16 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MATH 1050 (QL)[8] College Algebra 4
Breadth American Institutions (BAI) course[9] 3
Breadth Humanities (BHU) course[9] 3
Breadth Life Sciences (BLS) course[9] 3

Spring Semester (16 credits)
PHYS 1200 (BPS) Introduction to Physics by Hands-on Exploration ...4
STAT 1040 (QL) Introduction to Statistics 3
Breadth Creative Arts (BCA) course[9] 3

Level I courses:
FCHD 1500 (BSS) Human Development Across the Lifespan 3
ELED 1010 Orientation to Elementary Education 3

Sophomore Year (32 credits)
Fall Semester (15 credits)
MATH 2020 (QI) Introduction to Logic and Geometry 3
Breadth Physical Sciences (BPS) course[9] 3
Breadth Social Sciences (BSS) course[9] 3
Emphasis courses 6

Spring Semester (17 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Emphasis courses 6
HEP elective[10] 2
Teaching Support elective[10] 3
University Studies Depth course 3
Note: Apply to the program by the July 1 deadline.

Junior Year (30 credits)
Fall Semester (14 credits)
Level II courses:
Students must be admitted to the Teacher Education Program prior to enrolling in Level II courses.
ELED 3000 (CI) Foundation Studies and Practicum in Teaching and Classroom Management Level II 4
ELED 3005 Beginning Classroom Management 1
ELED 3100 Classroom Reading Instruction 3
FCHD 2600 Seminar in Early Childhood Education 2
FCHD 2630 Practicum in Early Childhood Education 2
PSY 3660 Educational Psychology for Teachers 2

Spring Semester (16 credits)
PEP 3050[10] Physical Education in the Elementary School 3
MUSC 3260[10] Elementary School Music 2
SPED 4000 Education of Exceptional Individuals 2
INST 4010 Principles and Practices of Technology for Elementary Teachers 3
ELED 4480 Early Childhood Education Kindergarten through Grade 3 3
FCHD 4550 Preschool Methods and Curriculum 3

Senior Year (31 credits)
Fall Semester (16 credits)
Level III courses:
ELED 4000 Teaching Science and Practicum Level III 3
ELED 4005 Intermediate Classroom Management 1
ELED 4030 (CI) Teaching Language Arts and Practicum Level III 3
ELED 4040 (CI) Assessment and Instruction for Struggling Readers ...3
ELED 4050 Teaching Social Studies and Practicum Level III 3
ELED 4060 Teaching Mathematics and Practicum Level III 3

Spring Semester (15 credits)
Level IV courses:
ELED 5250 Student Teaching—Seminar: Classroom Management 3
ELED 5050 Student Teaching—Kindergarten 6
ELED 5100[11] Student Teaching—Primary Grades (1-3) (6 cr) **or**
ELED 5150[11] Student Teaching—Elementary (Grades 4-6) (6 cr) 6

Additional Semester (9 credits)
FCHD 4960 Practice Teaching in Child Development Laboratories 6
University Studies Depth course 3

[8]The MATH 1050 requirement (or its equivalent) must be completed prior to application to the Teacher Education Program.
[9]At least *two* of the *seven* breadth courses *must* have a USU prefix.
[10]This requirement applies *only* to those completing the dual major.
[11]Early Childhood Education students should take ELED 5100. Dual Early Childhood/ Elementary Education students should take ELED 5150.

Composite Elementary Education and Special Education Major

Elementary Education Major (65 credits) (includes Teaching Support Courses)
Students should complete all of the following courses as indicated.

Note: Teaching licensure requires a 2.75 cumulative grade point average (GPA). (Grades lower than a *C* will not be accepted toward the major.)

Level I (6 credits) (2.75 GPA required in Level I courses)
ELED 1010 Orientation to Elementary Education (F,Sp,Su) 3
FCHD 1500 (BSS) Human Development Across the Lifespan (F,Sp) ...3

Level II (courses taken concurrently during spring semester) (17 credits)
Students must be admitted to the Teacher Education Program prior to taking these classes.

ELED 3000 (CI) Foundation Studies and Practicum in Teaching and Classroom Management Level II 6
ELED 3005 Beginning Classroom Management 1
SPED 4000 Education of Exceptional Individuals 2
PSY 3660 Educational Psychology for Teachers 2
SPED 5530 Technology for Teaching Exceptional Learners 3
ELED 3100 Classroom Reading Instruction 3

Level III (courses taken concurrently during fall, spring, or summer semester) (16 credits)
ELED 4000 Teaching Science and Practicum Level III 3
ELED 4005 Intermediate Classroom Management 1
ELED 4030 (CI) Teaching Language Arts and Practicum Level III 3
ELED 4040 (CI) Assessment and Instruction for Struggling Readers ...3
ELED 4050 Teaching Social Studies and Practicum Level III 3
ELED 4060 Teaching Mathematics and Practicum Level III 3

Level IV (15 credits) (taken during fall or spring semester)
ELED 5150 Student Teaching—Elementary (Grades 4-6) 6
SPED 5210 (CI)[12] Student Teaching in Special Education: Dual Majors 6
ELED 5250 Student Teaching—Seminar: Classroom Management 3

[12]Students must complete Special Education major coursework prior to student teaching.

Teaching Support Courses
MUSC 3260 Elementary School Music (F,Sp,Su) 2
PEP 3050 Physical Education in the Elementary School (F,Sp,Su) 3
COMD 2910 (CI)[13] Sign Language I (F,Sp,Su) 4
HEP 2000[13] First Aid and Emergency Care (F,Sp,Su) 2

[13]Required for Special Education—Severe specialization only.

Special Education Major (33 or 29 credits)

Students should choose *either* the **Mild/Moderate** specialization *or* the **Severe** specialization.

Students must be admitted to the Special Education program prior to taking these courses.

Mild/Moderate Specialization (33 credits)

Fall:
SPED 5010 (QI) Applied Behavioral Analysis 1: Principles, Assessment, and Analysis 3
SPED 5040 Foundations of Effective Assessment and Instructional Practices 3
SPED 5070 Policies and Procedures in Special Education 3
SPED 5310 Teaching Reading and Language Arts to Students with Mild/Moderate Disabilities 4
SPED 5330 Eligibility Assessment for Students with Mild/Moderate Disabilities 1
SPED 5410 Practicum: Direct Instruction Reading and Language Arts for Students with Mild/Moderate Disabilities 3

Spring:
SPED 5050 Applied Behavioral Analysis 2: Applications 3
SPED 5060 Consulting with Parents and Teachers 3
SPED 5320 Teaching Content Areas and Transition to Students with Mild/Moderate Disabilities 3
SPED 5340 Teaching Math to Students with Mild/Moderate Disabilities 3
SPED 5420 Practicum: Teaching Mathematics to Students with Mild/Moderate Disabilities 4

Severe Specialization (29 credits)

Fall:
SPED 5010 (QI) Applied Behavioral Analysis 1: Principles, Assessment, and Analysis 3
SPED 5040 Foundations of Effective Assessment and Instructional Practices 3
SPED 5070 Policies and Procedures in Special Education 3
SPED 5510 Curriculum for Students with Severe Disabilities 4
SPED 5600 Practicum: Introduction to Instruction of Students with Severe Disabilities 3

Spring:
SPED 5050 Applied Behavioral Analysis 2: Applications 3
SPED 5060 Consulting with Parents and Teachers 3
SPED 5520 Curriculum for Secondary-Level Students with Severe Disabilities 3
SPED 5610 Practicum: Advanced Systematic Instruction of Students with Severe Disabilities 4

Suggested Four-year Course of Study for Elementary Education/Special Education Mild/Moderate Specialization

This is a model of the requirements and possible sequence of courses. However, students may progress through the program or have more flexibility if they have high ACT scores, CLEP credit, concurrent enrollment credit, AP credit, and/or transfer credit; or if they attend during summer semesters.

Freshman Year (32 credits)
Fall Semester (16 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MATH 1050 (QL)[14] College Algebra 4
Breadth American Institutions (BAI) course[15] 3
Breadth Humanities (BHU) course[15] 3
Breadth Life Sciences (BLS) course[15] 3

Spring Semester (16 credits)
PHYS 1200 (BPS) Introduction to Physics by Hands-on Exploration ... 4
STAT 1040 (QL) Introduction to Statistics 3
Breadth Creative Arts (BCA) course[15] 3

Level I courses:
FCHD 1500 (BSS) Human Development Across the Lifespan 3
ELED 1010 Orientation to Elementary Education 3

Sophomore Year (34 credits)
Fall Semester (16 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
MUSC 3260 Elementary School Music 2
PEP 3050 Physical Education in the Elementary School 3
SPED 4000 Education of Exceptional Individuals 2
Breadth Physical Sciences (BPS) course[15] 3
Breadth Social Sciences (BSS) course[15] 3

Spring Semester (18 credits)
Level II courses:
Students must be admitted to the Teacher Education Program prior to enrolling in Level II courses.
ELED 3000 (CI) Foundation Studies and Practicum in Teaching and Classroom Management Level II 6
ELED 3005 Beginning Classroom Management 1
SPED 5530 Technology for Teaching Exceptional Learners 3
PSY 3660 Educational Psychology for Teachers 2
ELED 3100 Classroom Reading Instruction 3
University Studies Depth course 3

Junior Year (33 credits)
Fall Semester (17 credits)
SPED 5010 (QI) Applied Behavioral Analysis I: Principles, Assessment, and Analysis 3
SPED 5040 Foundations of Effective Assessment and Instructional Practices 3
SPED 5070 Policies and Procedures in Special Education 3
SPED 5310 Teaching Reading and Language Arts to Students with Mild/Moderate Disabilities 4
SPED 5330 Eligibility Assessment for Students with Mild/Moderate Disabilities 1
SPED 5410 Practicum: Direct Instruction Reading and Language Arts for Students with Mild/Moderate Disabilities 3

Spring Semester (16 credits)
SPED 5050 Applied Behavioral Analysis 2: Applications 3
SPED 5060 Consulting with Parents and Teachers 3
SPED 5320 Teaching Content Areas and Transition to Students with Mild/Moderate Disabilities 3

SPED 5340 Teaching Math to Students with Mild/Moderate Disabilities 3
SPED 5420 Practicum: Teaching Mathematics to Students with Mild/Moderate Disabilities 4

Senior Year (31 credits)
Fall Semester (16 credits)
Level III courses:
ELED 4000 Teaching Science and Practicum Level III 3
ELED 4005 Intermediate Classroom Management 1
ELED 4030 (CI) Teaching Language Arts and Practicum Level III 3
ELED 4040 (CI) Assessment and Instruction for Struggling Readers 3
ELED 4050 Teaching Social Studies and Practicum Level III 3
ELED 4060 Teaching Mathematics and Practicum Level III 3

Spring Semester (15 credits)
Level IV courses:
ELED 5250 Student Teaching—Seminar: Classroom Management 3
ELED 5150 Student Teaching—Elementary (Grades 4-6) 6
SPED 5210 (CI) Student Teaching in Special Education: Dual Majors 6

Additional Semester (6 credits)
MATH 2020 (QI) Introduction to Logic and Geometry 3
University Studies Depth course 3

Suggested Four-year Course of Study for Elementary Education/Special Education Severe Specialization

This is a model of the requirements and possible sequence of courses. However, students may progress through the program or have more flexibility if they have high ACT scores, CLEP credit, concurrent enrollment credit, AP credit, and/or transfer credit; or if they attend during summer semesters.

Freshman Year (32 credits)
Fall Semester (16 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MATH 1050 (QL)[14] College Algebra 4
Breadth American Institutions (BAI) course[15] 3
Breadth Humanities (BHU) course[15] 3
Breadth Life Sciences (BLS) course[15] 3

Spring Semester (16 credits)
PHYS 1200 (BPS) Introduction to Physics by Hands-on Exploration 4
STAT 1040 (QL) Introduction to Statistics 3
Breadth Creative Arts (BCA) course[15] 3

Level I courses:
FCHD 1500 (BSS) Human Development Across the Lifespan 3
ELED 1010 Orientation to Elementary Education 3

Sophomore Year (34 credits)
Fall Semester (16 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
MUSC 3260 Elementary School Music 2
PEP 3050 Physical Education in the Elementary School 3
SPED 4000 Education of Exceptional Individuals 2
Breadth Physical Sciences (BPS) course[15] 3
Breadth Social Sciences (BSS) course[15] 3

Spring Semester (18 credits)
Level II courses:
Students must be admitted to the Teacher Education Program prior to enrolling in Level II courses.
ELED 3000 (CI) Foundation Studies and Practicum in Teaching and Classroom Management Level II 6
ELED 3005 Beginning Classroom Management 1
SPED 5530 Technology for Teaching Exceptional Learners 3
PSY 3660 Educational Psychology for Teachers 2
ELED 3100 Classroom Reading Instruction 3
University Studies Depth course 3

Junior Year (30 credits)
Fall Semester (16 credits)
SPED 5010 (QI) Applied Behavioral Analysis I: Principles, Assessment, and Analysis 3
SPED 5040 Foundations of Effective Assessment and Instructional Practices 3
SPED 5070 Policies and Procedures in Special Education 3
SPED 5510 Curriculum for Students with Severe Disabilities 4
SPED 5600 Practicum: Introduction to Instruction of Students with Severe Disabilities 3

Spring Semester (14 credits)
SPED 5050 Applied Behavioral Analysis 2: Applications 3
SPED 5060 Consulting with Parents and Teachers 3
SPED 5520 Curriculum for Secondary-Level Students with Severe Disabilities 3
SPED 5540 Assessment of Persons with Severe Disabilities 1
SPED 5610 Practicum: Advanced Systematic Instruction of Students with Severe Disabilities 4

Senior Year (31 credits)
Fall Semester (16 credits)
Level III courses:
ELED 4000 Teaching Science and Practicum Level III 3
ELED 4005 Intermediate Classroom Management 1
ELED 4030 (CI) Teaching Language Arts and Practicum Level III 3
ELED 4040 (CI) Assessment and Instruction for Struggling Readers 3
ELED 4050 Teaching Social Studies and Practicum Level III 3
ELED 4060 Teaching Mathematics and Practicum Level III 3

Spring Semester (15 credits)
Level IV courses:
ELED 5250 Student Teaching—Seminar: Classroom Management 3
ELED 5150 Student Teaching—Elementary (Grades 4-6) 6
SPED 5210 (CI) Student Teaching in Special Education: Dual Majors 6

Additional Semester (12 credits)
MATH 2020 (QI) Introduction to Logic and Geometry 3
HEP 2000 First Aid and Emergency Care 2
COMD 2910 (CI) Sign Language I 4
University Studies Depth course 3

[14] The MATH 1050 requirement (or its equivalent) must be completed prior to application to the Teacher Education Program.
[15] At least *two* of the *seven* breadth courses *must* have a USU prefix.

Composite Early Childhood Education and Special Education—Early Childhood Major

Early Childhood Education Major (68 credits)

Students should complete all of the following courses as indicated.

Note: Teaching licensure requires a 2.75 cumulative grade point average (GPA). (Grades lower than a *C* will not be accepted toward the major.)

Level I (6 credits) (2.75 GPA required in Level I courses)
ELED 1010 Orientation to Elementary Education (F,Sp,Su) 3
FCHD 1500 (BSS) Human Development Across the Lifespan (F,Sp) 3

Level II (courses taken concurrently during fall or spring semester) (14 credits)
Students must be admitted to the Teacher Education Program prior to taking these classes.

ELED 3000 (CI) Foundation Studies and Practicum in Teaching and Classroom Management Level II....4
ELED 3005 Beginning Classroom Management (F,Sp)....1
FCHD 2600 Seminar in Early Childhood Education (F,Sp)....2
FCHD 2630 Practicum in Early Childhood Education (F,Sp)....2
PSY 3660 Educational Psychology for Teachers....2
ELED 3100 Classroom Reading Instruction....3

Transition (11 credits)
SPED 4000 Education of Exceptional Individuals (F,Sp,Su)....2
SPED 5530 Technology for Teaching Exceptional Learners (Sp *only*)..3
FCHD 4550[16] Preschool Methods and Curriculum (F,Sp)....3
ELED 4480[16] Early Childhood Education Kindergarten through Grade 3 (F,Sp)....3

Level III (courses taken concurrently during fall, spring, or summer semester) (16 credits)
ELED 4000 Teaching Science and Practicum Level III....3
ELED 4005 Intermediate Classroom Management (F,Sp,Su)....1
ELED 4030 (CI) Teaching Language Arts and Practicum Level III....3
ELED 4040 (CI) Assessment and Instruction for Struggling Readers...3
ELED 4050 Teaching Social Studies and Practicum Level III....3
ELED 4060 Teaching Mathematics and Practicum Level III....3

Level IV (courses taken during two semesters, fall and spring) (21 credits)
ELED 5250[17] Student Teaching—Seminar: Classroom Management ..3
ELED 5050[17] Student Teaching—Kindergarten....3
ELED 5100[17] Student Teaching Primary Grades (1-3)....6
SPED 5210 (CI)[17] Student Teaching in Special Education: Dual Majors....6
FCHD 4960[18] Practice Teaching in Child Development Laboratories ...3

[16]Level II must be completed prior to taking this course.
[17]Level III, Special Education major, and ELED 4480 must be completed prior to taking this course.
[18]FCHD 4550 must be completed prior to taking this course.

Special Education—Early Childhood Major (31 credits)

Students must be admitted to the Special Education program prior to taking these courses.

Fall:
SPED 5010 (QI) Applied Behavioral Analysis 1: Principles, Assessment, and Analysis....3
SPED 5040 Foundations of Effective Assessment and Instructional Practices....3
SPED 5070 Policies and Procedures in Special Education....3
SPED 5730 Intervention Strategies for Young Children with Disabilities....3
SPED 5820 Preschool Practicum with Young Children with Disabilities in Community Environments....4
SPED 5840 Seminar: Preschool Practicum with Young Children with Disabilities....2

Spring:
SPED 5050 Applied Behavioral Analysis 2: Applications....3
SPED 5060 Consulting with Parents and Teachers....3
SPED 5710 Young Children with Disabilities: Characteristics and Services....3
SPED 5810 Seminar and Field Experiences with Infants and Families....4

Suggested Four-year Course of Study for Composite Early Childhood Education and Special Education—Early Childhood Major

This is a model of the requirements and possible sequence of courses. However, students may progress through the program or have more flexibility if they have high ACT scores, CLEP credit, concurrent enrollment credit, AP credit, and/or transfer credit; or if they attend during summer semesters.

Freshman Year (32 credits)
Fall Semester (16 credits)
COMD 2500 Language, Speech, and Hearing Development....3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose....3
MATH 1050 (QL)[19] College Algebra....4
Breadth American Institutions (BAI) course[20]....3
Breadth Life Sciences (BLS) course[20]....3

Spring Semester (16 credits)
PHYS 1200 (BPS) Introduction to Physics by Hands-on Exploration ...4
STAT 1040 (QL) Introduction to Statistics....3
Breadth Creative Arts (BCA) course[20]....3

Level I courses:
FCHD 1500 (BSS) Human Development Across the Lifespan....3
ELED 1010 Orientation to Elementary Education....3

Sophomore Year (28 credits)
Fall Semester (14 credits)
MATH 2020 (QI) Introduction to Logic and Geometry....3
SPED 4000 Education of Exceptional Individuals....2
University Studies Depth course....3
Breadth Physical Sciences (BPS) course[20]....3
Breadth Social Sciences (BSS) course[20]....3

Spring Semester (14 credits)
Level II courses:
Students must be admitted to the Teacher Education Program prior to enrolling in Level II courses.
ELED 3000 (CI) Foundation Studies and Practicum in Teaching and Classroom Management Level II....4
ELED 3005 Beginning Classroom Management....1
FCHD 2600 Seminar in Early Childhood Education....2
FCHD 2630 Practicum in Early Childhood Education....2
PSY 3660 Educational Psychology for Teachers....2
SPED 5530 Technology for Teaching Exceptional Learners....3

Junior Year (31 credits)
Fall Semester (15 credits)
ELED 3100 Classroom Reading Instruction....3
ELED 4480 Early Childhood Education Kindergarten through Grade 3....3
FCHD 4550 Preschool Methods and Curriculum....3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode....3
University Studies Depth course....3

Spring Semester (16 credits)
Level III courses:
ELED 4000 Teaching Science and Practicum Level III....3
ELED 4005 Intermediate Classroom Management....1
ELED 4030 (CI) Teaching Language Arts and Practicum Level III....3
ELED 4040 (CI) Assessment and Instruction for Struggling Readers...3
ELED 4050 Teaching Social Studies and Practicum Level III....3
ELED 4060 Teaching Mathematics and Practicum Level III....3

Senior Year (34 credits)
Fall Semester (18 credits)
SPED 5010 (QI) Applied Behavioral Analysis I: Principles, Assessment, and Analysis....3
SPED 5040 Foundations of Effective Assessment and Instructional Practices....3
SPED 5070 Policies and Procedures in Special Education....3
SPED 5730 Intervention Strategies for Young Children with Disabilities....3
SPED 5820 Preschool Practicum with Young Children with Disabilties in Community Environments....4
SPED 5840 Seminar: Preschool Practicum with Young Children with Disabilties....2

Spring Semester (16 credits)
SPED 5050 Applied Behavioral Analysis 2: Applications....3
SPED 5060 Consulting with Parents and Teachers....3
SPED 5710 Young Children with Disabilities: Characteristics and Services....3
SPED 5810 Seminar and Field Experiences with Infants and Families....4
FCHD 4960 Practice Teaching in Child Development Laboratories....3

Additional Semester (18 credits)
ELED 5250 Student Teaching—Seminar: Classroom Management....3
ELED 5050 Student Teaching—Kindergarten....3
ELED 5100 Student Teaching—Primary Grades (1-3)....6
SPED 5210 Student Teaching in Special Education: Dual Majors....6

[19]The MATH 1050 requirement (or its equivalent) must be completed prior to application to the Teacher Education Program.
[20]At least *two* of the *seven* breadth courses *must* have a USU prefix.

Composite Elementary Education and Deaf Education Major

Elementary Education Major (61 credits) (includes Teaching Support Courses)

Students should complete all of the following courses as indicated.

Note: Teaching licensure requires a 2.75 cumulative grade point average (GPA). (Grades lower than a *C* will not be accepted toward the major.)

Level I (6 credits) (2.75 GPA required in Level I courses)
ELED 1010 Orientation to Elementary Education (F,Sp,Su)....3
FCHD 1500 (BSS) Human Development Across the Lifespan (F,Sp)....3

Level II (courses taken concurrently during fall or spring semester) (17 credits)
Students must be admitted to the Teacher Education Program prior to taking these classes.
ELED 3000 (CI) Foundation Studies and Practicum in Teaching and Classroom Management Level II....6
ELED 3005 Beginning Classroom Management....1
SPED 4000 Education of Exceptional Individuals....2
PSY 3660 Educational Psychology for Teachers....2
INST 4010 Principles and Practices of Technology for Elementary Teachers....3
ELED 3100 Classroom Reading Instruction....3

Level III (courses taken concurrently during fall, spring, or summer semester) (16 credits)
ELED 4000 Teaching Science and Practicum Level III....3
ELED 4005 Intermediate Classroom Management (F,Sp,Su)....1
ELED 4030 (CI) Teaching Language Arts and Practicum Level III....3
ELED 4040 (CI) Assessment and Instruction for Struggling Readers....3
ELED 4050 Teaching Social Studies and Practicum Level III....3
ELED 4060 Teaching Mathematics and Practicum Level III....3

Level IV (Student Teaching—taken during Master's Program)

Teaching Support Courses
MUSC 3260 Elementary School Music (F,Sp,Su)....2
PEP 3050 Physical Education in the Elementary School (F,Sp,Su)....3
HEP 3500 Elementary School Health Education (F,Sp)....2

Deaf Education Requirements (47-49 credits)

COMD 2500 Language, Speech, and Hearing Development (F,Sp)....3
COMD 2910 (CI) Sign Language I (F,Sp,Su)....4
COMD 3080 American Sign Language Practicum (F,Sp)....1-3
COMD 3910 Sign Language II (F,Sp,Su)....4
COMD 5610 Introduction to Education of the Deaf and Hard of Hearing (F)....3

Note: COMD 2500, 2910, 3910, and 5610 should be completed prior to the Deaf Education blocks.

Fall:
COMD 4750 Teaching the English Language to Individuals who are Deaf and Hard of Hearing....3
COMD 4770 Audiology and Teachers of Children who are Deaf and Hard of Hearing....3
COMD 4780 Socio-Cultural Aspects of Deafness....3
COMD 4910 (CI) Sign Language III....4
COMD 5740 Teaching Reading to Deaf and Hard of Hearing Children....3

Spring:
COMD 4630 Teaching Speech to Deaf and Hard of Hearing Children....3
COMD 4790 Psychological Principles and Individuals who are Deaf and Hard of Hearing....3
COMD 4920 Sign Language IV....4
COMD 5600 Classroom Teaching Using American Sign Language....3
COMD 5620 Teaching School Subjects to Students who are Deaf and Hard of Hearing....3

Composite Early Childhood Education and Deaf Education Major

Early Childhood Education Major (56 credits)

Students should complete all of the following courses as indicated.

Note: Teaching licensure requires a 2.75 cumulative grade point average (GPA). (Grades lower than a *C* will not be accepted toward the major.)

Level I (6 credits) (2.75 GPA required in Level I courses)`
ELED 1010 Orientation to Elementary Education (F,Sp,Su)....3
FCHD 1500 (BSS) Human Development Across the Lifespan (F,Sp)....3

Level II (courses taken concurrently during fall or spring semester) (14 credits)
Students must be admitted to the Teacher Education Program prior to taking these classes.
ELED 3000 (CI) Foundation Studies, Practicum in Teaching and Classroom Management Level II....4
ELED 3005 Beginning Classroom Management....1
ELED 3100 Classroom Reading Instruction....3
FCHD 2600 Seminar in Early Childhood Education....2
FCHD 2630 Practicum in Early Childhood Education....2
PSY 3660 Educational Psychology for Teachers....2

Transition (11 credits)
SPED 4000 Education of Exceptional Individuals....2
INST 4010 Principles and Practices of Technology for Elementary Teachers....3
FCHD 4550[21] Preschool Methods and Curriculum....3
ELED 4480[21] Early Childhood Education Kindergarten through Grade 3....3

Level III (courses taken concurrently during fall, spring, or summer semester) (16 credits)
ELED 4000 Teaching Science and Practicum Level III....3
ELED 4005 Intermediate Classroom Management (F,Sp,Su)....1
ELED 4030 (CI) Teaching Language Arts and Practicum Level III....3
ELED 4040 (CI) Assessment and Instruction for Struggling Readers....3
ELED 4050 Teaching Social Studies and Practicum Level III....3
ELED 4060 Teaching Mathematics and Practicum Level III....3

[21]Level II must be completed prior to taking this course.

Deaf Education Requirements (47-49 credits)

COMD 2500 Language, Speech, and Hearing Development (F,Sp)....3
COMD 2910 (CI) Sign Language I (F,Sp,Su)....4
COMD 3080 American Sign Language Practicum (F,Sp)....1-3
COMD 3910 Sign Language II (F,Sp,Su)....4
COMD 5610 Introduction to Education of the Deaf and Hard of Hearing (F)....3

Note: COMD 2500, 2910, 3910, and 5610 should be completed prior to the Deaf Education blocks.

Fall:
COMD 4750 Teaching the English Language to Individuals who are Deaf and Hard of Hearing....3
COMD 4770 Audiology and Teachers of Children who are Deaf and Hard of Hearing....3
COMD 4780 Socio-Cultural Aspects of Deafness....3
COMD 4910 (CI) Sign Language III....4
COMD 5740 Teaching Reading to Deaf and Hard of Hearing Children....3

Spring:
COMD 4630 Teaching Speech to Deaf and Hard of Hearing Children....3
COMD 4790 Psychological Principles and Individuals who are Deaf and Hard of Hearing....3
COMD 4920 Sign Language IV....4
COMD 5600 Classroom Teaching Using American Sign Language....3
COMD 5620 Teaching School Subjects to Students who are Deaf and Hard of Hearing....3

Suggested Four-year Course of Study for Elementary Education/Deaf Education Composite Major

This is a model of the requirements and possible sequence of courses. However, students may progress through the program or have more flexibility if they have high ACT scores, CLEP credit, concurrent enrollment credit, AP credit, and/or transfer credit; or if they attend during summer semesters.

Freshman Year (35 credits)
Fall Semester (18 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose....3
MATH 1050 (QL)[23] College Algebra....4
HEP 2000 First Aid and Emergency Care (2 cr) **or**
HEP 3500 Elementary School Health Education (2 cr)....2
Breadth American Institutions (BAI) course[24]....3
Breadth Humanities (BHU) course[24]....3
Breadth Life Sciences (BLS) course[24]....3

Spring Semester (17 credits)
COMD 2910 (CI) Sign Language I....4
PHYS 1200 (BPS) Introduction to Physics by Hands-on Exploration....4
Breadth Creative Arts (BCA) course[24]....3

Level I courses:
FCHD 1500 (BSS) Human Development Across the Lifespan....3
ELED 1010 Orientation to Elementary Education....3
Note: Apply to the program by the July 1 deadline.

Sophomore Year (35 credits)
Fall Semester (17 credits)
Level II courses:
Students must be admitted to the Teacher Education Program prior to enrolling in Level II courses.
ELED 3000 (CI) Foundation Studies and Practicum in Teaching and Classroom Management Level II....6
ELED 3005 Beginning Classroom Management....1
ELED 3100 Classroom Reading Instruction....3
SPED 4000 Education of Exceptional Individuals....2
PSY 3660 Educational Psychology for Teachers....2
INST 4010 Principles and Practices of Technology for Elementary Teachers....3

Spring Semester (18 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode....3
MATH 2020 (QI) Introduction to Logic and Geometry....3
MUSC 3260 Elementary School Music....2
COMD 3910 Sign Language II....4
Breadth Physical Sciences (BPS) course[24]....3
Breadth Social Sciences (BSS) course[24]....3

Junior Year (34 credits)
Fall Semester (18 credits)
STAT 1040 (QL) Introduction to Statistics....3
PEP 3050 Physical Education in the Elementary School....3
COMD 2500 Language, Speech, and Hearing Development....3
COMD 5610 Introduction to Education of the Deaf and Hard of Hearing....3
University Studies Depth courses....6

Spring Semester (16 credits)
Level III courses:
ELED 4000 Teaching Science and Practicum Level III....3
ELED 4005 Intermediate Classroom Management....1
ELED 4030 (CI) Teaching Language Arts and Practicum Level III....3

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ELED 4040 (CI) Assessment and Instruction for Struggling Readers ... 3
ELED 4050 Teaching Social Studies and Practicum Level III 3
ELED 4060 Teaching Mathematics and Practicum Level III..... 3

Senior Year (32 credits)
Fall Semester (16 credits)
COMD 4750 Teaching the English Language
to Individuals who are Deaf and Hard of Hearing 3
COMD 4770 Audiology and Teachers of Children
who are Deaf and Hard of Hearing 3
COMD 4780 Socio-Cultural Aspects of Deafness 3
COMD 4910 (CI) Sign Language III 4
COMD 5740 Teaching Reading
to Deaf and Hard of Hearing Children 3

Spring Semester (16 credits)
COMD 4630 Teaching Speech
to Deaf and Hard of Hearing Children 3
COMD 4790 Psychological Principles and Individuals
who are Deaf and Hard of Hearing 3
COMD 4920 Sign Language IV 4
COMD 5600 Classroom Teaching Using American Sign Language..... 3
COMD 5620 Teaching School Subjects to Students
who are Deaf and Hard of Hearing 3

Additional Semester
FCHD 4960 Practice Teaching in Child Development Laboratories 3

Student Teaching is completed during the MEd Graduate Program.

[23]The MATH 1050 requirement (or its equivalent) must be completed prior to application to the Teacher Education Program.
[24]At least *two* of the *seven* breadth courses *must* have a USU prefix.

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.

Departmental Honors

Students having majors within the Department of Elementary Education may choose to add breadth and depth to their regular course offerings by enrolling in the departmental honors program. A cumulative GPA above 3.5 is required for enrollment.

Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level.

For additional information about departmental honors within the Department of Elementary Education, contact Deborah Byrnes, (435) 797-0396, deborah.byrnes@usu.edu.

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. Major requirement sheets can also be found online at: **http://www.usu.edu/majorsheets/**

Financial Support

The following scholarships are available to junior and senior students: Ballam, Blair, Bowen, DeHart, Frye, Hales, Jackson, Kurzhals, McEvoy, Stewart, Taylor, Vest, Watterson, 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 Educational Specialist (EdS) degree and 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 EdS or 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 EdS or doctoral program. In addition to the requirements of the School of Graduate Studies (see pages 101-102), 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 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 of 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 degree must be filed with the School of Graduate Studies *at the beginning of the last semester of coursework*. A letter of completion should be filed by the department 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).

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.

Educational Specialist Degree (EdS)

The EdS is a 36-42 credit post-master's degree designed to enable experienced educators to specialize and improve their professional competence in specific areas or fields. The EdS degree meets the advanced study needs of persons seeking leadership roles in public education, junior colleges, and small private and state colleges. The coursework requirements extend competencies for individuals serving in such positions as program developers, trainers, curriculum specialists, supervisors, instructional leaders, and college instructors. The EdS is also related to certification needs of some educational leaders. Areas of emphasis in the Department of Elementary Education are: Early Childhood; Instructional Leadership; Supervision and Leadership; Schooling, Culture, and Society; and Reading and Writing. The EdS is especially appropriate for those individuals who wish preparation beyond the master's degree level, but who are not interested in doctoral work with its greater emphasis on developing proficiencies in conducting independent research.

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 251-252 of this catalog.

Additional Information

All students completing master's degrees in Elementary Education must enroll for a minimum of 9 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

Department of Elementary Education

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 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
Martha T. Dever, foundations, early childhood education
James T. Dorward, mathematics, program evaluation
John A. Smith, reading education

Clinical Professor
Barbara DeBoer, early childhood education

Associate Professors
James J. Barta, mathematics, early childhood education
Gary L. Carlston, instructional leadership
Parker C. Fawson, reading
Michael K. Freeman, educational leadership
Scott L. Hunsaker, gifted/talented education, foundations
Francine Fukui Johnson, foundations, gifted/talented education, supervision
Rebecca M. Monhardt, science education
Martha L. Whitaker, foundations

Assistant Professors
Lisa Pray, bilingual/English-as-a-second-language education
Sylvia Read, language arts education

Lecturers
Marilee Coles-Ritchie, foundations
Dorothy Dobson, social studies
Chad Downs, generalist
Judy Greene, language arts/foundations

Course Descriptions

Elementary Education (ELED), pages 612-616

Department of Engineering and Technology Education

Department Head: Kurt Becker
Location: Industrial Science 112E
Phone: (435) 797-1795
FAX: (435) 797-2567
E-mail: kbecker@cc.usu.edu
WWW: http://www.ete.usu.edu/

Graduate Program Coordinator:
Edward M. Reeve, Industrial Science 108, (435) 797-3642, ed.reeve@usu.edu

Undergraduate Advising:
Engineering Advising Center, Engineering 314A, (435) 797-2705, kathy@engineering.usu.edu, isobel.roskelley@usu.edu, joan.smith@usu.edu

Degrees offered: Bachelor of Science (BS) and Master of Science (MS) in Engineering and Technology Education, BS in Aviation Technology—Maintenance Management, BS in Aviation Technology—Professional Pilot, A&P Certificate in Aircraft Maintenance Technician—Airframe & Powerplant

Undergraduate emphases: *BS in Engineering and Technology Education*—Technology Education and Trade and Technical Education

Undergraduate Programs

Objectives

The Department of Engineering and Technology Education offers degrees in two fields: **engineering and 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 **Engineering and Technology 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 16-20 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 AV and ETE 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-ETE major requiring a specific class. (Non-ETE majors may take a *maximum of two* upper-division AV or ETE 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 2.5 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 2.3 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 2.3 (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 2.3.

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 Engineering and Technology Education (124 credits)

Technology Education Emphasis

The Technology Education emphasis is designed to prepare students for teaching in junior and senior high schools. Students should follow the suggested semester schedule presented below, completing all courses listed. Consult with an advisor when choosing elective courses. All students in this program must maintain a cumulative GPA of 2.75 and gain admission to teacher education, in order to student teach and to receive secondary education licensure (College of Education and Human Services). The suggested semester schedule is as follows:

Freshman Year (32 credits)
Fall Semester (17 credits)
ETE 1000[2] Orientation to Engineering and Technology Education 1
ETE 1010 Communications Technology 3
ETE 1030 Material Processing Systems 3
ETE 1200 Computer-Aided Drafting and Design 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MATH 1050 (QL)[4] College Algebra 4

Spring Semester (15 credits)
ETE 1040 Construction and Estimating 3
ETE 2300 (QI)[6] Electronic Fundamentals 4
MATH 1060 Trigonometry 2
USU 1350 (BLS) Integrated Life Science 3
University Studies Breadth course 3

Sophomore Year (31 credits)
Fall Semester (15 credits)
Note: Students should apply to the Secondary Teacher Education Program (STEP) *early* (see advisor).
ETE 2030 Wood-Based Manufacturing Systems 3
ETE 3220 Architecture and Construction Systems 3
University Studies Breadth course 3
Elective course(s) 6

Spring Semester (16 credits)
ETE 1020 Energy, Power, Transportation Systems Control Technology 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
PHYS 1800 (BPS)[5,7] Physics of Technology 4
SPED 4000[2,3] Education of Exceptional Individuals 2
Elective course(s) 4

Junior Year (33 credits)
Fall Semester (16 credits)
ETE 3200[2,3] Methods of Teaching Engineering and Technology Education I 3
ETE 3300[2,3] Clinical Experience I 1
SCED 3100[2,3] Motivation and Classroom Management 3
SCED 3210 (CI/DSS)[2,3,5] Educational and Multicultural Foundations 3
University Studies Breadth courses 6

Spring Semester (17 credits)
ETE 3030 Computer-Integrated Manufacturing Systems 3
ETE 3440 (DSC) Science, Technology, and Modern Society 3
ETE 4300[2,3] Clinical Experience II 1
ETE 4400[2,3] Methods of Teaching Engineering and Technology Education II 3
SCED 4200 (CI)[2,3] Reading, Writing and Technology 3
SCED 4210[2] Cognition and Evaluation of Student Learning 3
INST 3500[1] Technology Tools for Secondary Teachers 1

Note: Prior to Student Teaching, the Praxis Content Exam must be passed.

Senior Year (28 credits)
Fall Semester (12 credits)
ETE 5500[2,3] Student Teaching Seminar 2
ETE 5630[2,3] Student Teaching in Secondary Schools 10

Spring Semester (16 credits)
ETE 3050 Computer Systems and Networking 3
ETE 3660 Principles of Engineering Education 3
ETE 5220 (CI) Program and Course Development 3
University Studies Depth Humanities and Creative Arts (DHA) course 3
Elective course(s) 4

[1] The INST 3500 requirement has been waived. However, INST 4500 is recommended.
[2] This course is included in the Secondary Education Licensure Requirements. Prior to enrolling in this course, students must be admitted to the STEP.
[3] Students must maintain a cumulative 2.75 GPA for admission to the College of Education and Human Services, for student teaching, and to receive secondary education licensure.
[4] A Math ACT score of 23 or higher is required for enrolment in MATH 1050. If Math ACT score is between 18 and 22, student should enroll in MATH 1010 first.
[5] PHYS 1800 fulfills the University Studies Breadth Physical Sciences (BPS) requirement. SCED 3210 fulfills the University Studies Depth Social Sciences (DSS) requirement.
[6] MATH 1050 is a prerequisite for ETE 2300.
[7] MATH 1050 and 1060 are prerequisites for PHYS 1800 (which needs to be completed during the sophomore year).

Trade and Technical Education Emphasis

The Trade and Technical Education emphasis is designed to prepare students to teach vocational courses at the high school or post-high school level. Students should complete all courses listed below. All students in this emphasis must maintain a GPA of 2.75 in order to student teach.

INST 3500 Technology Tools for Secondary Teachers (F,Sp,Su) 1
ETE 3200 Methods of Teaching Engineering and Technology Education I (F) 3
ETE 3300 Clinical Experience I (F) 1
ETE 3900 Principles and Objectives of Career and Technical Education 3

ETE 3930 Evaluation of Career and Technical Education....2
ETE 4300 Clinical Experience II (Sp)....1
ETE 4400 Methods of Teaching Engineering and Technology Education II (Sp)....3
ETE 4700 Student Teaching in Postsecondary Schools....4
ETE 5220 (CI) Program and Course Development (Sp)....3
ETE 5910 Special Problems in Engineering and Technology Education....1-4
SPED 4000 Education of Exceptional Individuals (F,Sp,Su)....2
ENGL 1010 (CL1) Introduction to Writing: Academic Prose (F,Sp,Su) 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode (F,Sp,Su)....3
MATH 1050 (QL) College Algebra (F,Sp,Su)....4
SPCH 1020 (CI) Public Speaking (F,Sp)....3
STAT 2000 (QI) Statistical Methods (F,Sp) (3 cr) **or**
Any Quantitative Intensive (QI) approved course (3 cr)....3
University Studies courses....24
General elective courses....12

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.

The Department of Engineering and Technology Education is affiliated with Project Lead the Way (PLTW) and provides opportunities for students to become certified to teach selected PLTW courses. PLTW is a national program that has developed a series of courses that, when combined with college preparatory mathematics and science courses in high school, introduces students to the scope, rigor, and discipline of engineering and engineering technology prior to entering college.

Bachelor of Science in Aviation Technology—Maintenance Management (126 credits)

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 suggested semester schedule for **Aviation Technology—Maintenance Management** is as follows:

Freshman Year (32 credits)

Fall Semester (17 credits)
AV 1130[8] Flight Principles....2
AV 1140[8] Aircraft Components and Principles....2
AV 1170 Aircraft Structures....3
AV 2180 Aircraft Hydraulic and Pneumatic Systems....2
AV 2200 Aircraft Hydraulics and Pneumatic Systems Lab....1
MATH 1050 (QL)[8,9] College Algebra....4
University Studies Breadth course[11,12]....3

Spring Semester (15 credits)
AV 1240 Aircraft Maintenance....3
AV 2170[8] Aircraft Systems....2
AV 2190 Aircraft Systems Lab....1
ETE 1030[11] Material Processing Systems....3
ETE 2300 (QI)[8,9] Electronic Fundamentals....4
MATH 1060[8,15] Trigonometry....2

Sophomore Year (32 credits)

Fall Semester (15 credits)
AV 2100 Aircraft Reciprocating Powerplants and Accessories....3
AV 2110 Aircraft Reciprocating Powerplants and Accessories Lab....3
ETE 1200[11] Computer-Aided Drafting and Design....3
ENGL 1010 (CL1)[8,11,12] Introduction to Writing: Academic Prose....3
MATH 1100 (QL)[11,12] Calculus Techniques....3

Spring Semester (17 credits)
AV 1100[11] The Aviation Profession....1
AV 2140[8] Aircraft Turbine Powerplants and Maintenance Operations....3
AV 2150[8] Aircraft Turbine Powerplant Maintenance Operations Lab....3
AV 2430 Aircraft Electrical Systems and Components....2
AV 2440 Aircraft Electrical Systems Laboratory....2
ENGL 2010 (CL2)[8,11,12] Intermediate Writing: Research Writing in a Persuasive Mode....3
University Studies Breadth course[11,12]....3

Junior Year (31 credits)

Fall Semester (15 credits)
AV 3280 Advanced Turbine Engines....2
AV 4280[11] Airline Management....3
STAT 2300 (QL)[9,12] Business Statistics....4
Elective course(s)....3
Technical Elective course[13]....3

Spring Semester (16 credits)
AV 2420 FAA Regulations, Records, and Certification....2
AV 3610 AeroTechnology Design I....1
AV 4490 Human Factors in Aviation Safety....3
MHR 3110 (DSS)[10,11,12,14] Managing Organizations and People....3
PHYS 1800 (BPS)[9,14,15] Physics of Technology....4
University Studies Breadth course[11,12]....3

Senior Year (31 credits)

Fall Semester (15 credits)
AV 3120 Aviation Law....3
AV 4610 (CI) AeroTechnology Design II....3
MHR 3710[10,11,12] Developing Team and Interpersonal Skills....3
University Studies Breadth courses[11,12]....6

Spring Semester (16 credits)
AV 4620 (CI) AeroTechnology Design III....3
AV 4200 Composite Manufacturing Processes and Repair....3
University Studies Depth Humanities and Creative Arts (DHA) course[11,12]....3
Technical Elective courses[13]....7

Students must complete a total of 40 credits of stipulated upper-division coursework.

[8] This course is required for entrance to the Professional Technology Program (PTP). Completion of the Computer and Information Literacy (CIL) exam with a passing grade is also required.
[9] A Math ACT score of 23 or higher is required to enroll in MATH 1050. If Math ACT score is between 18 and 22, student should enroll in MATH 1010 first. MATH 1050 is a prerequisite for STAT 2300, ETE 2300, and PHYS 1800.
[10] Students must have a cumulative GPA of at least 2.67 and have professional status to be admitted to these College of Business courses.
[11] Due to teaching load constraints, these courses may be offered during semesters other than those listed here. Check with the department regularly for possible changes. Most of these classes are offered only once each year.
[12] These courses may be taken during summer semester to allow for more reasonable course loads during the academic year.
[13] Students must take 10 credits of technical electives which must be in upper-division courses (3000-level and above).
[14] PHYS 1800 fulfills the University Studies Breadth Physical Sciences (BPS) requirement. MHR 3110 fulfills the University Studies Depth Social Sciences (DSS) requirement.
[15] MATH 1060 is a prerequisite for PHYS 1800.

Department of Engineering and Technology Education

Bachelor of Science in Aviation Technology—Professional Pilot (126 credits)

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 suggested semester schedule for this degree is as follows:

Freshman Year (30 credits)
Fall Semester (15 credits)
AV 1100 The Aviation Profession 1
AV 1130 Flight Principles 2
AV 2330[16] Private Pilot Ground School 4
AV 2350[16,19] Private Pilot Certification 1
MATH 1050 (QL)[16,21] College Algebra 4
University Studies Breadth course 3

Spring Semester (15 credits)
AV 2170 Aircraft Systems 2
AV 2510[16,19] Intermediate Flight 1
BMET 2000 (BPS)[16] The Atmosphere and Weather 3
ETE 2300 (QI)[16,20] Electronic Fundamentals 4
MATH 1060[16] Trigonometry 2
Elective courses 3

Sophomore Year (33 credits)
Fall Semester (16 credits)
AV 2180 Aircraft Hydraulic and Pneumatic Systems 2
AV 2520[16,22] Instrument Pilot Ground School 4
AV 2540[19] Instrument Pilot Certification I 1
ENGL 1010 (CL1)[16] Introduction to Writing: Academic Prose 3
MATH 1100 (QL)[20] Calculus Techniques 3
University Studies Breadth course 3

Spring Semester (17 credits)
AV 2430 Aircraft Electrical Systems and Components 2
AV 2550[19] Instrument Pilot Certification II 1
AV 2620 Commercial Pilot Ground School 2
BMET 3250[22] Aviation Weather 3
ENGL 2010 (CL2)[16] Intermediate Writing: Research Writing in a Persuasive Mode 3
Any Communications Intensive (CI) approved course 3
University Studies Breadth course 3

Junior Year (32 credits)
Fall Semester (16 credits)
AV 2660[19] Commercial Pilot Certification 1
AV 3010 National Airspace, Air Traffic Control, and Airport Administration 3
AV 3120 Aviation Law 3
AV 3140 Advanced Avionics Systems and Flight Simulation 3
AV 4280 Airline Management 3
University Studies Breadth course 3

Spring Semester (16 credits)
AV 2720 CFI and CFII Ground School 3
AV 2880[19] Multi-Engine Certification 1
AV 4490 Human Factors in Aviation Safety 3
AV 5400 Regional Jet Ground School I 4
MHR 3110 (DSS)[17,18,24] Managing Operations and People 3
Elective course(s) 2

Senior Year (31 credits)
Fall Semester (14 credits)
AV 2740[19] CFI Certification 1
AV 4660 (CI) Flight Senior Project 3
AV 5410 Regional Jet Ground School II 4
Elective course(s) 3
University Studies Breadth course 3

Spring Semester (17 credits)
AV 2860[19] CFII Certification 1
ETE 5910 Special Problems: Regional Jet Simulator 3
PHYS 1800 (BPS)[18,23] Physics of Technology 4
Upper-division elective courses[17] 6
University Studies Depth Humanities and Creative Arts (DHA) course 3

[16] This course is required for entrance to the Professional Technology Program (PTP). Completion of the Computer and Information Literacy (CIL) exams with passing grades is also required for PTP admission.
[17] Students should contact their advisor for a list of approved upper-division electives.
[18] MHR 3110 fulfills the University Studies Depth Social Sciences (DSS) requirement. PHYS 1800 fulfills the University Studies Breadth Physical Sciences (BPS) requirement.
[19] Depending on weather and other factors, flying courses may be taken during semesters other than those indicated. It is imperative that students work with their advisors and flight instructor to determine the best arrangement for these courses.
[20] MATH 1050 is a prerequisite for ETE 2300 and MATH 1100.
[21] A Math ACT score of 23 or higher is required to enroll in MATH 1050. If Math ACT score is between 18 and 22, student should enroll in MATH 1010 first.
[22] Students should take BMET 2000 prior to taking AV 2520 and BMET 3250.
[23] MATH 1050 and 1060 are prerequisites for PHYS 1800.
[24] All students must have a cumulative GPA of at least 2.67 and have professional status in order to be admitted to College of Business classes.

Students must complete a total of 40 credits of stipulated upper-division coursework.

A&P Certificate in Aircraft Maintenance Technician—Airframe & Powerplant

This two-year technical program emphasizes aircraft repair and maintenance. Required courses are:
AV 1130 Flight Principles (F) 2
AV 1140 Aircraft Components and Principles (F) 2
AV 1170 Aircraft Structures (F) 3
AV 1240 Aircraft Maintenance (Sp) 3
AV 2100 Aircraft Reciprocating Powerplants and Accessories (F) 3
AV 2110 Aircraft Reciprocating Powerplants and Accessories Lab (F) . 3
AV 2140 Aircraft Turbine Powerplants and Maintenance Operations (Sp) 3
AV 2150 Aircraft Turbine Powerplant Maintenance Operations Lab (Sp) 3
AV 2170 Aircraft Systems (Sp) 2
AV 2180 Aircraft Hydraulic and Pneumatic Systems (F) 2
AV 2190 Aircraft Systems Lab (Sp) 1
AV 2200 Aircraft Hydraulics and Pneumatics Systems Lab (F) 1
AV 2420 FAA Regulations, Records, and Certification (Sp) 2
AV 2430 Aircraft Electrical Systems and Components (Sp) 2
AV 2440 Aircraft Electrical Systems Laboratory (Sp) 2
AV 3280 Advanced Turbine Engines (F) 2
AV 4200 Composite Manufacturing Processes and Repair (Sp) 3
ETE 1030 Material Processing Systems (F,Sp) 3
ETE 1200 Computer-Aided Drafting and Design (F,Sp,Su) 3
ETE 2300 (QI) Electronic Fundamentals (Sp) 4
MATH 1050 (QL) College Algebra (F,Sp,Su) 4
MATH 1060 Trigonometry (F,Sp,Su) 2
PHYS 1800 (BPS) Physics of Technology 4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose (F,Sp,Su) 3
FAA regulations require students to earn a 70 percent or higher score to pass each course.

Department of Engineering and Technology Education

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. Minimum GPA requirements for participation in departmental honors vary by department, but usually fall within the range of 3.30-3.50. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level. The campus-wide Honors Program, which is open to all qualified students regardless of major, offers a rich array of cultural and social activities, special classes, and the benefit of Honors early registration. Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@cc.usu.edu. Additional information can be found online at: **http://www.usu.edu/honors/**

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 Engineering and Technology Education Department, or online at: **http://www.usu.edu/majorsheets/**

Graduate Programs

The Master of Science (MS) degree in Engineering and Technology Education is offered by the department. Candidates may choose the Plan A thesis option, the Plan B nonthesis program, or the Plan C coursework option.

Admission Requirements

See the general admission requirements for graduate study in this catalog (pages 101-102). 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 technology 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: ETE 6090, 6100, 6150, 6450, and 6750. The Plan C option consists entirely of coursework. Students should contact the Engineering and Technology Education Department for information about the availability of this option.

Financial Assistance

The department offers a limited number of graduate research and teaching assistantships. For further information, contact the Engineering and Technology Education Department.

Engineering and Technology 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, electronics technology
Richard A. Charles, director of Aviation Program
Gary A. Stewardson, technology education, manufacturing technology

Assistant Professors
Ning Fang, dynamics, manufacturing engineering
Paul D. Schreuders, engineering education

Senior Lecturer
James L. Garrett, aviation maintenance

Principal Lecturer
Nolan D. Clifford, aviation technology, professional pilot

Lecturers
Randall W. Chesley, aviation maintenance
Gary R. Green, aviation technology, professional pilot

Chief Flight Instructor
Sean E. Heiner

Course Descriptions

Aviation Technology (AV), pages 570-572
Engineering and Technology Education (ETE), pages 624-627

Department of English

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Director, Graduate Studies:
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Director, Undergraduate Studies:
To be appointed

Advisor, Undergraduate Studies:
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Director, Undergraduate American Studies Program:
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Director, Departmental Honors Program:
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Chair, British and Commonwealth Studies Minor:
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Chair, Creative Writing Emphasis:
Michael Sowder, Ray B. West 301A, (435) 797-7100, msowder@english.usu.edu

Chair, English Teaching Emphasis:
Patricia Gantt, Ray B. West 420A, (435) 797-2718, pgantt@english.usu.edu

Chair, Literary Studies Emphasis:
Evelyn I. Funda, Ray B. West 312F, (435) 797-3653, efunda@english.usu.edu

Chair, Literature and Writing Master's Specialization:
Michael Sowder, Ray B. West 301A, (435) 797-7100, msowder@english.usu.edu

Chair, Technical and Professional Writing Emphasis:
Ryan M. Moeller, Ray B. West 312B, (435) 797-8637, rmoeller@english.usu.edu

Chair, Technical Writing Master's Program (online):
David E. Hailey, Ray B. West 313, (435) 797-2741, dhailey@english.usu.edu

Chair, Theory and Practice of Professional Communication Doctoral Program:
Kelli Cargile Cook, Ray B. West 301D, (435) 797-0263, kcargilecook@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; Doctor of Philosophy (PhD) in Theory and Practice of Professional Communication

Undergraduate emphases: *BS, BA in English*—Literary Studies, Professional and Technical Writing, English Teaching, and Creative Writing

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 and American Studies encourage students to gain an appreciation of language and literature through reading, analysis, and writing as a means of enriching their lives as individuals, citizens and professionals. Through a variety of courses in literature, writing, and linguistics, students develop an awareness 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 or American Studies thus acquire communicative, analytical, and interpretive skills that help prepare them for a wide range of careers.

After completing a set of core requirements, students in English fulfill the requirements in one of four emphases: (1) the **Literary 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 Writing** emphasis, which prepares students for various writing careers in professional organizations; (3) the **English Teaching** emphasis, which prepares students for teaching secondary-level English in the public school system; and (4) the **Creative Writing** emphasis, which trains students in the art of literary writing and prepares them for graduate study in creative writing programs. The English Department also offers a major in American Studies.

The English Department offers a Folklore minor and an interdisciplinary American Studies major and minor. The American Studies Program, situated within the English Department, offers students the opportunity to explore American life and cultures from interdisciplinary perspectives, while preparing them for careers in academic or professional fields. Students may pursue *either* an American Studies major or minor *or* a folklore minor. The English Department also offers an English Teaching Minor, an English Minor (Standard Nonteaching), and a minor in British and Commonwealth Studies.

The English Department also offers specific courses supporting other fields of specialization, courses fulfilling University Studies requirements, and enriching educational experiences through opportunities for creativity and expression enhancing lifetime activities.

Admission and Graduation Requirements

The requirements for admission and graduation are commensurate with those described on pages 16-20 and 60-63 of this catalog. 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 *A-B-C-D-F* basis, and major or minor subject courses passed with less than a *C* grade must be repeated. Transfer 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 page 500 for procedures and requirements pertaining to teacher licensure and admission requirements, or go online to: **http://www.coe.usu.edu/**.

Course Requirements

Core and Survey Requirements

Upon entering the major, all English majors must complete ENGL 1110 (English Orientation) *as soon as possible*. In addition, all English majors, *except* for students in the Professional and Technical Writing emphasis, are required to complete three of the 2000-level literature survey courses and ENGL 2600 (Literary Analysis) *as soon as possible* **before** enrolling in upper-division courses. Differing requirements for the Professional and Technical Writing Emphasis are shown below.

Literary Studies Emphasis

This 49-credit emphasis is devoted to the study of literature. Its fundamental premise is that literature is a field of diverse representations that gives shape and meaning to human experience.

Students first complete three of the 2000-level survey courses, which 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 analysis which introduces them to the methodologies of literary criticism.

At the 3000 and 4000 levels, students closely examine the conventions and principles forming the more traditional survey courses. 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 course focusing on literary theory and a linguistics course 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. 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.

A. Core Requirements (4 credits)
ENGL 1110 English Orientation (F,Sp) 1
ENGL 2600[1] Literary Analysis (F,Sp) 3

B. Literary History (9 credits)
Select three courses from the following:
ENGL 2140 British Literary History: Anglo-Saxon to 18th Century (F,Sp) 3
ENGL 2150 British Literary History: Romanticism to Present (F,Sp) 3
ENGL 2160 American Literary History: Colonialism to 1865 (F,Sp) 3
ENGL 2170 American Literary History: 1865 to Present (F,Sp) 3

C. American, British, and World Literature (9 credits)
Select ENGL 3330, plus *two* of the following three period courses:
ENGL 3300[2] Period Studies in American Literature (F,Sp) 3
ENGL 3310[2] Period Studies in British Literature (F,Sp) 3
ENGL 3320[2] Period Studies in World Literature (F,Sp) 3
ENGL 3330 Literary Theory (F,Sp) 3

D. Linguistics (3 credits)
Select one of the following courses:
ENGL 4200 Linguistic Structures (F,Sp,Su) 3
ENGL 4210 History of the English Language (Sp) 3

E. Authors (6 credits)
Complete ENGL 4300 and one other course.
ENGL 4300[2] Shakespeare (F,Sp) 3
ENGL 4310[2] American Writers (F,Sp) 3
ENGL 4320[2] British Writers (F,Sp) 3
ENGL 4330[2] World Writers (F) 3

F. Genre (6 credits)
Select two courses from the following:
ENGL 4340[2] Studies in Prose Fiction (Sp) 3
ENGL 4350[2] Studies in Poetry (F) 3
ENGL 4360[2] Studies in Drama/Film (Sp) 3
ENGL 4370[2] Studies in Nonfiction Prose (F) 3

G. Literature and Culture (6 credits)
Select two courses from the following:
ENGL 5300 (CI)[2] Literature and Gender (F,Sp) 3
ENGL 5320 (CI)[2] Literature and Cultural Difference (Sp) 3
ENGL 5340 (CI)[2] Studies in Literary and Cultural Theory (F) 3

H. Capstone Seminar (3 credits)
ENGL 5350 (CI)[3] Literary Studies Capstone (Sp) 3

I. Electives (3 credits)
Select one additional course from category *E* or *F*.

Department of English

Note: The Period Studies; Authors; Genre; and Literature and Culture courses vary according to the specialty of the faculty member teaching the course.

Sample Four-year Plan for English Major, Literary Studies Emphasis

Minimum GPA for Admission: 2.75, major; 2.75, USU; 2.75, Career
Minimum GPA for Graduation: 2.75, major courses; 2.0, USU; 2.0, Career
Minimum Grade Accepted: *C* in major courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (30 credits)
Fall Semester (15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
ENGL 1110 English Orientation 1
University Studies Breadth courses 6
University Studies Quantitative Literacy (QL) course 3
Elective course(s) 2

Spring Semester (15 credits)
ENGL 2600 Literary Analysis 3
ENGL Literary History course 3
University Studies Breadth courses 9

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (30 credits)
Fall Semester (15 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
ENGL Period Studies Literature course 3
ENGL Literary History course 3
University Studies Breadth course 3
Depth Life and Physical Sciences (DSC) course 3

Spring Semester (15 credits)
ENGL 3330 Literary Theory 3
ENGL Literary History course 3
ENGL Linguistics course 3
Quantitative Intensive (QI) course (PHIL 2200 suggested) 3
Elective course(s) 3

Junior Year (30 credits)
Fall Semester (15 credits)
ENGL 4300 Shakespeare 3
ENGL Authors course 3
ENGL Genre course 3
Elective courses 6

Spring Semester (15 credits)
ENGL Authors course 3
ENGL Genre course 3
ENGL Period Studies Literature course 3
Depth Social Sciences (DSS) course 3
Elective course(s) 3

Senior Year (30 credits)
Fall Semester (15 credits)
ENGL Communications Intensive (CI) Literature and Culture course 3
ENGL Authors course or Genre course 3
Elective courses 9

Spring Semester (15 credits)
ENGL 5350 (CI) Literary Studies Capstone 3
ENGL Literature and Culture course (CI) 3
Elective courses 9

Note: All courses from the following categories are upper-division courses: Period Studies; Linguistics; Authors; Genre; and Literature and Culture.

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 and two introductory professional writing courses introducing students to the profession of writing and the current technologies used in all levels of text production. ENGL 3400 (Professional Writing) and ENGL 3410 (Professional Writing Technology), which are prerequisites for applications courses, must be passed with a grade of *B-* or better, in order for the student to continue in the program. At the same time, students also take two courses addressing rhetorical issues and strategies in the perception, reading, and writing of texts, and two courses in linguistics acquainting students with the structure and diversity of the English language.

In addition, all Professional and Technical Writing students must pass ENGL 1120 (Elements of Grammar) with a grade of *B-* or better, or pass the challenge exam offered by the Writing Center.

Students then take courses in professional editing, document design and graphics, interactive media, and publication production and management. Along with these, students may also take courses in creative writing, as well as those with more specific forms of writing, such as proposals, newsletters, and computer documentation. Internships 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, in which they prepare portfolios, explore professional opportunities, and prepare to begin their careers.

A. Core Requirements (4 credits)
ENGL 1110 English Orientation (F,Sp) 1
ENGL 1120[4] Elements of Grammar (F,Sp) 3

B. Literary History (3 credits)
Select one course from the following:
ENGL 2140 British Literary History: Anglo-Saxon to 18th Century (F,Sp) 3
ENGL 2150 British Literary History: Romanticism to Present (F,Sp) 3

ENGL 2160 American Literary History: Colonialism to 1865 (F,Sp) 3
ENGL 2170 American Literary History: 1865 to Present (F,Sp) 3

C. Introductory Professional Writing Courses (6 credits)
ENGL 3400 (CI) Professional Writing (F,Sp) 3
ENGL 3410 Professional Writing Technology (F,Sp) 3

D. Theoretical Foundation Courses (6 credits)
Select two courses from the following:
ENGL 3450 Reading Theory for Writers (F,Sp) 3
ENGL 3460 Modern Rhetorical Theory (F,Sp) 3
ENGL 5490[7] Usability Studies: Theory and Practice (F,Sp) 3

E. Linguistics Courses (6 credits)
Select two courses from the following:
ENGL 4200 Linguistic Structures (F,Sp,Su) 3
ENGL 4210 History of the English Language (Sp) 3
ENGL 4230 Language and Society (F) 3
ENGL 5210 Topics in Linguistics (F) 3

F. Applied and Creative Writing Courses (6 credits)
Complete 6 credits from the following:
ENGL 3040 Perspectives in Writing and Rhetoric (F,Sp) 3
ENGL 3420 Fiction Writing (F,Sp) 3
ENGL 3430 Poetry Writing (F,Sp) 3
ENGL 3440 Creative Nonfiction Writing (F,Sp) 3
ENGL 4250 Playwriting (F) 3
ENGL 4420[2] Advanced Fiction Writing (Sp) 3
ENGL 4430[2] Advanced Poetry Writing (Sp) 3
ENGL 4440[2] Advanced Nonfiction Writing (Sp) 3
ENGL 4900 Internship/Cooperative Work Experience (F,Sp,Su) 1-6

G. Major Courses (15 credits)
ENGL 4400 (CI)[6] Professional Editing (F) 3
ENGL 4410[6] Document Design and Graphics (F,Sp) 3
ENGL 5400[5,6] Specialized Documents (F,Sp) 3
ENGL 5410[6,8] Interactive Media (F,Sp) 3
ENGL 5420[6] Publications Production (Sp) 3

H. Capstone Seminar (3 credits)
ENGL 5430 (CI)[3] Professional Writing Capstone (Workplace Culture and Communication) (F,Sp) 3

Sample Four-year Plan for English Major, Professional and Technical Writing Emphasis

Minimum GPA for Admission: 2.75, major; 2.75, USU; 2.75, Career
Minimum GPA for Graduation: 2.75, major courses; 2.0, USU; 2.0, Career
Minimum Grade Accepted: *C* in major courses; *B-* in ENGL 1120, 3400, and 3410

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (30 credits)
Fall Semester (15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
ENGL 1110 English Orientation 1
University Studies Breadth courses 6
University Studies Quantitative Literacy (QL) course 3
Elective course(s) 2

Spring Semester (15 credits)
ENGL 1120 Elements of Grammar (or exam) 3
University Studies Breadth courses 9
Elective course(s) 3

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (30 credits)
Fall Semester (15 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
ENGL Literary History course 3
University Studies Breadth course 3
Depth Life and Physical Sciences (DSC) course 3
Elective course(s) 3

Spring Semester (15 credits)
ENGL 3400 (CI) Professional Writing 3
ENGL 3410 Professional Writing Technology 3
Quantitative Intensive (QI) course (PHIL 2200 suggested) 3
Elective courses 6

Junior Year (30 credits)
Fall Semester (15 credits)
ENGL 4400 (CI) Professional Editing 3
ENGL Theoretical Foundation course 3
ENGL Applied and Creative Writing course 3
Depth Social Sciences (DSS) course (SPCH 3050 suggested) 3
Elective course(s) 3

Spring Semester (15 credits)
ENGL 4410 Document Design and Graphics 3
ENGL Theoretical Foundation course 3
ENGL Applied and Creative Writing course 3
ENGL Linguistics course 3
Elective course(s) 3

Senior Year (30 credits)
Fall Semester (15 credits)
ENGL 5400 Specialized Documents 3
ENGL 5410 Interactive Media 3
ENGL Linguistics course 3
Elective courses 6

Spring Semester (15 credits)
ENGL 5420 Publications Production 3
ENGL 5430 (CI) Professional Writing Capstone (Workplace Culture and Communication) 3
Elective courses 9

Note: All courses from the following categories are upper-division courses: Theoretical Foundation; Linguistics; and Applied and Creative Writing.

Department of English

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 all students regardless of gender, race, ethnicity, religion, sexuality, or socioeconomic standing.

Students first complete 9 credits of literature survey courses and 3 credits of literary theory 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 courses 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, Shakespeare, 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, 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.

A. Core Requirements (4 credits)

ENGL 1110 English Orientation (F,Sp) 1
ENGL 2600 Literary Analysis (F,Sp) 3

B. Literary History (9 credits)

Select three courses from the following:
ENGL 2140 British Literary History: Anglo-Saxon to 18th Century (F,Sp) 3
ENGL 2150 British Literary History: Romanticism to Present (F,Sp) 3
ENGL 2160 American Literary History: Colonialism to 1865 (F,Sp) 3
ENGL 2170 American Literary History: 1865 to Present (F,Sp) 3

C. Linguistics (3 credits)

ENGL 4200 Linguistic Structures (F,Sp,Su) 3

D. Upper-division Writing Courses (3 credits)

Select one course from the following:
ENGL 3400 (CI) Professional Writing (F,Sp) 3
ENGL 3420 Fiction Writing (F,Sp) 3
ENGL 3430 Poetry Writing (F,Sp) 3
ENGL 3440 Creative Nonfiction Writing (F,Sp) 3

E. Upper-division Literature Courses (15 credits)

1. Required Course (3 credits)
ENGL 4300 Shakespeare (F,Sp) 3

2. Select one course from each of the following groups:

a. Group 1 (3 credits)
ENGL 3300 Period Studies in American Literature (F,Sp) 3
ENGL 4310 American Writers (F,Sp) 3
ENGL 4610 Western American Literature (F) 3
ENGL 4630 American Nature Writers (F,Sp) 3

b. Group 2 (3 credits)
ENGL 3310 Period Studies in British Literature (F,Sp) 3
ENGL 4320 British Writers (F,Sp) 3

c. Group 3 (3 credits)
ENGL 3320 Period Studies in World Literature (F,Sp) 3
ENGL 4330 World Writers (F) 3
CLAS 3210 Classical Mythology (Honors only) (Sp) 3

d. Group 4 (3 credits)
ENGL 4340 Studies in Prose Fiction (Sp) 3
ENGL 4350 Studies in Poetry (F) 3
ENGL 4360 Studies in Drama/Film (Sp) 3
ENGL 4370 Studies in Nonfiction Prose (F) 3
Folklore Courses: ENGL 3700 (Regional Folklore), 3710 (Folklore Colloquium), 4700 (Folk Material Culture), 4750 (Folklore Summer Workshop, Fife Conference), 5700 (Folk Narrative) 3

F. English Education Courses (15 credits)

ENGL 3510 Young Adult Literature (F,Sp) 3
ENGL 3520 Multicultural American Literature (F,Sp) 3
ENGL 4220 Ethnic Literacy (F,Sp) 3
ENGL 4500 (CI) Teaching Writing (F,Sp) 3
ENGL 4510 (CI) Teaching Literature (F,Sp) 3

G. Capstone Seminar (3 credits)

ENGL 5550 English Teaching Capstone (Sp) 3

In addition to fulfilling the above requirements, students in the English teaching emphasis must fulfill a grammar competency requirement. This may be accomplished either by enrolling in ENGL 1120, Elements of Grammar, (also offered through Independent Study or online) or by passing a challenge exam in the English Department Writing Center (Ray B. West 104) with a score of 80 percent or better. See the English undergraduate advisor for further information.

H. Teaching Minor

Students in the English Teaching emphasis are also required to complete a teaching minor selected from among the following: Chemistry, Geography, History, Mathematics, Modern Languages (French, German, Spanish), Physical Education Coaching, Physics, Political Science, Psychology, School Health, School Library Media, Sociology, Speech Communication, English as a Second Language, and Theatre Arts.

I. Secondary Teacher Education Program (STEP) (35 credits)

To receive a license to teach in the public school system, students in the English Teaching emphasis must also complete the 35-credit STEP administered through the Department of Secondary Education. The student enrolls in this three-semester sequence of courses after having completed nearly all teaching major and minor requirements and after having been granted full admission to the program, which entails meeting various admission criteria. See the Department of Secondary Education for further information regarding this program.

Sample Four-year Plan for English Major, English Teaching Emphasis

Minimum GPA for Admission: 2.75, major; 2.75, USU; 2.75, Career
Additional Minimum GPA for Matriculation to STEP Program: 2.75, USU
Minimum GPA for Graduation: 2.75, major courses; 2.0, USU; 2.75, Career (for certification)
Minimum Grade Accepted: *C* in major courses; *C-* in STEP courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (30 credits)

Fall Semester (15 credits)

ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
ENGL 1110 English Orientation 1
University Studies Breadth courses 6
University Studies Quantitative Literacy (QL) course 3
Elective course(s) 2

Spring Semester (15 credits)

ENGL 1120 Elements of Grammar (or exam) 3
ENGL Literary History course 3
University Studies Breadth courses 9

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (36 credits)

Fall Semester (18 credits)

ENGL 2600 Literary Analysis 3
ENGL 4200 Linguistic Structures 3
ENGL Literary History course 3
University Studies Breadth course 3
Depth Life and Physical Sciences (DSC) course 3
Teaching Minor course 3

Spring Semester (18 credits)

ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
ENGL 3310 Period Studies in British Literature (3 cr) **or**
ENGL 4320 British Writers (3 cr) 3
ENGL 3510 Young Adult Literature 3
ENGL Literary History course 3
Quantitative Intensive (QI) course 3
Teaching Minor course 3

Junior Year (33 credits)

Fall Semester (18 credits)

ENGL 3400 Professional Writing (3 cr) **or**
ENGL 3420 Fiction Writing (3 cr) **or**
ENGL 3430 Poetry Writing (3 cr) **or**
ENGL 3440 Creative Nonfiction Writing (3 cr) 3
ENGL 3520 Multicultural American Literature 3
ENGL 4300 Shakespeare 3
ENGL 4500 (CI) Teaching Writing 3
Teaching Minor courses 6

Spring Semester (15 credits)

ENGL 4220 Ethnic Literacy 3
ENGL 3300 Period Studies in American Literature (3 cr) **or**
ENGL 4310 American Writers (3 cr) **or**
ENGL 4610 Western American Literature (3 cr) **or**
ENGL 4630 American Nature Writers (3 cr) 3
ENGL 4340 Studies in Prose Fiction (3 cr) **or**
ENGL 4350 Studies in Poetry (3 cr) **or**
ENGL 4360 Studies in Drama/Film (3 cr) **or**
ENGL 4370 Studies in Nonfiction Prose (3 cr) **or**
Folklore Classes: ENGL 3700 (Regional Folklore), ENGL 3710 (Folklore Colloquium), ENGL 4700 (Folk Material Culture), ENGL 4750 (Folklore Summer Workshop), ENGL 5700 (Folk Narrative) (3 cr) 3
Teaching Minor courses 6

Senior Year (35 credits)

Fall Semester (17 credits)

ENGL 3320 Period Studies in World Literature (3 cr) **or**
ENGL 4330 World Writers (3 cr) 3
ENGL 4510 (CI) Teaching Literature 3
INST 3500 Technology Tools for Secondary Teachers 1
SCED 3100 Motivation and Classroom Management 3
SCED 3210 (CI/DSS) Educational and Multicultural Foundations 3
SCED 3300 Clinical Experience I 1
SCED 3600 Teaching English 3

Spring Semester (18 credits)

ENGL 5550 English Teaching Capstone 3
SCED 4200 (CI) Reading, Writing, and Technology 3
SCED 4210 Cognition and Evaluation of Student Learning 3
SPED 4000 Education of Exceptional Individuals 2
Teaching Minor Methods course 3
Minor Clinical Experience course 1
Teaching Minor course 3

Certification Year (12 credits)

SCED 5500 Student Teaching Seminar 2
SCED 5630 Student Teaching in Secondary Schools 10

Note: This plan allows for an 18-credit teaching minor. Longer minors will extend the plan by additional semesters.

Creative Writing Emphasis

This 52-credit emphasis is devoted to the art of literary writing: fiction, poetry, creative nonfiction, and drama. Through practice in a chosen genre and a comprehensive study of literature, students learn the craft of literary writing as discovered and practiced over the last three thousand years of written human culture. The emphasis prepares undergraduates for graduate work in creative writing and develops critical, cognitive, and writing skills applicable in numerous professional fields.

Since creative writers must have a broad knowledge of literature, students first complete three of the 2000-level survey courses which provide an overview of major periods, authors, and genres in American and British literature. They also take an introductory course in literary theory which introduces methodologies of literary criticism.

At the 3000-level, students begin their work as creative writers, taking three introductory writing courses in three genres: fiction, poetry, and creative nonfiction. To continue their immersion in the study of literature, students take one course in Period Studies.

At the 4000-level, students concentrate their training as creative writers, taking two courses in advanced creative writing, courses which can be repeated. Also at the 4000-level, students take a course in the study of the English language, a course focused on the study of a single author, and a course in the study of one's chosen genre. Students also select three courses (for 9 credits) from courses outside their emphasis, ideally from outside the English Department, to further broaden their knowledge of human culture and the natural world.

The emphasis culminates in a creative writing capstone, which encourages students to reflect upon and assess their experience in the creative writing program, and which also has students complete a portfolio of their best work.

A. Core Requirements (4 credits)
ENGL 1110 English Orientation (F,Sp) 1
ENGL 2600 Literary Analysis (F,Sp) 3

B. Literary History (9 credits)
Select three courses from the following:
ENGL 2140 British Literary History: Anglo-Saxon to 18th Century (F,Sp) 3
ENGL 2150 British Literary History: Romanticism to Present (F,Sp) 3
ENGL 2160 American Literary History: Colonialism to 1865 (F,Sp) 3
ENGL 2170 American Literary History: 1865 to Present (F,Sp) 3

C. Creative Writing Courses (15 credits)
Select all three of the following courses:
ENGL 3420 Fiction Writing (F,Sp) 3
ENGL 3430 Poetry Writing (F,Sp) 3
ENGL 3440 Creative Nonfiction Writing (F,Sp) 3

Select two of the following courses:
ENGL 4250 Playwriting (F) 3
ENGL 4420[2] Advanced Fiction Writing (prereq. ENGL 3420) (Sp) 3
ENGL 4430[2] Advanced Poetry Writing (prereq. ENGL 3430) (Sp) 3
ENGL 4440[2] Advanced Nonfiction Writing (Sp) 3

D. American, British, and World Literature (3 credits)
Select one of the following courses:
ENGL 3300[2] Period Studies in American Literature (F,Sp) 3
ENGL 3310[2] Period Studies in British Literature (F,Sp) 3
ENGL 3320[2] Period Studies in World Literature (F,Sp) 3

E. Linguistics (3 credits)
Select one course:
ENGL 4200 Linguistic Structures (F,Sp,Su) 3
ENGL 4210 History of the English Language (Sp) 3

F. Authors (3 credits)
Select one of the following courses:
ENGL 4300[2] Shakespeare (F,Sp) 3
ENGL 4310[2] American Writers (F,Sp) 3
ENGL 4320[2] British Writers (F,Sp) 3
ENGL 4330[2] World Writers (F) 3

Note: The Writers courses vary according to the specialty of the faculty member teaching the course.

G. Genres (3 credits)
Select one of the following courses:
ENGL 4340[2] Studies in Prose Fiction (Sp) 3
ENGL 4350[2] Studies in Poetry (F) 3
ENGL 4360[2] Studies in Drama/Film (Sp) 3
ENGL 4370[2] Studies in Nonfiction Prose (F) 3

Note: The Genre courses vary according to the specialty of the faculty member teaching the course.

H. Capstone Seminar (3 credits)
ENGL 5450[3] Creative Writing Capstone (Sp) 3

I. Electives (9 credits)

Note: The Period Studies, Authors, and Genre courses vary according to the specialty of the faculty member teaching the course.

[1] ENGL 2600 should be taken before registering for 3000 or above literature courses.
[2] These courses are repeatable for credit.
[3] This capstone course should be completed during the senior year.
[4] ENGL1120 is waived if students pass the grammar challenge exam. For further information, contact the undergraduate advisor.
[5] ENGL 5400 includes proposals, brochures, environmental impact statements, newsletters, computer documentation, etc. This course is repeatable for credit.
[6] Prerequisite: Admittance to program and completion of ENGL 3400 and 3410 with grades of *B-* or better.
[7] Prior to enrolling in ENGL 5490, students must have completed either ENGL 3450 or 3460 with a grade of *B-* or better.
[8] ENGL 5410 includes multimedia, interactive and electronic texts, etc. This course is repeatable for credit.

Sample Four-year Plan for English Major, Creative Writing Emphasis

Minimum GPA for Admission: 2.75, major; 2.75, USU; 2.75, Career
Minimum GPA for Graduation: 2.75, major courses; 2.0, USU; 2.0, Career
Minimum Grade Accepted: *C* in major courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (30 credits)
Fall Semester (15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
ENGL 1110 English Orientation 1
University Studies Breadth courses 6
University Studies Quantitative Literacy (QL) course 3
Elective course(s) 2

Spring Semester (15 credits)
ENGL Literary History course 3
University Studies Breadth courses 9
Elective course(s) 3

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (30 credits)
Fall Semester (15 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
ENGL Literary History course 3
University Studies Breadth course 3
Depth Life and Physical Sciences (DSC) course 3
Elective course(s) 3

Spring Semester (15 credits)
ENGL 2600 Literary Analysis 3
ENGL 3430 Poetry Writing 3
ENGL 3440 Creative Nonfiction Writing 3
ENGL Literary History course 3
Elective course(s) 3

Junior Year (30 credits)
Fall Semester (15 credits)
ENGL 3420 Fiction Writing....3
ENGL 4250 Playwriting (optional) (3 cr) **or**
Elective course(s) (3 cr)....3
ENGL American, British, and World Literature course....3
ENGL Literary History course....3
Quantitative Intensive (QI) course (PHIL 2200 suggested)....3

Spring Semester (15 credits)
ENGL 4420 Advanced Fiction Writing (3 cr) **or**
ENGL 4430 Advanced Poetry Writing (3 cr) **or**
ENGL 4440 Advanced Nonfiction Writing (3 cr)....3
ENGL Linguistics course....3
ENGL Genre course....3
ENGL approved elective course....3
Elective course(s)....3

Senior Year (30 credits)
Fall Semester (15 credits)
ENGL Authors course....3
ENGL approved elective course....3
Communications Intensive (CI) course....3
Depth Social Sciences (DSS) course....3
Elective course(s)....3

Spring Semester (15 credits)
ENGL 4420 Advanced Fiction Writing (3 cr) **or**
ENGL 4430 Advanced Poetry Writing (3 cr) **or**
ENGL 4440 Advanced Nonfiction Writing (3 cr)....3
ENGL 5450 Creative Writing Capstone....3
Communications Intensive (CI) course....3
Elective courses....6

Note: All courses from the following categories are upper-division courses: Period Studies, Linguistics, Authors, and Genre.

American Studies Major and Minor

Many key issues tied to the roots, development, and expression 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 51 credits, including 9 credits of core requirements that introduce foundations of American literature, region, and culture; 6 credits chosen from the 3000 or 4000 level that expose students to the diversity of American culture; and 12 credits of upper-division work (3000 or 4000 level) that allow students to approach American literature, history, and culture through various genres and historical periods.

In addition to completing the required English and history classes, students must complete 21 credits from two of the following seven cognate areas: creative writing, folklore, literature, history, nature and environment, political science, and sociology and anthropology. Students will be required to meet with either the director or the undergraduate advisor (Lisa Hamblin, Taggart Student Center 302) 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.

Course Requirements

A. Core Requirements (9 credits)
Choose *three* of the following courses:
ENGL 2160 American Literary History: Colonialism to 1865 (F,Sp)....3
ENGL 2170 American Literary History: 1865 to Present (F,Sp)....3
HIST 2700 (BAI) United States to 1877 (F,Sp,Su)....3
HIST 2710 (BAI) United States 1877-Present (F,Sp,Su)....3

B. Choose *two* of the following courses (6 credits)
One selection must be from the ENGL course listings, and one selection must be from the HIST course listings.
ENGL 2630 (BHU) Survey of American Culture (F,Sp)....3
ENGL 3070 (DHA) Perspectives in Folklore (F,Su)....3
ENGL 3300 Period Studies in American Literature (F,Sp)....3
ENGL 3520 Multicultural American Literature (F,Sp)....3
ENGL 3620 Native American Studies (F,Sp)....3
ENGL 4610 Western American Literature (F,Sp)....3

HIST 3670 Slavery in the Atlantic World....3
HIST 4550 (DHA/CI) Women and Gender in America (F)....3
HIST 4600 (DHA/CI) The History of the American West....3
HIST 4630 The History of Mexican Americans....3
HIST 4710 American Indian History (F)....3
HIST 4720 (DHA/CI) The Civil Rights Movement (F,Sp)....3
HIST 4730 (CI) History of Black America (Sp)....3

C. Choose *four* of the following courses (12 credits)
At least one selection must be from the ENGL course listings, and at least one selection must be from the HIST course listings.
ENGL 4310 American Writers (F,Sp)....3
ENGL 4340 Studies in Prose Fiction (Sp)....3
ENGL 4350 Studies in Poetry (F)....3
ENGL 4360 Studies in Drama/Film (Sp)....3
ENGL 4370 Studies in Nonfiction Prose (F)....3
ENGL 4620 (CI) Advanced Seminar in American Studies (F,Sp)....3
ENGL 4630 American Nature Writers (F,Sp)....3
ENGL/HIST 4640 (CI) Studies in the American West (F,Sp)....3
ENGL 4900 Internship/Cooperative Work Experience (F,Sp,Su)....1-3

HIST 3720 Colonial America (F)....3
HIST 3730 The New American Nation (Sp)....3
HIST 3740 United States in the Age of Jefferson and Jackson (F)....3
HIST 3750 Civil War and Reconstruction (Sp)....3
HIST 3760 (DHA/CI) The United States 1900-1945 (Sp)....3
HIST 3770 Contemporary America 1945-Present (F)....3
HIST 3840 Twentieth Century American West (Sp)....3
HIST 3850 (DHA/CI) History of Utah (Sp)....3

HIST 3950 (DHA/CI) Environmental History 3
HIST 4400 (DHA) History of Aviation and Aeronautics.....3
HIST/ENGL 4640 (CI) Studies in the American West (F,Sp).....3
HIST 4790 American Religious History 3
HIST 4810 American Military History.....3

D. Cognate Areas (further information shown below) (21 credits)

Select two cognate areas and choose 9 credits from one and 12 credits from the other (21 credits total). Possible cognate course options are listed below.

1. Creative Writing
2. Folklore
3. History
4. American Literature
5. Nature and Environment
6. Political Science
7. Sociology and Anthropology

E. Capstone Course (3 credits)

ENGL/HIST 5690 (CI) American Studies Capstone Seminar (Sp).....3

Cognate Course Options

Students are required to select **two** cognate areas and choose 9 credits from one and 12 credits from the other (21 credits total). Cognate courses *cannot* be used to fill University Studies requirements. **A maximum of 3 credits can be completed in lower-division courses.** The following are partial lists of appropriate courses. The Director of American Studies or the American Studies Advisor (Lisa Hamblin) must approve substitutions.

1. Creative Writing

Select *three* or *four* courses from the following:
ENGL 3420 Fiction Writing (F,Sp) 3
ENGL 3430 Poetry Writing (F,Sp) 3
ENGL 3440 Creative Nonfiction Writing (F,Sp) 3
ENGL 4420 Advanced Fiction Writing (Sp) 3
ENGL 4430 Advanced Poetry Writing (Sp) 3
ENGL 4440 Advanced Nonfiction Writing (Sp).....3

2. Folklore

Select *three* or *four* courses from the following:
ENGL/HIST/ANTH 2210 (BHU) Introduction to Folklore (F,Sp).....3
ENGL/HIST/ANTH 2720 Survey of American Folklore (F,Sp).....3
ENGL/HIST 3070 Perspectives in Folklore (F,Su) 3
ENGL/HIST 3700 (CI) Regional Folklore (F,Sp).....3
ENGL/HIST 3710 (CI) Folklore Colloquium (Sp).....3
ENGL/HIST 4700 Folk Material Culture (Sp) 3
ENGL/HIST 4750 Advanced Folklore Workshop: Fife Conference (Su).....3
ENGL/HIST/ANTH 5700 Folk Narrative (Sp) 3

3. History

Select *three* or *four* courses from the following. Courses may *not* be "double-counted" to satisfy requirements in sections A, B, or C.
HIST/ENGL 1600 American Cultures in Film (F,Sp).....3
HIST 2700 (BAI) United States to 1877 (F,Sp,Su).....3
HIST 2710 (BAI) United States 1877-Present (F,Sp,Su) 3
HIST 3720 Colonial America (F).....3
HIST 3730 The New American Nation (Sp).....3
HIST 3740 United States in the Age of Jefferson and Jackson (F) 3
HIST 3750 Civil War and Reconstruction (Sp) 3
HIST 3760 (CI) The United States, 1900-1945 (Sp).....3
HIST 3850 (CI) History of Utah (Sp).....3
HIST 4550 (DHA/CI) Women and Gender in America (F).....3
HIST 4600 (CI) The History of the American West.....3
HIST/ENGL 4640 (CI) Studies in the American West (F,Sp).....3
HIST 4710 American Indian History (F).....3
HIST 4730 (CI) History of Black America (Sp) 3
HIST 4790 American Religious History 3
HIST 4810 American Military History.....3

4. American Literature

Select *three* or *four* courses from the following. Courses may *not* be "double-counted" to satisfy requirements in sections A, B, or C.
ENGL 3300 Period Studies in American Literature (F,Sp).....3
ENGL 3520 Multicultural American Literature (F,Sp).....3
ENGL 3620 Native American Studies (F,Sp).....3
ENGL 4310 American Writers (F,Sp).....3
ENGL 4340 Studies in Prose Fiction (Sp).....3
ENGL 4350 Studies in Poetry (F).....3
ENGL 4360 Studies in Drama/Film (Sp) 3
ENGL 4370 Studies in Nonfiction Prose (F).....3
ENGL 4610 Western American Literature (F,Sp) 3
ENGL 4620 (CI) Advanced Seminar in American Studies (F,Sp).....3
ENGL 4630 American Nature Writers (F,Sp).....3
ENGL/HIST 4640 (CI) Studies in the American West (F,Sp).....3

5. Nature and Environment

Select *three* or *four* courses from the following:
ENGL 4630 American Nature Writers (F,Sp).....3
ENVS 2340 (BSS) Natural Resources and Society (F,Sp).....3
ENVS 5110 Environmental Education (Sp) 3
HIST 3950 (CI) Environmental History 3
NR 1010 (BSS) Humans and the Changing Global Environment (F,Sp).....3
NR 2220 General Ecology (F,Sp) 3
PHIL 3510 Environmental Ethics (F,Sp).....3
POLS 4820 (DSS) Natural Resources and Environmental Policy (Sp) 3
SOC 3600 Sociology of Urban Places (F).....3
SOC 3610 (DSS) Rural Sociology (F) 3
SOC 4620 (DSS) Sociology of the Environment and Natural Resources (Sp) 3
SPCH 5250 Environmental Rhetoric (Sp) 3
WILD 2200 (BLS) Ecology of Our Changing World (F,Sp).....3

6. Political Science

Select *three* or *four* courses from the following:
POLS 1100 (BAI) United States Government and Politics (F,Sp).....3
POLS 2200 (BSS) Comparative Politics (F,Sp) 3
POLS 3140 (DSS) The Presidency (F) 3
POLS/ECON 3170 Law and Economics (F) 3
POLS 3310 (DSS) American Political Thought (F).....3
POLS 3320 The Foundations of American Constitutionalism 3
POLS 3400 (DSS) United States Foreign Policy (F,Sp).....3
POLS 4130 Constitutional Theory (Sp).....3
POLS 4140 Political Organizations 3

7. Sociology and Anthropology

Select *three* or *four* courses from the following:
ANTH 1010 (BSS) Cultural Anthropology (F,Sp).....3
ANTH 3110 North American Indian Cultures (F) 3
ANTH 3130 (CI) Peoples of Latin America.....3
ANTH 3200 (DSS/CI) Perspectives on Race (Sp) 3
ANTH 3300 (DSS) Archaeology in North America (Sp) 3
ANTH 4110 (DSS) Southwest Indian Cultures, Past and Present (F)...3
ANTH 4360 (DSS) Ancient Desert West (F).....3-4
ANTH 5800 Museum Development (F,Sp,Su) 1-3
SOC 1010 (BSS) Introductory Sociology (F,Sp).....3
SOC 2370 Sociology of Gender (F) 3
SOC 3010 Race, Class, and Gender (F,Sp).....3

Sample Four-year Plan for American Studies Major

Minimum GPA for Admission: 2.75, major; 2.75, USU; 2.75, Career
Minimum GPA for Graduation: 2.75, major courses; 2.0, USU; 2.0, Career
Minimum Grade Accepted: *C* in major courses

Plans of study vary greatly among students, depending upon their areas of interest. The sample plan described below reflects the plan for a student who chooses an American Studies major (a) concentrating on English courses, (b) with a focus on American literature, and (c) selecting cognate areas in History and Political Science. Students may also choose an American Studies major with a History concentration, focusing on a chronological sequence of upper-division history classes and cognate areas in American literature and in nature and environment.

The following sample plan outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883. (**Note**: Students may *not* count the courses used for University Studies in a Cognate Area as well.)

Freshman Year (30 credits)
Fall Semester (15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
ENGL 1110 English Orientation 1
University Studies Breadth courses 6
University Studies Quantitative Literacy (QL) course 3
Elective course(s) 2

Spring Semester (15 credits)
ENGL 2160 American Literary History: Colonialism to 1865 3
ENGL 2630 (BHU) Survey of American Culture 3
University Studies Breadth courses 6
Elective course(s) 3

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (30 credits)
Fall Semester (15 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
ENGL 2170 American Literary History: 1865 to Present 3
ENGL 3070 Perspectives in Folklore (3 cr) **or**
ENGL 3300 Period Studies in American Literature (3 cr) **or**
ENGL 3520 Multicultural American Literature (3 cr) **or**
ENGL 3620 Native American Studies (3 cr) 3
University Studies Breadth course 3
Depth Life and Physical Sciences (DSC) course 3

Spring Semester (15 credits)
ENGL 3300 Period Studies in American Literature (3 cr) **or**
ENGL 3520 Multicultural American Literature (3 cr) 3
ENGL 4310 American Writers (3 cr) **or**
ENGL 4340[9] Studies in Prose Fiction (3 cr) **or**
ENGL 4360[9] Studies in Drama/Film (3 cr) **or**
ENGL 4630 American Nature Writers (3 cr) **or**
ENGL 4900 Internship/Cooperative Work Experience (3 cr) 3
Cognate Area #1 course[10] 3
Cognate Area #2 course[10] 3
Elective course(s) 3

Junior Year (30 credits)
Fall Semester (15 credits)
ENGL 4310 American Writers (3 cr) **or**
ENGL 4350[9] Studies in Poetry (3 cr) **or**
ENGL 4370[9] Studies in Nonfiction Prose (3 cr) **or**
ENGL 4620 (CI) Advanced Seminar in American Studies (3 cr) **or**
ENGL 4630 American Nature Writers (3 cr) **or**
ENGL 4640 (CI) Studies in the American West (3 cr) **or**
ENGL 4900 Internship/Cooperative Work Experience (3 cr) 3
Cognate Area #1 course[10] 3
Cognate Area #2 course[10] 3
Depth Social Sciences (DSS) course (May *not* be a course used in one of the *Cognate Areas*.) 3
Elective course(s) 3

Spring Semester (15 credits)
ENGL 4310 American Writers (3 cr) **or**
ENGL 4340[9] Studies in Prose Fiction (3 cr) **or**
ENGL 4360[9] Studies in Drama/Film (3 cr) **or**
ENGL 4630 American Nature Writers (3 cr) **or**
ENGL 4900 Internship/Cooperative Work Experience (3 cr) 3
Quantitative Intensive (QI) course (PHIL 2200 suggested) 3
Cognate Area #1 course[10] 3
Cognate Area #2 course[10] 3
Elective course(s) 3

Senior Year (30 credits)
Fall Semester (15 credits)
ENGL 4610 Western American Literature 3
Communications Intensive (CI) course 3
Cognate Area #1 course[10] 3
Elective courses 6

Spring Semester (15 credits)
ENGL 5690 (CI) American Studies Capstone Seminar 3
Elective courses 12

[9]These courses may be used toward the major *only* when course content is American Studies related. Students should contact their advisor for approval.
[10]Students may apply only *one* lower-division course in the *Cognate Areas* (one course total), *not* one course per Cognate Area.

American Studies Minor (21 credits)

American Studies minors must meet and maintain a 2.75 GPA admissions and graduation standard. Students are required to complete the following: (1) one introductory ENGL course (ENGL 2160, American Literary History: Colonialism to 1865; or ENGL 2170, American Literary History: 1865 to Present); (2) one introductory HIST course (HIST 2700, United States to 1877; or HIST 2710, United States 1877-Present); and (3) one 3000- or 4000-level ENGL or HIST course (listed on pages 285-286 in sections B and C). In addition, students must also complete 12 credits of upper-division coursework drawn from two cognate areas (listed on page 286 in section D). These courses of study must be approved by the Director of American Studies or by the American Studies advisor (Lisa Hamblin, Taggart Student Center 302) at least one year in advance of graduation. Courses used to fulfill requirements for the English and History majors may *not* be used for the American Studies minor.

Folklore Minor (18 credits)

The 18-credit minor in folklore is an interdisciplinary program sponsored by the English Department and the History Department. The Director of the Folklore Program or the Folklore Advisor (Lisa Hamblin) must approve the coursework at least one year prior to graduation. Folklore minor students must maintain a 2.75 GPA admissions and graduation standard.

A. Required Courses (6 credits)
ENGL/HIST/ANTH 2210 (BHU) Introduction to Folklore (F,Sp).....3
ENGL/HIST/ANTH 5700 Folk Narrative (Sp).....3

B. Survey of Folklore in Culture and Place (3 credits)
Select *one* of the following courses:
ENGL/HIST/ANTH 2720 Survey of American Folklore (F,Sp).....3
ENGL/HIST 3700 (CI) Regional Folklore (F,Sp).....3

C. Folklore Genres (3 credits)
Select *one* of the following courses:
ENGL/HIST 3070 (DHA) Perspectives in Folklore (F,Su).....3
ENGL/HIST 4700 Folk Material Culture (Sp).....3

D. Focused Approaches to the Study of Folklore (3 credits)
Select *one* of the following courses:
ENGL/HIST 3710 (CI) Folklore Colloquium (Sp).....3
ENGL/HIST 4750 Advanced Folklore Workshop:
Fife Conference (Su).....3

E. Electives (3 credits)
Select *one* of the following courses:
ANTH 1010 (BSS) Cultural Anthropology (F,Sp).....3
ANTH 2010 (BSS) Peoples of the Contemporary World (F).....3
ANTH 3110 North American Indian Cultures (F).....3
ANTH 3130 (CI) Peoples of Latin America.....3
ANTH 3160 (DSS) Anthropology of Religion (F).....3
ANTH 4110 (DSS) Southwest Indian Cultures, Past and Present (F).....3
ANTH 4120 (CI/DSS) Ethnography of Childhood (F).....3
ANTH 4130 (DSS) Medical Anthropology: Matter, Culture, Spirit, and Health (Sp).....3
ANTH 5190 Applied Anthropology Practicum.....3
ENGL/HIST 1600 American Cultures in Film (F).....3
ENGL/HIST 3070 (DHA) Perspectives in Folklore (F,Su).....3
ENGL 3520 Multicultural American Literature (F,Sp).....3
ENGL 3620 Native American Studies (F,Sp).....3
ENGL/HIST 3710 (CI) Folklore Colloquium (Sp).....3
ENGL/HIST 4750 Advanced Folklore Workshop: Fife Conference (Su).....3
HIST 4850 Interpreting the Past for Teachers (F,Sp).....3

English Teaching Minor (27 credits)

English Teaching minor students must meet and maintain a 2.75 GPA for admission and graduation. This minor is available *only* to students completing a teaching major. Students may not use the *P/D/F* option, and grades *C* and below must be repeated. Students must complete the following courses:

ENGL 2140 British Literary History: Anglo-Saxon to 18th Century (F,Sp) (3 cr) **or**
ENGL 2150 British Literary History: Romanticism to Present (F,Sp) (3 cr).....3
ENGL 2160 American Literary History: Colonialism to 1865 (F,Sp) (3 cr) **or**
ENGL 2170 American Literary History: 1865 to Present (F,Sp) (3 cr).....3
ENGL 3510 Young Adult Literature (F,Sp).....3
ENGL 3520 Multicultural American Literature (F,Sp).....3
ENGL 4200 Linguistic Structures (F,Sp,Su).....3
ENGL 4220 Ethnic Literacy (F,Sp).....3
ENGL 4300 Shakespeare (F,Sp).....3
ENGL 4500 (CI) Teaching Writing (F,Sp).....3
ENGL 4510 (CI) Teaching Literature (F,Sp).....3

In addition to fulfilling the above requirements, students in the English teaching minor must fulfill a grammar competency requirement. They may meet this requirement by *either* enrolling in ENGL 1120, Elements of Grammar (also offered through Independent Study), *or* by passing a challenge exam in the English Department Writing Center (Ray B. West 104) with a score of 80 percent or better. For further information, contact the English undergraduate advisor (Lisa Hamblin, Taggart Student Center 302, lisa.hamblin@usu.edu).

English Minor (Standard Nonteaching) (18 credits)

The standard nonteaching minor consists of 18 credits of various courses, 12 of which must be in upper-division coursework. Ten of the 18 credits must be earned in residence at USU. Advanced Placement credit, CLEP credit, and credit from ENGL 1010 and 2010 may **not** be counted toward this minor. The program must be approved by the Academic Advisor for the English Department at least one year prior to graduation.

British and Commonwealth Studies Minor (18 credits)

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 of the British Empire's contact with world cultures in the Commonwealth and other postcolonial nations. This minor requires a minimum of 18 credits. Up to three of these courses (9 credits) from the list in *Section A* below may also be used to fulfill requirements for the English or History majors. 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.

A. Select five courses relevant to British and Commonwealth Studies (15 credits)
Each semester, applicable courses will be listed on the program's website (click on link at **http://english.usu.edu/**). Several courses which may fulfill the requirements are listed below. Other courses may also be applicable, depending on the topic. At least one course must be chosen from the English Department offerings, and at least one course must be chosen from the History Department. Furthermore, at least one course must focus on some aspect of the Commonwealth (each of these courses is designated by an asterisk on the website). Students engaged in a formal program of study in Britain or any Commonwealth country may apply this experience toward the British and Commonwealth Studies minor, at the program coordinator's discretion.

ENGL 2140 British Literary History: Anglo-Saxon to 18th Century (F,Sp).....3
ENGL 2150 British Literary History: Romanticism to Present (F,Sp).....3
ENGL 3060 British and Commonwealth Cultures.....3
ENGL 3310 Period Studies in British Literature (F,Sp).....3
ENGL 3320 Period Studies in World Literature (F,Sp).....3
ENGL/HIST 3700 (CI) Regional Folklore (F,Sp).....3
ENGL 4300 Shakespeare (F,Sp).....3
ENGL 4320 British Writers (F,Sp).....3
ENGL 4330 World Writers (F).....3
HIST 3240 Modern Europe from 1789 to the Present.....3
HIST 3510 Africa and the World.....3
HIST 3720 Colonial America (F).....3

HIST 4210 Celtic Europe (F,Sp) 3
HIST 4250 The Reformation in Britain: 1450-1688 3
HIST 4390 British Imperialism from 1688 to the Present 3

B. Complete one of the following two courses (3 credits)
These courses will culminate in the student producing a research paper of approximately 20 pages, which should be on some topic relevant to Britain and/or the Commonwealth.
ENGL 5920 Directed Study (F,Sp,Su) 3
HIST 4930 Directed Readings 3

For further information about the British and Commonwealth Studies Minor, contact the program coordinator (Shane Graham, Ray B. West 301B, (435) 797-2719, sgraham@english.usu.edu).

Program Assessment

For information about how the English Department assesses its programs, click on the **Assessment** link on the departmental home page at: **http://english.usu.edu/**

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school.

Students are eligible for admission to the English departmental honors program if they: (1) are majoring in English or in American Studies, (2) have a cumulative GPA of at least 3.3, and (3) have a GPA in English courses (excluding ENGL 1010 and 2010) of at least 3.5. In order to earn a departmental honors degree, students must maintain these GPA levels, take 15 credits of approved upper-division English coursework for Honors credit, and complete and orally defend a Senior Honors Thesis. Typically, students take four 3-credit courses with honors contracts and one 3-credit independent study course (ENGL 5910, Senior Honors Thesis) in order to complete the 15 required credits for the program. For more information, follow the Honors Program link at: **http://english.usu.edu/**

Additional Information and Updates

English programs are constantly being updated. Students should therefore confer with the English advisor, Lisa Hamblin (Taggart Student Center 302). Current requirement sheets are available online at: **http://www.usu.edu/majorsheets/**

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. For further information, click on the scholarships link at: **http://english.usu.edu**

Graduate Programs

PhD in Theory and Practice of Professional Communication

The Theory and Practice of Professional Communication (TPPC) program is designed to meet the interests and needs of students who aspire to conduct advanced study of and research into the communicative practices of organizations and the professions. The program offers the opportunity to study professional communication, technology, and culture in a department with a long history of expertise and achievement in writing and technology. The defining features of this program include opportunities to study and work with advanced communication technologies, to engage in extended fieldwork research experiences, and to pursue a program of study that can largely be tailored to work with different research interests within the field of professional communication. The program prepares students to become academic instructors/researchers in English departments or to move into administrative or research positions in nonacademic workplaces.

The TPPC program has a website providing details about the application process, financial assistance, and graduation requirements. This website may be accessed at: **http://tppc.usu.edu/**

Research

PhD students have opportunities to participate in unique research activities available at facilities associated with the Department of English, such as computer classrooms and labs directed by faculty members. These research activities complement faculty expertise and curriculum strengths in the department, including workplace-focused graduate research, theory and practice of online education, and training in writing and professional communication.

The TPPC program makes extensive use of Web-based communications systems. The English Department at Utah State has a national reputation for its achievements in online education and continues to develop innovative ways to deliver state-of-the-art, Web-based instruction to students in Utah, across the U.S., and around the world. Depending on their research and teaching interests, TPPC students may be actively involved in these efforts.

Coursework

As part of the work on their degree, students in the program complete a minimum of 60 approved semester credits beyond their master's degree. The required courses include ENGL 7000 (Advanced Research Methods in Professional Communication), ENGL 7410 (Theory and Research in Professional Communication), ENGL 7900 (Research Internship), and ENGL 7970 (Dissertation Research). Additional coursework is completed through a rotating series of seminars focused on the ongoing research projects and interests of faculty. In addition, to support the breadth of perspective required to understand professional communication as it operates in society at large, students are required to take at least 6 credits (and a maximum of 18 credits) of graduate-level coursework outside of the Department of English. Students are encouraged to select courses that will help them develop expertise in an area (either disciplinary or interdisciplinary) that will complement their research and/or pedagogical goals.

Department of English

Admission Procedure

Applicants for admission to the program must have a master's degree in a subject area that complements their professional reason(s) for earning a PhD in Theory and Practice of Professional Communication. They must also have earned scores *no lower than the 40th percentile* in the Verbal section and in *either* the Quantitative *or* the Analytical section of the Graduate Record Examination (GRE) General Test.

Applicants to the program should send materials to two offices at Utah State University, as described below.

To the **School of Graduate Studies**, applicants should send four items:

1. A completed application form, along with the application fee.
2. Two copies of all official undergraduate and graduate transcripts, showing GPA. The minimum requirement is 3.00 on a 4.00 scale for the last 60 credits of undergraduate courses taken and for all graduate credits taken.
3. Three letters of recommendation (at least two of which must be from former professors if the applicant has been enrolled in school during the last five years).
4. GRE scores no older than five years.

To the **Director of Graduate Studies in the Department of English**, applicants should send four items:

1. A letter of intent providing background information 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 professional communication is important to the applicant.
2. A completed *Graduate Instructorship Application for PhD Students* form (indicating whether or not the applicant wishes to be considered for a graduate instructorship).
3. A current vita.
4. Two writing samples (a total of 20-40 pages). The samples may include academic or nonacademic writing, but should demonstrate *both* the applicant's critical *and* research skills. Each sample must be accompanied by a 1-page introductory preface. For additional details, including current application deadline, see the TPPC website at: **http://tppc.usu.edu/**

Financial Assistance

Both departmental support and formal research grant support are available to graduate students on a competitive basis. Highly qualified graduate students may also be nominated to compete for University fellowships. Students who wish to be considered for financial aid must meet the application deadlines described above.

Graduate instructorships are available through the Department of English. The assignment will be 50 percent time—approximately 20 hours of work per week. The normal teaching load is two sections of writing classes (e.g., composition or introduction to technical communication) for fall and spring semesters.

In addition, students are normally responsible for paying resident (instate) tuition and fees if they are residents of Utah, and *both* resident and nonresident (out-of-state) tuition and fees if they are *not* Utah residents. However, PhD students who are employed as graduate instructors (or who are recipients of certain fellowships) are eligible for tuition waivers. If they are Utah residents, their resident tuition costs will be waived. If they are *not* Utah residents, *both* the resident and nonresident tuition costs will be waived. Recipients of these tuition waivers will *still* be responsible for paying fees each semester.

Master's 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 a 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://english.usu.edu/**

Admission Requirements

In addition to the requirements specified on pages 101-102 (Admission Procedures), applicants for admission to the English Department master's degree programs should have a BS or BA degree with an undergraduate major in a subject area relevant to the master's 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://techcomm.usu.edu/grad/**

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. The final annual deadline is June 15 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.

MA/MS in English 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

The graduate specialization in Literature and Writing offers an MA or MS in English to students who wish to do advanced work in the fields of literary criticism, composition, rhetoric, and creative writing. The aim

is to professionalize students, helping them to become scholars and teachers of English. While any student having a strong undergraduate education in English, along with a desire to pursue that education further, is welcome to pursue the Literature and Writing specialization, the specialization does cater most directly to future PhD students in English, future two-year college instructors, and secondary educators. Under the guidance of a faculty committee, students are encouraged to write a thesis as the culmination of their studies. With approval, this thesis may consist of a creative writing work with a critical reflective essay. Students not wishing to write a thesis may complete the Plan C option by taking 33 credits of coursework.

In both seminars and independent study with faculty, Literature and Writing students consider literary and nonliterary texts, learning not only how to interpret such texts, but also how to produce them. The course of study thus includes both theory and practice: students take part in the reading and the writing of literature, criticism, essays, and arguments. The curriculum is divided into three groups of courses: (1) Literature, (2) Writing, and (3) Teaching Literature and Writing. Students who are particularly interested in one of these three areas may take as many courses in that group as are available. However, they should *not* expect to be able to take *all* their courses from any one group; rather, they are encouraged to take courses from *all three* groups before they graduate.

Although most of their courses will be completed within the Literature and Writing curriculum, students may also pursue their interests by taking some courses in the department's other master's programs (American Studies, Folklore, and Technical Writing), as well as doctoral courses in the Theory and Practice of Professional Communication PhD program. Permission of the Director of Graduate Studies in English is required. Coursework may include some online courses; however, Literature and Writing is an on-campus specialization and *may not* be completed by taking *only* online classes.

Technical Writing (online)

The graduate specialization in Technical Writing is designed for students who already have some training and/or experience as practitioners of technical writing. It is taught entirely online, via the Internet, and aims to prepare students to enter or reenter nonacademic workplaces, not just as practitioners, but also as developers and managers of technical documents. When they graduate, students will be qualified to determine and defend writing policy and practices in their workplaces.

To prepare students for these leadership roles, the Technical Writing specialization 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 specialization balances 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 Technical Writing specialization 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, provided they have some practical experience.

Students in Technical Writing must complete 33 credits under the Plan C option. Courses may be taken in any sequence. Students in this specialization pursue the MS degree.

MA/MS in American Studies Requirements

Those applicants who have been admitted to the American Studies degree program will work out a program of study with either the American Studies Director or the Folklore Director. Generally, students develop their programs with a focus in American literature, folklore, or history. Interdisciplinary connections with many other departments at USU are possible. Students may choose the American Studies Standard specialization, with or without an emphasis in creative nonfiction writing on the cultures and landscapes of the American West; *or* the Folklore specialization, with or without an emphasis in public sector folklore. 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 American Studies Standard specialization must take ENGL/HIST 6600 (American Studies Theory and Method) early in their course of study. Students must also take *at least one course* in a department *other than English*. Students selecting the Creative Nonfiction emphasis will follow the same requirements as the students in the American Studies Standard specialization, with the following exception: all students in the Creative Nonfiction emphasis are required to take two courses in which a major part of their coursework focuses on some form of creative nonfiction. If approved, it is possible for one course in *either* fiction *or* poetry writing to be applied toward this emphasis.

Students in the Folklore specialization must take ENGL/HIST 6700 (Folklore Theory and Method) early in their course of study. Students selecting the Public Sector Folklore emphasis will follow the same requirements as the students in the Folklore specialization, with the following exception: all students in the Public Sector Folklore emphasis are required to take ENGL/HIST 6720 (Folklore Fieldwork), ENGL/HIST 6730 (Public Folklore), and ENGL 6900 (Graduate Internship).

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-Cazier Library is a regional depository for federal publications and receives 60,000 to 70,000 government titles each year. The library's Special Collections division contains 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 poetry. The Fife Folklore Archives, one of the best folklore archives in the country, contains over 3,400 books on folklore and folklore-related topics. The Special Collections division also serves as the national depository for the American Folklore Society's Papers, more than 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 106-109 of this catalog). Only grades of *B-* or better will be accepted for credits in support of the

degree programs, and 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 School of Graduate Studies assistant dean (Main 164). After successfully defending their Plan B papers, students must submit a department-approved copy to University Library Special Collections.

All candidates who are first-year graduate instructors are required to take ENGL 6820 (Practicum in Teaching English) 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 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
Melody Graulich, American Literature, American Studies, Western American literature, feminist studies; editor, *Western American Literature*
Patricia Gantt, teacher education, young adult literature, American studies, women and gender studies, southern literature
Christine Hult, composition and rhetoric, teacher education (Associate Dean, College of Humanities, Arts and Social Sciences)
Joyce A. Kinkead, composition and rhetoric (Vice Provost for Undergraduate Studies and Research)
Stephen C. Siporin, folklore, folk narrative, material culture, folk ethnicity
Jeffrey Smitten, eighteenth century British literature, Scottish literature, literary theory and criticism
Jeannie B. Thomas, folklore, legend, oral narrative, humor and gender

Professors Emeritus
Jan Bakker, nineteenth- and early twentieth-century American literature
Barre Toelken, folklore, Native American studies, medieval literature

Associate Professors
Kelli Cargile Cook, technical communication
Paul J. Crumbley, American poetry, nineteenth century American women writers, American identity, the wilderness experience
Brock Dethier, composition, creative writing
Kathryn R. Fitzgerald, teacher education, composition and rhetoric, writing assessment
Evelyn I. Funda, American literature, Western American 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
Jennifer Sinor, rhetoric and composition, teacher education
Michael Sowder, creative writing (poetry), American literature

Associate Professors Emeritus
Theodore Andra, British literature, techincal writing
Kate M. Begnal, twentieth-century literature, postmodernism, literary theory and criticism
Patricia Gardner, world literature, children's and young adult literature, folklore

Assistant Professors
Cheryl E. Ball, computers and writing, new media, visual rhetoric, composition studies, e-poetics
Christopher Cokinos, creative nonfiction, poetry writing, science and nature writing; editor, *Isotope*
Christine F. Cooper, medieval literature, commonwealth
Lisa Ann Gabbert, folklore, American studies
Shane Graham, postcolonial literature and theory, contemporary fiction and drama, multicultural literature
Ryan M. Moeller, professional writing, rhetorical theory, rhetorics of technology
Roberta S. Stearman, American literature, fiction writing
Charles Waugh, fiction writing, literature and globalization

Adjunct Assistant Professor
Christie L. Fox, folklore; Program Coordinator of Honors Program

Lecturers
Susan Andersen, literature and writing
Shanan L. Ballam, writing, creative writing
Star Coulbrooke, Associate Director of Writing Center
John Engler, literature and writing
Nikole Berger Eyre, literature and writing
Julie R. Foust, writing; Director of Rhetoric Associates
Marina L. Hall, Coordinator of Public Relations and Educational Outreach
Charlene A. Hirschi, Director of Writing Center
Maria Melendez, literature and writing
Susan Nyikos, literature and writing
Robin Parent, American studies, folklore, distance education
Rachel Rich, literature and writing
Paige Smitten, literature and writing
Anne H. Stark, literature and writing
Michael Ward, literature and writing

Course Descriptions

English (ENGL), pages 616-621

Department of 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/departments/envs

Undergraduate Advisor:
Maureen A. Wagner, Natural Resources 120, (435) 797-2448, maureen@cc.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

Undergraduate emphases: *Environmental Studies BS*—Human Impacts on the Environment, Communications, Business and Economics, Environmental Policy, International, Planning and Analysis, Environmental Stewardship; *Geography BS, BA*—Human Impacts on the Environment, Cultural/Social Geography, Planning and Analysis, Geographic Perspectives

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 provides an opportunity for students to select from several areas of emphasis, depending upon their career goals.

The **Geography** curriculum provides a broad background in the basic themes of geography—human (cultural), physical, and regional geography. In addition, students acquire technical geographic analysis skills. As with the Environmental Studies major, students also have the opportunity to select from several areas of emphasis, depending upon their career goals.

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 planning and management of visitor use in wildland recreation settings, such as state and national parks, forests, monuments, and wilderness areas. Because such jobs require an understanding of the landscape, its natural resources, and the people who visit, the major offers courses in both the bio-physical and social sciences, along with an emphasis on communication and collaboration skills.

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.

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 128-129).

Graduation Requirements

All courses listed as major subject courses must be taken on an *A-B-C-D-F* basis. Students must achieve a grade of *C-* or better in all ENVS and GEOG courses used to satisfy the requirements for a major in the Department of Environment and Society. 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.

Department of Environment and Society

Environmental Studies Major

The Environmental Studies major consists of 84-87 credits. This total includes the disciplinary foundation, professional courses, and an emphasis area of 15 or more credits.

A. Disciplinary Foundation (18 credits)

BIOL 1010 (BLS) Biology and the Citizen (F,Sp,Su)....3
BIOL 1020 Biological Discovery: A Lab Course (F,Sp)....1
CHEM 1110 (BPS) General Chemistry I (F,Sp)....4
HIST 3950 (DHA/CI) Environmental History (3 cr) **or**
PHIL 3510 (DHA) Environmental Ethics (F,Sp) (3 cr)....3
MATH 1050 (QL) College Algebra (F,Sp,Su)....4
STAT 2000 (QI) Statistical Methods (F,Sp)....3

B. Professional Coursework (43-44 credits)

ENVS 1990 Professional Orientation for Environment and Society (F)....2
ENVS 2340 (BSS) Natural Resources and Society (F,Sp)....3
ENVS 3000 Natural Resources Policy and Economics (F)....4
ENVS 3330 Environment and Society (Sp)....3
ENVS 3500 (QI) Quantitative Assessment of Environmental and Natural Resource Problems (F)....3
ENVS 4000 Human Dimensions of Natural Resource Management (F)....3
ENVS 4400 Economic Applications in Natural Resource Management (Sp)....4
ENVS 4990 Environmental and Natural Resource Professionalism Seminar (F)....2
ENVS 5000 Collaborative Problem-Solving for Environment and Natural Resources (Sp)....3
GEOG 1000 (BPS) Physical Geography (F,Sp,Su) (3 cr) **or**
GEO 1110 (BPS) The Dynamic Earth: Physical Geology (F,Sp) (4 cr)....3 or 4
GEOG 3850 Map, Air Photo, and GIS Interpretation (F)....4
WATS 3700 (CI) Fundamentals of Watershed Science (Sp)....3
WILD 2200 (BLS) Ecology of Our Changing World (F,Sp)....3
WILD 3900 Managing Dynamic Ecological Systems (Sp)....3

C. Animal Course (select 3 credits)

ENVS 3600 (DSC) Living With Wildlife (Sp)....3
WATS 3100 (CI/DSC) Fish Diversity and Conservation (F)....3

D. Plant Course (select 3-4 credits)

BIOL 3040 (DSC) Plants and Civilization (F)....3
PLSC 3500 The Structure and Function of Economic Crop Plants (Sp)....3
WILD 3600 Wildland Plant Ecology and Identification (F)....4

E. Policy Course (select 2-3 credits)

The course chosen from this section *cannot* also be applied toward the emphasis area.

ENVS 4130 Recreation Policy and Planning (Sp)....3
ENVS 5300 Natural Resources Law and Policy (Sp)....2
ENVS 5320 Water Law and Policy in the United States (Sp)....3
ENVS 5550 Sustainable Development (Sp)....3
ENVS 5640 Conflict Management in Natural Resources (Sp)....3
Another course related to natural resource or environmental policy, numbered 3000 or higher....3

F. Area of Emphasis (15 credits)

Students majoring in Environmental Studies are required to select an emphasis of at least 15 credits. A student should meet with his or her advisor to develop and gain approval for the emphasis *no later* than midway through the first semester of the junior year. Students must file an approved emphasis plan prior to applying for graduation; contact the departmental office in NR 201 for details. Some courses may require prerequisites; for additional information, see course descriptions.

Complete 15 credits chosen from one of the following emphasis areas:

Human Impacts on the Environment

ENVS 5550 Sustainable Development (Sp)....3
ENVS 5570 Sustainable Living (Sp)....3
GEO 3100 (DSC) Natural Disasters (Sp)....3
HIST 3950 (DHA/CI) Environmental History (cannot be applied toward this option if already used to fulfill requirements in *Section A*)....3
SOC 4620 (DSS) Sociology of the Environment and Natural Resources....3
WATS 3820 (DSC/QI) Climate Change (Sp)....3
WILD 4600 Conservation Biology (Sp)....3

Communications

ENGL 3440 Creative Nonfiction Writing (F,Sp)....3
ENGL 4630 American Nature Writers (F,Sp)....3
ENVS 4600 Natural Resource Interpretation (F)....3
ENVS 5110 Environmental Education (Sp)....3
JCOM 1130 Beginning Newswriting for the Mass Media (F,Sp,Su)....3
SPCH 5250 Environmental Rhetoric (Sp)....3

Business and Economics

BA 3500 Fundaments of Marketing (F,Sp,Su)....3
ECON 3170 Law and Economics (F)....3
ECON 5560 Natural Resource and Environmental Economics (Sp)....3
ENVS 5550 Sustainable Development (Sp)....3
MHR 2050 Legal and Ethical Environment of Business (F,Sp,Su)....3
MHR 3110 (DSS) Managing Organizations and People (F,Sp,Su)....3

Environmental Policy

ENVS 4130 Recreation Policy and Planning (Sp)....3
ENVS 5300 Natural Resources Law and Policy (Sp)....3
ENVS 5320 Water Law and Policy in the United States (Sp)....3
ENVS 5550 Sustainable Development (Sp)....3
ENVS 5640 Conflict Management in Natural Resources (Sp)....3
POLS 5180 Natural Resource Policy (Sp)....3

International

ANTH 2010 (BSS) Peoples of the Contemporary World (F)....3
ECON 5400 International and Development Economics (F)....3
ENVS 5550 Sustainable Development (Sp)....3
GEOG 1300 (BSS) World Regional Geography (F)....3
GEOG 4200 (CI) Regional Geography (F,Sp,Su)....3
GEOG 6650 Developing Societies (F)....3
SOC 4730 Women in International Development (Sp)....3

Planning and Analysis

BIOL 5010 Biogeography (Sp)....3
ENVS 5640 Conflict Management in Natural Resources (Sp)....3
GEO 3100 (DSC) Natural Disasters (Sp)....3
GEOG 3610 Geography of Rural/Urban Planning (F)....3
LAEP 3700 City and Regional Planning (Sp)....3
WATS 4930 Geographic Information Systems (F)....4
WATS 5330 Large River Management (F)....3

Environmental Stewardship

In consultation with his or her advisor, a student may develop a custom emphasis of at least 15 credits. Students pursuing this option must fill out an emphasis form describing educational goals and specific courses to be taken. A University-approved minor may be used to meet this requirement, subject to approval by the student's advisor and department head.

G. Electives
Students may take the remainder of the 120 credits from any department. The guidelines described under "Breadth Requirements" (see pages 49-51) and "Depth Education Requirements" (see pages 53-58) should be consulted to ensure meeting University Studies Requirements.

Environmental Studies Major
Recommended Four-Year Plan of Study

Students should meet regularly with their faculty advisor and carefully plan their academic program, keeping in mind that many upper-division courses have prerequisites and must be taken in sequence.

Students following the recommended schedule listed below should be able to complete degree requirements in four years (eight semesters).

Freshman Year (28-29 credits)
Fall Semester (14-15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
ENVS 1990 Professional Orientation for Environment and Society 2
GEOG 1000 (BPS) Physical Geography (3 cr) **or**
GEO 1110 (BPS) The Dynamic Earth: Physical Geology (4 cr)..... 3 or 4
USU 1300 (BAI) U.S. Institutions (3 cr) **or**
Other approved Breadth American Institutions (BAI) course (3 cr) 3
USU 1320 (BHU) Civilization: Humanities (3 cr) **or**
Other approved Breadth Humanities (BHU) course (3 cr).....3

Spring Semester (14 credits)
BIOL 1010 (BLS) Biology and the Citizen.....3
BIOL 1020 Biological Discovery: A Lab Course 1
ENVS 2340 (BSS) Natural Resources and Society 3
MATH 1050 (QL) College Algebra.....4
USU 1330 (BCA) Civilization: Creative Arts (3 cr) **or**
Other approved Breadth Creative Arts (BCA) course (3 cr) 3

Sophomore Year (29-30 credits)
Fall Semester (14 credits)
CHEM 1110 (BPS) General Chemistry I 4
GEOG 3850 Map, Air Photo, and GIS Interpretation.....4
STAT 2000 (QI) Statistical Methods 3
WILD 2200 (BLS) Ecology of Our Changing World 3

Spring Semester (15-16 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing In a Persuasive Mode 3
ENVS 3330 Environment and Society.....3
HIST 3950 (DHA/CI)[1] Environmental History (3 cr) **or**
PHIL 3510 (DHA) Environmental Ethics (3 cr).....3
Animal or plant course.....3-4
Policy or area of emphasis course 3

Junior Year (27-31 credits)
Fall Semester (14-16 credits)
ENVS 3000 Natural Resources Policy and Economics.....4
Animal or plant course.....3-4
Area of emphasis or elective courses 7-8

Spring Semester (13-15 credits)
ENVS 4400 Economic Applications in Natural Resource Management 4
WATS 3700 (CI) Fundamentals of Watershed Science 3
WILD 3900 Managing Dynamic Ecological Systems 3
Policy or area of emphasis course(s).....3-5

Senior Year (30-33 credits)
Fall Semester (15-16 credits)
ENVS 3500 (QI) Quantitative Assessment of Environmental and Natural Resource Problems.....3
ENVS 4000 Human Dimensions of Natural Resource Management 3
ENVS 4990 Environmental and Natural Resource Professionalism Seminar 2
Area of emphasis or elective courses 7-8

Spring Semester (15-17 credits)
ENVS 5000 Collaborative Problem-Solving for Environment and Natural Resources 3
Policy, area of emphasis, or elective courses.....12-14

[1]HIST 3950 is taught intermittently. For more information, contact the History Department.

Environmental Studies Minor (15-17 credits)
The Environmental Studies minor is open to all majors except those in the College of Natural Resources. Students wishing to minor in Environmental Studies should contact the Department of Environment and Society to meet with the department's designated minor advisor. All courses required for the minor must be taken on an *A-B-C-D-F* basis. A grade of *C-* or better is required for all ENVS courses taken to meet requirements for the minor. A minimum GPA of 2.5 is required for courses taken to complete the minor.

A. Required Courses (10 credits)
ENVS 2340 (BSS) Natural Resources and Society (F,Sp).....3
ENVS 3000 Natural Resources Policy and Economics (F) 4
WILD 2200 (BLS) Ecology of Our Changing World (F,Sp).....3

B. Policy or Economics Course (2-4 credits)
Select one of the following courses in natural resources policy or economics:

ENVS 4130 Recreation Policy and Planning (Sp).....3
ENVS 4400 Economic Applications in Natural Resource Management (Sp).....4
ENVS 5300 Natural Resources Law and Policy (Sp).....2
ENVS 5320 Water Law and Policy in the United States (F).....3
ENVS 5550 Sustainable Development (Sp).....3

C. Electives (3 credits)
Select one additional upper-division (3000-level or higher) course of 3 credits or more, which provides greater depth in an area of natural or social sciences that can be applied to the management of natural resources and the environment, to be selected in consultation with the Environmental Studies minor advisor.

Geography Major
The Geography major consists of 48 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.

A. Disciplinary Foundation Courses (29 credits)
ENVS 1990 Professional Orientation for Environment and Society (F).....2
ENVS 3330 Environment and Society (Sp).....3
GEOG 1000 (BPS) Physical Geography (F,Sp,Su).....3
GEOG 1005 Physical Geography Lab (F,Sp).....1
GEOG 1300 (BSS) World Regional Geography (F).....3

GEOG 1400 (BSS) Human Geography (Sp).....3
GEOG 3850 Map, Air Photo, and GIS Interpretation (F).....4
GEOG 4200 (CI) Regional Geography (F,Sp,Su).....3
GEOG 4850 Cartographic Design (Sp).....3
WATS 4930 Geographic Information Systems (F).....4

B. Quantitative Foundation (7 credits)

MATH 1050 (QL) College Algebra (F,Sp,Su).....4
STAT 2000 (QI) Statistical Methods (F,Sp).....3

C. Emphasis Area (12 credits)

Students majoring in Geography are required to select an emphasis of at least 12 credits. A student should meet with his or her advisor to develop and gain approval for the emphasis *no later* than midway through the first semester of the junior year. Students must file an approved emphasis plan prior to applying for graduation; contact the departmental office in NR 201 for details. Some courses may require prerequisites; for additional information, see course descriptions.

Complete 12 credits chosen from one of the following emphasis areas.

Human Impacts on the Environment
ENVS 3600 (DSC) Living with Wildlife (Sp).....3
ENVS 5000 Collaborative Problem-Solving for Environment and Natural Resources (Sp).....3
ENVS 5550 Sustainable Development (Sp).....3
ENVS 5570 Sustainable Living (Sp).....3
HIST 3950 (DHA/CI) Environmental History.....3
WILD 2200 (BLS) Ecology of Our Changing World (F,Sp) (3 cr) **or**
NR 2220 General Ecology (F,Sp) (3 cr).....3
(Students can count *either* WILD 2200 *or* NR 2220 toward the emphasis area, but c*annot* count both.)
WILD 4600 Conservation Biology (Sp).....3

Cultural/Social Geography
ANTH 3160 (DSS) Anthropology of Religion (F).....3
ENVS 5550 Sustainable Development (Sp).....3
FREN 3550 (DHA) French Civilization (F) (3 cr) **or**
JAPN 3100 Readings in Contemporary Japanese Culture (F) (3 cr) **or**
Any other culture course offered as part of a foreign language program (3 cr).....3
GEOG 4200 (CI) Regional Geography (F,Sp,Su).....3
(Must be the *second* geographic area of study *beyond* the area chosen in the *Disciplinary Foundation Courses*.)
GEOG 5650 (DSS) Developing Societies (F).....3
SOC 4710 Asian Societies (Sp).....3

Planning and Analysis
ENVS 3000 Natural Resource Policy and Economics (F).....4
ENVS 5000 Collaborative Problem-Solving for Environment and Natural Resources (Sp).....3
ENVS 5300 Natural Resources Law and Policy (Sp).....2
GEOG 3610 Geography of Rural/Urban Planning (F).....3
LAEP 3700 City and Regional Planning (Sp).....3

Geographic Perspectives
In consultation with his or her advisor, a student may develop a customized emphasis that meets specific career goals not addressed in the other three emphases. Students pursuing this option must complete an emphasis form describing educational goals and specific courses to be taken. A University-approved minor may be used to meet this requirement, subject to approval by the student's advisor and department head.

Geography Major Recommended Four-Year Plan of Study

Students should meet regularly with their faculty advisor and carefully plan their academic program, keeping in mind that many upper-division courses have prerequisites and must be taken in sequence.

Students following the recommended schedule listed below should be able to complete degree requirements in four years (eight semesters). **Note:** Students in the Geography Teaching Major should contact their advisor for information about their recommended four-year plan of study.

Freshman Year (30 credits)

Fall Semester (14 credits)
ENVS 1990 Professional Orientation for Environment and Society.....2
ENGL 1010 (CL1) Introduction to Writing: Academic Prose.....3
GEOG 1300 (BSS) World Regional Geography.....3
USU 1300 (BAI) U.S. Institutions (3 cr) **or**
Other approved Breadth American Institutions (BAI) course (3 cr).....3
USU 1320 (BHU) Civilization: Humanities (3 cr) **or**
Oher approved Breadth Humanities (BHU) course (3 cr).....3

Spring Semester (16 credits)
GEOG 1000 (BPS) Physical Geography.....3
GEOG 1005 Physical Geography Lab.....1
MATH 1050 (QL) College Algebra.....4
USU 1330 (BCA) Civilization: Creative Arts (3 cr) **or**
Other approved Breadth Creative Arts (BCA) course (3 cr).....3
USU 1350 (BLS) Integrated Life Science (3 cr) **or**
Other approved Breadth Life Sciences (BLS) course (3 cr).....3
Elective course(s).....2

Sophomore Year (31-33 credits)

Fall Semester (16 credits)
STAT 2000 (QI) Statistical Methods.....3
GEOG 3850 Map, Air Photo, and GIS Interpretation.....4
Elective courses.....9

Spring Semester (15-17 credits)
GEOG 1400 (BSS) Human Geography.....3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode.....3
Depth Humanities and Creative Arts (DHA) course.....2-3
Geography area of emphasis or elective courses.....7-8

Junior Year (28-30 credits)

Fall Semester (13-14 credits)
GEOG 4200 (CI) Regional Geography.....3
WATS 4930 Geographic Information Systems.....4
Geography area of emphasis or elective courses.....6-7

Spring Semester (15-16 credits)
GEOG 4850 Cartographic Design.....3
Depth Life and Physical Sciences (DSC) course.....3-4
Elective courses (including CI course).....9

Senior Year (28-30 credits)

Fall Semester (14-15 credits)
ENVS 4990 Environmental and Natural Resource Professionalism Seminar (highly recommended).....2
Geography area of emphasis or elective courses.....12-13

Spring Semester (14-15 credits)
ENVS 3330 Environment and Society.....3
Geography area of emphasis or elective courses.....11-12

Geography Minor (24 credits minimum)

All courses required for the Geography minor *must* be taken on an *A-B-C-D-F* basis. A grade of *C-* or better is required for all GEOG courses taken to meet requirements for the minor. **In order to graduate, students must maintain a 2.5 or higher grade point average in all courses taken from offerings within the College of Natural Resources.**

GEOG 1000 (BPS) Physical Geography (F,Sp,Su)....3
GEOG 1005 Physical Geography Lab (F,Sp)....1
GEOG 1300 (BSS) World Regional Geography (F)....3
GEOG 1400 (BSS) Human Geography (Sp)....3
GEOG 3850 Map, Air Photo, and GIS Interpretation (F)....4
GEOG 4200 (CI) Regional Geography (F,Sp,Su)....3
GEOG 4850 Cartographic Design (Sp)....3
WATS 4930 Geographic Information Systems (F)....4

Geography Teaching Major (90-106 credits)

The teaching major in Geography consists of the geography courses (38 credits minimum, shown in sections *A*, *B*, and *C* below), a teaching minor (17-33 credits), and the Secondary Teacher Education Program (STEP) (35 credits). **A 2.75 or higher overall cumulative GPA in 90 credits is required for admission to the STEP. The 2.75 minimum overall cumulative GPA must be maintained for graduation.**

A. Geography Teaching Major Foundation Courses (24-25 credits)

ENVS 1990 Professional Orientation for Environment and Society (F)....2
GEOG 1000 (BPS) Physical Geography (F,Sp,Su)....3
GEOG 1300 (BSS) World Regional Geography (F)....3
GEOG 1400 (BSS) Human Geography (Sp)....3
GEOG 3850 Map, Air Photo, and GIS Interpretation (F)....4
GEOG 4200 (CI) Regional Geography (Utah) (Sp)....3
GEOG 4200 (CI) Regional Geography (International Course) (F,Sp,Su)....3
GEOG 4850 Cartographic Design (Sp) (3 cr) **or**
WATS 4930 Geographic Information Systems (F) (4 cr)....3 or 4

B. Geography Education Pedagogical Methods Courses (4 credits)

GEOG 4300 Geography Education Classroom Practicum (taken with GEOG 4800) (F,Sp,Su)....1
GEOG 4800 Teaching Geography (F)....3

C. Geography Education Elective Courses (9-10 credits)

Students may select the remaining 9-10 credits in Geography from courses numbered 2000 and above. It is recommended that students take additional coursework in the following areas: regional, physical, and human geography; human-environment interaction techniques; technology in geography education; and classroom technology. All electives must be coordinated with a geography education advisor.

D. Teaching Minor (17-33 credits)

A teaching major in Geography also requires an approved teaching minor from another field of study acceptable to the Secondary Education Department.

E. Secondary Teacher Education Program (STEP) (35 credits)

Students must complete three levels in the STEP. All three levels of the STEP will be offered during fall and spring semesters, *not* during summers. Levels of the STEP are taken as a package, not piecemeal.

Each level must be satisfactorily completed before a student is advanced to the next level. All courses must be completed with a minimum grade of *C-*. **Prior to admission to the STEP, students in the Geography Teaching Major *must* complete MATH 1050, unless their Math ACT score is 25 or higher**.

Students should consult with advisors in major and minor departments for scheduling of special methods classes at Levels 1 and 2. Although certain combinations of majors and minors require three special methods classes, only *two* clinical experiences (total) should be scheduled at Levels 1 and 2. These in-school experiences are coordinated by methods instructors.

1. Level 1 (15-week courses) (11 credits minimum)
INST 3500 Technology Tools for Secondary Teachers (F,Sp,Su)....1
SCED 3100 Motivation and Classroom Management (F,Sp)....3
SCED 3210 (CI/DSS) Educational and Multicultural Foundations (F,Sp)....3
Clinical Experience I (30 hrs. minimum) (3300 in various departments)....1
One or more methods courses in major (3-6 credits in minor—Social Studies Education)....3

2. Level 2 (15-week courses) (12 credits minimum)
SPED 4000 Education of Exceptional Individuals (may be taken anytime) (F,Sp,Su)....2
SCED 4200 (CI) Reading, Writing, and Technology (F,Sp)....3
SCED 4210 Cognition and Evaluation of Student Learning (F,Sp)....3
Clinical Experience II (30 hrs. minimum) (4300 in various departments)....1
Special Methods II (major or minor) (taught in various departments)....3

3. Level 3 (includes 13 weeks of student teaching and 2 weeks of Student Teaching Seminar) (12 credits)
SCED 5500 Student Teaching Seminar (2 weeks) (F,Sp)....2
SCED 5630 Student Teaching in Secondary Schools (13 weeks, full-time) (F,Sp)....10

F. Electives

After meeting the University Studies, USU upper-division, and geography teaching major requirements, students may take the remainder of their 120 required credits in any discipline and from any department. ENVS 4990 (2 cr.) and ENVS 5000 (3 cr.) are recommended.

Teaching Minor in Geography (24 credits minimum)

Note: A teaching minor in Geography **requires** an approved teaching major in another subject. All courses required for the Geography Teaching minor *must* be taken on an *A-B-C-D-F* basis. A grade of *C-* or better is required for all GEOG courses taken to meet requirements for the minor. A minimum GPA of 2.5 is required for courses taken to complete the minor.

A. Geography Teaching Minor Foundation Courses (18-19 credits)

GEOG 1000 (BPS) Physical Geography (F,Sp,Su)....3
GEOG 1300 (BSS) World Regional Geography (F)....3
GEOG 1400 (BSS) Human Geography (Sp)....3
GEOG 4200 (CI) Regional Geography (Utah) (Sp)....3
GEOG 4200 (CI) Regional Geography (International Course) (F,Sp,Su)....3
GEOG 3850 Map, Air Photo, and GIS Interpretation (F) (4 cr) **or**
GEOG 4850 Cartographic Design (Sp) (3 cr) **or**
WATS 4930 Geographic Information Systems (F) (4 cr)....3 or 4

B. Geography Education Courses (4 credits)
GEOG 4300 Geography Education Classroom Practicum (taken with GEOG 4800) (F,Sp,Su) 1
GEOG 4800 Teaching Geography (F) 3

C. Geography Electives (1-2 credits)

Recreation Resource Management Major

The Recreation Resource Management major consists of 76-78 credits.

A. Disciplinary Foundation (15 credits)
BIOL 1010 (BLS) Biology and the Citizen (F,Sp,Su) 3
BIOL 1020 Biological Discovery: A Lab Course (F,Sp) 1
CHEM 1110 (BPS) General Chemistry I (F,Sp) 4
MATH 1050 (QL) College Algebra (F,Sp,Su) 4
STAT 2000 (QI) Statistical Methods (F,Sp) 3

B. Professional Coursework (52-53 credits)
ENVS 1990 Professional Orientation for Environment and Society (F) 2
ENVS 2340 (BSS) Natural Resources and Society (F,Sp) 3
ENVS 3000 Natural Resources Policy and Economics (F) 4
ENVS 3300 Fundamentals of Recreation Resources Management (F) 3
ENVS 3500 (QI) Quantitative Assessment of Environmental and Natural Resource Problems (F) 3
ENVS 4000 Human Dimensions of Natural Resource Management (F) 3
ENVS 4130 Recreation Policy and Planning (Sp) 3
ENVS 4400 Economic Applications in Natural Resource Management (Sp) 4
ENVS 4500 (CI) Wildland Recreation Behavior (F) 3
ENVS 4920 Special Projects in Recreation Management (F,Sp,Su) 3
ENVS 4990 Environmental and Natural Resource Professionalism Seminar (F) 2
ENVS 5000 Collaborative Problem-Solving for Environment and Natural Resources (Sp) 3
GEOG 1000 (BPS) Physical Geography (F,Sp,Su) (3 cr) **or**
GEO 1110 (BPS) The Dynamic Earth: Physical Geology (F,Sp) (4 cr) ..... 3 or 4
GEOG 3850 Map, Air Photo, and GIS Interpretation (F) 4
WATS 3700 (CI) Fundamentals of Watershed Science (Sp) 3
WILD 2200 (BLS) Ecology of Our Changing World (F,Sp) 3
WILD 3900 Managing Dynamic Ecological Systems (Sp) 3

C. Animal Course (select 3 credits)
ENVS 3600 (DSC) Living With Wildlife (Sp) 3
WATS 3100 (CI/DSC) Fish Diversity and Conservation (F) 3

D. Education/Interpretation Course (select 3 credits)
ENVS 4600 Natural Resource Interpretation (F) 3
ENVS 5110 Environmental Education (Sp) 3

E. Plant Course (select 3-4 credits)
BIOL 3040 (DSC) Plants and Civilization (F) 3
PLSC 3500 The Structure and Function of Economic Crop Plants (Sp) 3
WILD 3600 Wildland Plant Ecology and Identification (F) 4

F. Electives
Students may take the remainder of the 120 credits from any department. The guidelines described under "Breadth Requirements" (see pages 49-51) and "Depth Education Requirements" (see pages 53-58) should be consulted to ensure meeting University Studies Requirements.

Recreation Resource Management Major
Recommended Four-Year Plan of Study

Students should meet regularly with their faculty advisor and carefully plan their academic program, keeping in mind that many upper-division courses have prerequisites and must be taken in sequence.

Students following the recommended schedule listed below should be able to complete degree requirements in four years (eight semesters).

Freshman Year (28-29 credits)
Fall Semester (14-15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
ENVS 1990 Professional Orientation for Environment and Society 2
GEOG 1000 (BPS) Physical Geography (3 cr) **or**
GEO 1110 (BPS) The Dynamic Earth: Physical Geology (4 cr) ..... 3 or 4
USU 1300 (BAI) U.S. Institutions (3 cr) **or**
Other approved Breadth American Institutions (BAI) course (3 cr) 3
USU 1320 (BHU) Civilization: Humanities (3 cr) **or**
Other approved Breadth Humanities (BHU) course (3 cr) 3

Spring Semester (14 credits)
BIOL 1010 (BLS) Biology and the Citizen 3
BIOL 1020 Biological Discovery: A Lab Course 1
ENVS 2340 (BSS) Natural Resources and Society 3
MATH 1050 (QL) College Algebra 4
USU 1330 (BCA) Civilization: Creative Arts (3 cr) **or**
Other approved Breadth Creative Arts (BCA) course (3 cr) 3

Sophomore Year (30-33 credits)
Fall Semester (15-16 credits)
CHEM 1110 (BPS) General Chemistry I 4
ENVS 3300 Fundamentals of Recreation Resources Management 3
STAT 2000 (QI) Statistical Methods 3
WILD 2200 (BLS) Ecology of Our Changing World 3
Elective course(s) 2-3

Spring Semester (15-17 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
WATS 3700 (CI) Fundamentals of Watershed Science 3
Depth Humanities and Creative Arts (DHA) course 2-3
Plant or animal course 3-4
Elective course(s) 4

Junior Year (28-30 credits)
Fall Semester (14-15 credits)
ENVS 3000 Natural Resources Policy and Economics 4
ENVS 4500 (CI) Wildland Recreation Behavior 3
GEOG 3850 Map, Air Photo, and GIS Interpretation 4
Plant or animal course 3-4

Spring Semester (14-15 credits)
ENVS 4130 Recreation Policy and Planning 3
ENVS 4400 Economic Applications in Natural Resource Management 4
WILD 3900 Managing Dynamic Ecological Systems 3
Elective courses 4-5

Senior Year (29 credits)
Fall Semester (14 credits)
ENVS 3500 (QI) Quantitative Assessment of Environmental and Natural Resource Problems 3
ENVS 4000 Human Dimensions of Natural Resource Management 3
ENVS 4920 Special Projects in Recreation Management (3 cr) **or** Education/Interpretation course (3 cr) 3
ENVS 4990 Environmental and Natural Resource Professionalism Seminar 2
Elective course 3

Spring Semester (15 credits)
ENVS 5000 Collaborative Problem-Solving for Environment and Natural Resources 3
ENVS 4920 Special Projects in Recreation Management (3 cr) **or** Education/Interpretation course (3 cr) 3
Elective courses 9

Recreation Resources Minor (15 credits minimum)

Students wishing to minor in Recreation Resources should contact the Department of Environment and Society to meet with the department's designated minor advisor. All courses required for the minor must be taken on an *A-B-C-D-F* basis. A grade of *C-* or better is required for all ENVS courses taken to meet requirements for the minor. A minimum GPA of 2.5 is required for courses taken to complete the minor.

A. Required Courses (12 credits)
ENVS 3300 Fundamentals of Recreation Resources Management (F) 3
ENVS 4130 Recreation Policy and Planning (Sp) 3
ENVS 4500 (CI) Wildland Recreation Behavior (F) 3
ENVS 4600 Natural Resource Interpretation (F) 3

B. Elective Course (3-4 credits)
Select *one* of the following courses:
ENVS 3330 Environment and Society (Sp) 3
ENVS 4000 (DSS) Human Dimensions of Natural Resource Management (F) 3
ENVS 4400 Economic Applications in Natural Resource Management (Sp) 4
ENVS 5110 Environmental Education (Sp) 3

Financial Assistance

The main opportunities for undergraduates to find financial support through grants, work-study, and loans are listed on pages 23-28 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.

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. The minimum GPA requirement for admission into departmental honors in any department within the College of Natural Resources is 3.30. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level.

For information about the campus-wide Honors Program, see page 338.

Additional Information

For additional information about the Bachelor of Science requirements, course sequencing, and departmental emphasis areas 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/departments/envs**

Major requirement sheets, which outline career opportunities and required courses for departmental majors, can be obtained from the department, or online at: **http://www.usu.edu/majorsheets/**

Graduate Programs

Admission Requirements

See general admission requirements on pages 101-102. 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.

Department of Environment and Society

Degree Programs

The department offers opportunities for graduate study through the MS, MA, PhD, and graduate certificate programs listed below.

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

Bioregional Planning is aimed at students focused on how the biophysical attributes of a region influence the human dimensions of culture and settlement and the reciprocal of this. Offered jointly with the Department of Landscape Architecture and Environmental Planning, the program has an interdisciplinary core of courses that provides the background for addressing complex issues in the areas of environmental analysis, planning, and policy. Employment is available in both the private and public sectors, wherever there is emphasis on large-scale planning and management.

Geography

Geography is geared for students interested in exploring the availability and location of the earth's natural resources, the physical and cultural processes that occur at the earth's surface, and the spatial interactions among components of human society and the biophysical environment. Career opportunities are available in both the private and public sectors in such areas as business, planning, resource and economic development, environmental assessment, and education.

Recreation Resource Management

Recreation Resource Management is for graduate students interested in planning and management of visitor use in wildland recreation settings, such as state and national parks, forests, monuments, and wilderness areas, requiring an understanding of the landscape, its natural resources, and the people who visit. Degree programs offer courses in both the bio-physical and social sciences, along with an emphasis on communication and collaboration skills. Upon completion of a degree program, opportunities are available to work as recreation planners and managers; park, forest, monument, or wilderness rangers; environmental interpreters; visitor center directors; and other similar occupations. Graduate study provides additional opportunities for research and teaching in higher education, as well as work in the government, nongovernment, and private sectors.

Human Dimensions of Ecosystem Science and Management

These degrees are the first of their kind in the country. They are aimed at students who desire to be problem-solvers with an ability to integrate the human and biophysical aspects of ecosystems, and to analyze policies and decisions that encourage sustainability of human communities and ecosystems. The MS degree prepares students for professional practice in natural resources and environmental planning and management, policy and program analysis, public affairs, environmental education, community assessment and collaboration, conflict management, and extension/outreach. The PhD program places a greater emphasis on basic theory and research methods in one or more social science disciplines, and thus prepares students for university teaching, research, and extension; for conducting agency and private organizational research; and for positions in formal policy and program evaluation.

Natural Resources (MNR)

The MNR is a nonthesis master's degree program designed for students and practicing professionals seeking advanced training in natural resource management, with an emphasis on collaboration and interdisciplinary teamwork. Employment is available in both the private and public sectors, in positions where management skills are of paramount importance.

Graduate Certificates

The **National Environmental Policy Act (NEPA)** program offers training at the graduate level related to the National Environmental Policy Act, including how to manage the NEPA process and write effective NEPA documents, reviewing NEPA documents, environmental risk communication, environmental compliance, interdisciplinary team-building, environmental contracting, cumulative impact analysis and documentation, conflict management, and socio-economic impact analysis. The certificate leads to careers in federal natural resource agencies, typically as a member of planning teams, where NEPA expertise is critical to decision-making regarding alternative uses of the land.

The **Natural Resource and Environmental Education (NREE)** program provides graduate students with a comprehensive education 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. Careers are available with land management agencies; in the education sector—both formal (K-12 school-based) and nonformal (youth, community, and outdoor); in nonprofit organizations; and in the for-profit commercial sector.

Internships

Students are encouraged to undertake one or more internships with various agencies and organizations, as a means of exploring various career possibilities.

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.

Department of Environment and Society

Financial Assistance

General aspects of financial support for graduate students at Utah State University are listed on pages 100-101 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/departments/envs**

Environment and Society Faculty

Professors
Mark W. Brunson, environmental knowledge, attitudes and behavior, outdoor recreation
Steven E. Daniels, natural resource policy and sociology
James J. Kennedy, organizational behavior, forest economics
Richard S. Krannich, natural resource sociology and policy
H. Charles Romesburg, environmental decision making, natural resource research methods and survey sampling, bioethics
Terry L. Sharik, academic administration and leadership, teaching and learning pedagogy, forest ecology
Richard E. Toth, bioregional planning and water resources management

Adjunct Professor
Thomas C. Edwards, Jr., Utah Cooperative Fish and Wildlife Research Unit, spatial

Professors Emeritus
Clifford B. Craig, human geography, geographic education, rural/urban planning and development, geography of Utah, GIS education
Leona K. Hawks, green consumerism, resource conservation and efficiency, human impacts on the environment
Derrick J. Thom, cultural geography, international rural development, land use planning, Africa

Research Professor Emeritus
Leila McReynolds Shultz, plant taxonomy and geography

Associate Professors
Ted J. Alsop, physical geography, university pedagogy, photogrammetry
Steven W. Burr, outdoor recreation, nature-based tourism
Christopher A. Conte, African, environmental history
D. Layne Coppock, range ecology and management, international development, systems analysis
Joanna L. Endter-Wada, natural resource and environmental policy, interdisciplinary social sciences, water management and planning
Robert H. Schmidt, wildlife policy and human dimensions, wildlife damage management

Adjunct Associate Professors
Christopher Call, vegetation manipulation/management
Arthur J. Caplan, environmental economics, public policy, quantitative analysis
Nancy O. Mesner, water quality extension specialist, water policy and modeling
R. Douglas Ramsey, remote sensing, geographic information systems, landscapes

Assistant Professors
Nicole L. McCoy, natural resource economics and policy
Claudia A. Radel, human-environment geography, cultural/political ecology, feminist geography

Adjunct Assistant Professors
David T. Anderson, Project Director Utah Botanical Center
Benny Bobowski, wildlife biology, rangeland ecology, ecosystem management
Paul W. Box, geographic information systems, spatial analysis and modeling
Christopher Cokinos, literary nature and science writing
Michael F. Harper, Latin America, educational technology, geography education
John Haskin, novice teacher development and qualitative research methodologies
Tamsin C. McCormick, physical geology, land management, environmental education, habitat restoration
Douglas G. Wachob, development efffects on wildlife, environmental education

Senior Lecturer
Michael F. Butkus, recreation resources management and planning, interpretive planning

Lecturers
Benjamin D. Baldwin, Tehabi Project Leader, internship development, leadership and teamwork
Judith A. Kurtzman, natural resource policy
Barbara Middleton, environmental education

Adjunct Lecturer
Catherine A. "Kate" Stephens, Program Coordinator of Utah Conservation Corps, environmental education

Course Descriptions

Environment and Society (ENVS), pages 621-624
Geography (GEOG), pages 637-638
National Environmental Policy Act (NEPA), page 677

Department of Family, Consumer, and Human Development

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Associate Department Head and Adele and Dale Young 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:
Scot M. Allgood, Family Life Center 207, (435) 797-7433, allgood@cc.usu.edu
Undergraduate Academic Advisor:
Marilyn B. Kruse, Family Life 205A, (435) 797-1530, marilynk@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. A minimum GPA of 3.0 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 serving individuals and families across the life span. Through coursework and applied experiences, majors study how 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. Students are then qualified to work 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 and in Family and Consumer Sciences are required to complete a practicum experience, which is arranged with the department practicum coordinator. Types of practicum sites include state agencies, hospitals, preschools 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 Laboratory setting. Students majoring in Early Childhood Education complete a formal internship in the Adele and Dale Young Child Development Laboratory and in primary school grades.

Majors in Family, Consumer, and Human Development (FCHD), Family and Consumer Sciences (FCS), and Early Childhood Education (ECE), 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 teach in grades K-3 in the Utah 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 to receive the certificate. A complete list of requirements may be obtained in Family Life 214 or by calling (435) 797-7140.

Departmental Requirements for Family, Consumer, and Human Development Major

Admission Requirements

Students with less than 24 semester credits can declare a premajor in FCHD (PFHD). Completion of at least 24 semester credits (including FCHD 1100, 1500, and 2400) with a cumulative GPA of 3.0 is required for admission into the Family and Community Services, Human Development, and Deaf Education emphases. Family Finance premajor courses include FCHD 1100, 1500, 2400, and 2450. A cumulative GPA of 3.0 is required.

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 3.0 is required to enter the major, and a cumulative 3.0 GPA is required for graduation. A GPA of 3.0 in FCHD major courses is also required for graduation.

3. **Ten-year Policy.** Courses which are required for the major will be accepted if they have been completed within the last 10 years.

Department of Family, Consumer, and Human Development

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)

FCHD 1100 Critical Issues in Family, Consumer, and Human Development (F,Sp,Su) 1
FCHD 1500 (BSS) Human Development Across the Lifespan (F,Sp) ... 3
FCHD 2400 (BSS) Marriage and Family Relationships (F,Sp) 3
FCHD 2610 Child Guidance (F,Sp) 3
FCHD 3100 Abuse and Neglect in Family Context (Prereq: Sophomore standing, FCHD 1500, 2400) (F,Sp) 3
FCHD 3110 Human Sexuality (Prereq: FCHD 1500, 2400) (F,Su) 3
FCHD 3130 (QI) Research Methods (Prereq: STAT 1040) (majors only) (F,Sp) 3
FCHD 3210 (CI) Families and Cultural Diversity (Prereq: FCHD 1500, 2400, CL2 fulfillment) (F,Sp) (majors only) 3
FCHD 3510* Infancy and Early Childhood (Prereq: Junior standing, FCHD 1500, 2610) (F,Sp) 3
FCHD 3520* Children in the Middle Years (Prereq: Junior standing, FCHD 1500, 2610) (F,Sp) 3
FCHD 3530 Adolescence (Prereq: Junior standing, FCHD 1500) (F,Sp) 3
FCHD 3540 Adult Development and Aging (Prereq: Junior standing and FCHD 1500) (F,Sp) 3
FCHD 4220 Family Crises and Interventions (Prereq: Junior standing, FCHD 2400) (F,Su) 3
FCHD 4230 Families and Social Policy (Prereq: Junior standing, FCHD 2400) (F,Sp) 3
FCHD 4240 Social and Family Gerontology (Prereq: Junior standing, FCHD 2400, 3540) (F,Sp) 3
FCHD 4900 (CI) Pre-Practicum Skills (Prereq: Junior standing, FCHD 2610, 3100, ENGL 2010) (F,Sp) 3
FCHD 4980[1] Practicum (F,Sp,Su) 6
PSY 2800 (QI) Psychological Statistics (Prereq: STAT 1040) (3 cr) **or**
SOC 3120 (QI) Social Statistics I (Prereq: Completion of 6 credits in Sociology, Social Work and Anthropology departmental courses and STAT 1040 or equivalent) (3 cr) 3

*FCHD majors with a Family and Community Services emphasis must take *one lab* concurrently with *either* FCHD 3510 *or* 3520. FCHD majors with a Human Development emphasis must take *one lab* concurrently with *both* FCHD 3510 and 3520. The online sections of FCHD 3510 and 3520 *do not offer a lab experience*. Therefore, students must take these courses through campus-based sections. For students attending classes at the Uintah Basin Regional Campus, the FCHD 3550 and 3560 labs should be taken concurrently with FCHD 3510 and 3520, *regardless of emphasis*.

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 3550 Infant Lab (take concurrently with FCHD 3510) (F,Sp) (1 cr) **or**
FCHD 3560 Middle Childhood Lab (take concurrently with FCHD 3520) (F,Sp) (1 cr) 1
FCHD 3350 Family Finance (F,Sp,Su) 3
FCHD 5540 Family Life Education Methods (Prereq: Junior Standing, FCHD 1500, 2400) (F,Sp) (majors only) 3

Human Development Emphasis (8 credits)

FCHD 3550 Infant Lab (take concurrently with FCHD 3510) (F,Sp) 1
FCHD 3560 Middle Childhood Lab (take concurrently with FCHD 3520) (F,Sp) 1
FCHD 4550 Preschool Methods and Curriculum (Prereq: Junior standing, FCHD 1500) (F,Sp) 3
FCHD 4960[2] Practice Teaching in Child Development Laboratories (Prereq: Junior standing, FCHD 4550) (F,Sp,Su). 3

Suggested Electives

FCHD 5550 Workshop: Casework Training I (F) 3
FCHD 5550 Workshop: Casework Training II (Sp) 3

Suggested Four-year Course of Study for Family, Consumer, and Human Development Major, Family and Community Services Emphasis

The suggested course of study shown below is intended to guide students in the selection of their courses. However, students should meet with their advisor each semester to plan an individualized schedule tailored to their specific interests and needs.

Freshman Year (30-33 credits)

Fall Semester (15-18 credits)

FCHD 1100 Critical Issues in Family, Consumer, and Human Development 1
FCHD 1500 (BSS)[4] Human Development Across the Lifespan 3
MATH 1010 Intermediate Algebra 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
USU 1000 Introduction to Computers and Information Literacy (1 cr) **or**
OSS 1400 Microcomputer Applications (3 cr) **or**
Passing scores on Computer and Information Literacy (CIL) exams (0 cr) 0-3
(**Note:** Although USU 1000 and OSS 1400 include the CIL exams, the CIL requirement is met *only* by passing all six exams, *not* by simply passing USU 1000 or OSS 1400.)
University Studies Breadth course[5] 3
Elective course(s) 2

Spring Semester (15 credits)

FCHD 2400 (BSS)[4] Marriage and Family Relationships 3
FCHD 2610 Child Guidance 3
STAT 1040 (QL) Introduction to Statistics 3
University Studies Breadth course[5] 3
Elective course(s) 3

Sophomore Year (30 credits)

Fall Semester (15 credits)

FCHD 3100 Abuse and Neglect in Family Context 3
FCHD 3110 Human Sexuality 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
PSY 2800 (QI) Psychological Statistics 3
University Studies Breadth course[5] 3

Spring Semester (15 credits)
FCHD 3210 (CI) Families and Cultural Diversity 3
FCHD 3350 Family Finance 3
University Studies Breadth courses[5] 6
Elective course(s) 3

Junior Year (30 credits)
Fall Semester (14-15 credits)
FCHD 3510[6] Infancy and Early Childhood 3
FCHD 3550[6] Infant Lab ..... (1)
FCHD 3540 Adult Development and Aging 3
FCHD 4220 Family Crises and Interventions 3
Depth Humanities and Creative Arts (DHA) course 3
Elective course(s) 2

Spring Semester (15-16 credits)
FCHD 3130 (QI) Research Methods 3
FCHD 3520[6] Children in the Middle Years 3
FCHD 3560[6] Middle Childhood Lab ..... (1)
FCHD 3530 Adolescence 3
FCHD 4230 Families and Social Policy 3
Elective course(s) 3

Senior Year (30 credits)
Fall Semester (15 credits)
FCHD 4240 Social and Family Gerontology 3
FCHD 4900 (CI) Pre-Practicum Skills 3
FCHD 5540 Family Life Education Methods 3
Depth Life and Physical Sciences (DSC) course 3
Elective course(s) 3

Spring Semester (15 credits)
FCHD 4980 Practicum 6
Elective course(s) 9

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). 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[3]
FCHD 1100 Critical Issues in Family, Consumer, and Human Development (F,Sp,Su) 1
FCHD 1500 (BSS) Human Development Across the Lifespan (F,Sp) 3
FCHD 2400 (BSS) Marriage and Family Relationships (F,Sp) 3
FCHD 2610 Child Guidance (F,Sp) 3
FCHD 3100 Abuse and Neglect in Family Context (Prereq: Sophomore standing, FCHD 1500, 2400) (F,Sp) 3
FCHD 3110 Human Sexuality (Prereq: FCHD 1500, 2400) (F,Su) 3
FCHD 3130 (QI) Research Methods (Prereq: STAT 1040) (majors only) (F,Sp) 3
FCHD 3210 (CI) Families and Cultural Diversity (Prereq: FCHD 1500, 2400, CL2 fulfillment) (F,Sp) (majors only) 3
FCHD 3510[6] Infancy and Early Childhood (Prereq: Junior standing, FCHD 1500, 2610) (F,Sp) 3
FCHD 3550 Infant Lab (F,Sp) 1
FCHD 3520 Children in the Middle Years (Prereq: Junior standing, FCHD 1500, 2610) (F,Sp) 3
FCHD 4220 Family Crises and Interventions (Prereq: Junior standing, FCHD 2400) (F,Su) 3
FCHD 4550 Preschool Methods and Curriculum (Prereq: Junior standing, FCHD 1500) (F,Sp) 3
FCHD 4900 (CI) Pre-Practicum Skills (Prereq: Junior standing, FCHD 2610, 3100, ENGL 2010) (F,Sp) 3
FCHD 4960[2] Practice Teaching in Child Development Laboratories (Prereq: Junior standing, FCHD 4550) (F,Sp,Su) 3
FCHD 4980[1] Practicum (with ages 0-3) (F,Sp,Su) 3
COMD 2500 Language, Speech, and Hearing Development (F,Sp) 3
COMD 2910 (CI) Sign Language I (F,Sp,Su) 4
PSY 2800 (QI) Psychological Statistics (Prereq: STAT 1040) (3 cr) **or**
SOC 3120 (QI) Social Statistics I (Prereq: Completion of 6 credits in Sociology, Social Work and Anthropology departmental courses and STAT 1040 or equivalent) (3 cr) 3
SPED 4000 Education of Exceptional Individuals (F,Sp,Su) 2

In addition to these courses, students must complete the following courses during their senior year:
COMD 3910 Sign Language II (F,Sp,Su) 4
COMD 4770 Audiology and Teachers of Children who are Deaf and Hard of Hearing (F) 3
COMD 5610 Introduction to Education of the Deaf and Hard of Hearing (F) 3
SPED 5060 Consulting with Parents and Teachers (Sp) 3
SPED 5710 Young Children with Disabilities: Characteristics and Services (Sp) 3

Students in this emphasis must meet with their advisor each semester.

[1]Prerequisite: Junior standing, FCHD 4900, a total of at least 30 FCHD credits, and prior application approval by the Practicum Coordinator. Practicum application deadlines are February 15 for fall, June 15 for spring, and October 15 for summer.
[2]Students must sign up three full semesters in advance in Family Life 205.
[3]For COMD and SPED course offerings, contact the Department of Communicative Disorders and Deaf Education and the Department of Special Education and Rehabilitation.
[4]FCHD 1500 or 2400 meets the Breadth Social Sciences (BSS) requirement.
[5]At least *two* of the *six* required breadth courses *must* have a USU prefix.
[6]Students must complete *one* laboratory experience: *either* FCHD 3550 (taken concurrently with FCHD 3510) ***or*** FCHD 3560 (taken concurrently with FCHD 3520).

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. The Family Life Center is a U.S. Department of Housing and Urban Development (HUD) approved housing and financial counseling agency that provides counseling and education to the community. Employment opportunities include 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, Housing and Urban Development, 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, and financial planner.

Major Courses (56 credits)

FCHD 1100 Critical Issues in Family, Consumer, and Human Development (F,Sp,Su) 1
FCHD 1500 (BSS) Human Development Across the Lifespan (F,Sp) ... 3
FCHD 2400 (BSS) Marriage and Family Relationships (F,Sp) 3
FCHD 2450 (BSS) The Consumer and the Market (F,Sp) 3
FCHD 3130 (QI) Research Methods (Prereq: STAT 1040) (majors only) (F,Sp) 3
FCHD 3210 (CI) Families and Cultural Diversity (Prereq: FCHD 1500, 2400, CL2 fulfillment) (F,Sp) (majors only) 3
FCHD 3280 Economic Issues for Individuals and Families (Sp) 3
FCHD 3310 Consumer Policy (Sp) 3
FCHD 3340 Housing: Societal and Environmental Issues (F) 3
FCHD 3350 Family Finance (F,Sp,Su) 3
FCHD 3450 Consumer Credit Problems (Prereq: FCHD 3350) (F) 3
FCHD 4220 Family Crises and Interventions (Prereq: Junior standing, FCHD 2400) (F,Su) 3
FCHD 4230 Families and Social Policy (Prereq: Junior standing, FCHD 2400) (F,Sp) 3
FCHD 4330 Family Finance Career Seminar (Prereq: FCHD 3350) (F) 1
FCHD 4350 Advanced Family Finance (Prereq: FCHD 3350) (Sp) 3
FCHD 4460 Financial Counseling (Prereq: FCHD 3350, 3450) (majors only) (Sp) 3
FCHD 4950 Practicum: Consumer Science (majors only) (F,Sp,Su) 6
FCHD 5340 Housing Finance and Regulations (Prereq: FCHD 3340, 3350) (majors only) (Sp) 3
FCHD 5950 Financial Counseling Practicum (Prereq: FCHD 4220, 4460, 5340) (majors only) (F,Sp,Su) 3

Required General Education Courses

ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp) 3
STAT 1040 (QL) Introduction to Statistics (Prereq: MATH 1010) (F,Sp,Su) 3
SPCH 1020 (CI) Public Speaking (F,Sp) 3

Suggested Support Courses

BA 3460 Fundamentals of Personal Investing 3
ECON 2010 (BSS) Introduction to Microeconomics (F,Sp) 3
FCHD 3540 Adult Development and Aging (Prereq: Junior Standing, FCHD 1500) (F,Sp) 3
FCHD 4240 Social and Family Gerontology (Prereq: Junior standing, FCHD 2400, 3540) (F,Sp) 3
OSS 2450 Spreadsheets and Databases (F,Sp,Su) 3
PFP 5060 Personal Financial Planning and Advising (F) 3
PFP 5070 Retirement Planning (Sp) 3
PFP 5080 Estate Planning (Sp) 3

Prerequisites for FCHD 4950 and 5950 Family Finance Practica

FCHD 4950 and 5950 may be taken *only* by FCHD majors who have completed the application process. Prior to enrolling in FCHD 4950 or 5950, students must have completed a minimum of 70 semester credits. The following courses are also prerequisites for FCHD 4950 and 5950:

FCHD 1100 Critical Issues in Family, Consumer, and Human Development (F,Sp,Su) 1
FCHD 1500 (BSS) Human Development Across the Lifespan (F,Sp) ... 3
FCHD 2400 (BSS) Marriage and Family Relationships (F,Sp) 3
FCHD 2450 (BSS) The Consumer and the Market (F,Sp) 3
FCHD 3340 Housing: Societal and Environmental Issues (F) 3
FCHD 3350 Family Finance (F,Sp,Su) 3
FCHD 3450 Consumer Credit Problems (Prereq: FCHD 3350) (F) 3
SPCH 1020 (CI) Public Speaking (F,Sp) 3

Additional Prerequisites for FCHD 5950, Financial Counseling Practicum

FCHD 4220 Family Crises and Interventions (Prereq: Junior standing, FCHD 2400) (F,Su) 3
FCHD 4460 Financial Counseling (Prereq: FCHD 3350, 3450) (majors only) (Sp) 3
FCHD 5340 Housing Finance and Regulations (Prereq: FCHD 3340, 3350) (majors only) (Sp) 3

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 3.0 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)

FCHD 1500 (BSS) Human Development Across the Lifespan (F,Sp) ... 3
FCHD 2400 (BSS) Marriage and Family Relationships (F,Sp) 3

Elective Courses (9 credits)

Students must complete *three* of the following courses:

FCHD 2610 Child Guidance (F,Sp) 3
FCHD 3100[7] Abuse and Neglect in Family Context (F,Sp) 3
FCHD 3110[8] Human Sexuality (F,Su) 3
FCHD 3510[9] Infancy and Early Childhood (F,Sp) 3
FCHD 3520[9] Children in the Middle Years (F,Sp) 3
FCHD 3530[10] Adolescence (F,Sp) 3
FCHD 3540[10] Adult Development and Aging (F,Sp) 3
FCHD 4220[11] Family Crises and Interventions (F,Su) 3
FCHD 4230[11] Families and Social Policy (F,Sp) 3
FCHD 4240[12] Social and Family Gerontology (F,Sp) 3

Students should be aware that the following courses *cannot* be used to fulfill requirements for the FHD minor: FCHD 2500, 2600, 2630, 3130, 3210, 4550, 4800, 4940, 5550; practica (FCHD 4900, 4950, 4960, 4970, 4980); and Readings and Conference (FCHD 4990).

[7]Prerequisites: Sophomore standing, FCHD 1500, 2400.
[8]Prerequisites: FCHD 1500, 2400.
[9]Prerequisites: Junior standing, FCHD 1500, 2610.
[10]Prerequisites: Junior standing, FCHD 1500.
[11]Prerequisites: Junior standing, FCHD 2400.
[12]Prerequisites: Junior standing, FCHD 2400, 3540.

Family Finance Minor (3.0 GPA required)

Required Courses (6 credits)

FCHD 2450 (BSS) The Consumer and the Market (F,Sp) 3
FCHD 3350 Family Finance (F,Sp,Su) 3

Elective Courses (9 credits)

Students must complete *at least 9 credits* in courses selected from the following. Courses counted toward the minor may *not* be taken *pass/fail*.

FCHD 3280 Economic Issues for Individuals and Families (Sp) 3
FCHD 3310 Consumer Policy (Sp) 3
FCHD 3340 Housing: Societal and Environmental Issues (F) 3
FCHD 3450 Consumer Credit Problems (Prereq: FCHD 3350) (F) 3
FCHD 4350 Advanced Family Finance (Prereq: FCHD 3350) (Sp) 3

Department of Family, Consumer, and Human Development

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.

University Studies Requirements

Early Childhood Education Majors are required to take certain classes to fulfill the University Studies requirements. The following sections list the specific courses to choose from:

Quantitative Literacy (QL) (3 credits)
(A grade lower than a *C*- will not be accepted in this course.)
STAT 1040 (QL) Introduction to Statistics (F,Sp,Su) 3
(MATH 1050 or Math ACT score of 25 or higher is required to apply to the Teacher Education Program.)

Breadth Requirements (21 credits)
Choose *one* course from the following to meet BAI requirement:
ECON 1500, HIST 1700, POLS 1100, USU 1300 3

Choose *one* course from the following to meet BCA requirement:
MUSC 1010, USU 1330, ID 1750 3

Choose *one* course from the following to meet BHU requirement:
ANTH 2210, HIST 1110, HIST 1510, PHIL 1000, PHIL 1120, PHIL 1200, PHIL 2400, USU 1320 3

Choose *one* course from the following to meet BSS requirement:
ANTH 1010, ANTH 2010, ASTE 2900, ENVS 2340, GEOG 1300, GEOG 1400, JCOM 1500, NR 1010, POLS 2200, SOC 1010, USU 1340 3

Choose *one* course from the following to meet BLS requirement:
AWER 1200, BIOL 1010, FRWS 2200, NFS 1020, PLSC 2100, USU 1350 3

Complete PHYS 1200 and choose *one* course from the following to meet BPS requirement:
BMET 2000, GEOG 1000, GEO 1010, GEO 1110, CHEM 1010, PHYS 1040, SOIL 2000, USU 1360 6

Depth Education Requirements
Communications Intensive (CI) (2 courses)
ELED 3000 (CI) Foundation Studies and Practicum in Teaching and Classroom Management Level II 6
ELED 4030 (CI) Teaching Language Arts and Practicum Level III 3
(ELED 3000 and 4030 are included in major requirements.)

Quantitative Intensive (QI) (1 course)
(A grade lower than a *C*- will not be accepted in this course.)
MATH 2020 (QI) Introduction to Logic and Geometry (F,Sp,Su) 3
(Prereq: MATH 1050 or Math ACT score of 25 or higher; also required to apply to the Teacher Education Program)

Depth Course Requirements (2 courses)
Choose two approved University Studies depth courses designated DSC, DHA, or DSS (outside of area of emphasis).

Early Childhood Education Major (80 credits) (minimum 2.75 GPA)

Offered in Conjunction with Elementary Education Department.
Note: Grades lower than a *C* will not be accepted in the major.

Admission criteria for the **Teacher Education Program** include: completion of 30 credits with a cumulative GPA of 2.75, successful performance on the ACT exam, successfully passing the Teacher Education Writing Exam, a speech and hearing test, and high potential as a teacher as judged by performance in a small-group interview. Admission is limited to ensure a quality program and by the availability of space.

Students majoring in Early Childhood Education must complete all of the following courses as indicated.

FCHD Required Course (1 credit)

FCHD 1100 Critical Issues in Family, Consumer, and Human Development (F,Sp,Su) 1

Level I (6 credits)[13]

ELED 1010 Orientation to Elementary Education 3
FCHD 1500 (BSS) Human Development Across the Lifespan 3

Level II (14 credits)[14]

Students must be officially admitted to the Teacher Education Program prior to Level II.
ELED 3000 (CI) Foundation Studies and Practicum in Teaching and Classroom Management Level II 4
ELED 3005 Beginning Classroom Management 1
FCHD 2600 Seminar in Early Childhood Education (F,Sp) 2
FCHD 2630 Practicum in Early Childhood Education (F,Sp) 2
PSY 3660 Educational Psychology for Teachers 2
(Level II courses must be taken concurrently.)
ELED 3100[14] Teaching Reading I 3
(ELED 3100 may be taken during transition semester, if desired.)

Transition (11 credits)

SPED 4000[14] Education of Exceptional Individuals 2
INST 4010[14] Principles and Practices of Technology for Elementary Teachers 3
FCHD 4550[15,16] Preschool Methods and Curriculum 3
ELED 4480[15] Early Childhood Education Kindergarten through Grade 3 3

Level III (16 credits; must follow Level II)

ELED 4000 Teaching Science and Practicum Level III 3
ELED 4005 Intermediate Classroom Management 1
ELED 4030 (CI) Teaching Language Arts and Practicum Level III 3
ELED 4040 (CI) Teaching Reading II and Practicum Level III 3
ELED 4050 Teaching Social Studies and Practicum Level III 3
ELED 4060 Teaching Mathematics and Practicum Level III 3
(Level III courses must be taken concurrently.)

Level IV (21 credits)

ELED 5050 Student Teaching—Kindergarten 6
ELED 5100 Student Teaching—Primary Grades (1-3) 6
ELED 5250 Student Teaching—Seminar 3
FCHD 4960[16,17] Practice Teaching in Child Development Laboratories 6
(Level IV courses must be taken during two semesters.)

Emphasis (12 credits)

Descriptions of available emphasis areas are shown below.

Electives (if needed to complete 120 credits)
Choose Breadth Electives from the following courses:
ART 3700 Elementary Art Methods....3
THEA 4030 (DHA) Storytelling....3
THEA 4330 Drama and Theatre for Youth: Grades K-6....3
THEA 5360 Drama in the Secondary Education Classroom: Grades 7-12....3
HEP 3500 Elementary School Health Education....2
PEP 3050 Physical Education in the Elementary School....3
PEP 3650 Movement Exploration for Elementary Teachers....2
ETE 3070 K-8 Engineering and Technology Education....3
ENVS 5110 Environmental Education....3
ELED 4410 Gifted Education in the Regular Classroom....3
ELED 4420 Multiple Talent Approach to Thinking....2
FCHD 2610 Child Guidance....3
ENGL 3530[18] Children's Literature....3
MUSC 3260 Elementary School Music....2

[13]These courses are prerequisites to Level II.
[14]SPED 4000, ELED 3100, or INST 4010 may be taken concurrently with Level II courses, allowing students to earn 14-15 credits during their Level II semester. See the *Schedule of Classes* for information about when these courses will be taught.
[15]ELED 4480 and FCHD 4550 must be taken *after* completion of Level II.
[16]FCHD 4550 is a prerequisite for FCHD 4960.
[17]Students must apply for FCHD 4960 three to four semesters in advance of taking the class. Apply in Family Life Building, room 205.
[18]ENGL 3530 is highly recommended.

Early Childhood Areas of Emphasis
Students majoring in Early Childhood Education are required to complete 12 credits in an area of emphasis. The area of emphasis must be chosen from the following fields: Language Arts, Social Studies, Mathematics/General Science, General Science, Fine Arts, Art, Music, Physical Education, Health/Wellness/ Nutrition, Foreign Language, School Library Media, or English as a Second Language. **Students must choose two upper-division courses numbered 3000 or above.**

Requirements for the areas of emphasis are listed below and on the following pages. Grades lower than *C*- will not be accepted in the areas of emphasis.

Language Arts Emphasis (12 credits)
Select two courses from each group. Remaining courses (if any) may be selected from any of the courses listed.
Listening and Speaking
SPCH 1020 (CI) Public Speaking....3
SPCH 2110 (CI) Interpersonal Communication....3
SPCH 3330 (DSS) Intercultural Communication....3
THEA 1030 (BHU) Exploring Performance Through Aesthetic Texts....3
THEA 4030 (DHA) Storytelling....3
THEA 4330 Drama and Theatre for Youth: Grades K-6....3
THEA 5360 Drama in the Secondary Education Classroom: Grades 7-12....3

Reading and Writing
ENGL 1120 Elements of Grammar....3
ENGL 2200 (BHU) Understanding Literature....3
ENGL 2210 (BHU) Introduction to Folklore....3
ENGL 2720 Survey of American Folklore....3
ENGL 3030 (DHA) Perspectives in Literature....3
ENGL 3040 (DHA) Perspectives in Writing and Rhetoric....3
ENGL 3420 Fiction Writing....3
ENGL 3530 Children's Literature....3
ENGL 3700 (CI) Regional Folklore....3

Electives
ENGL 2140 British Literary History: Anglo-Saxon to 18th Century....3
ENGL 2600 Literary Analysis....3
ENGL 3050 (DHA) Masterpieces of World Literature....3
ENGL 3070 (DHA) Perspectives in Folklore....3
ENGL 3430 Poetry Writing....3
ENGL 3510 Young Adult Literature....3
ENGL 3520 Multicultural American Literature....3
ENGL 4300 Shakespeare....3
COMD 2500 Language, Speech, and Hearing Development....3

Social Studies Emphasis (12 credits)
The purpose of this area is to offer students the opportunity to broaden their understanding of social studies. Students should select courses from at least three areas to constitute the 12 credits required.

Anthropology
ANTH 1010 (BSS) Cultural Anthropology....3
ANTH 2010 (BSS) Peoples of the Contemporary World....3
ANTH 2030 (CI/BSS) World Archaeology....3
ANTH 3130 (CI) Peoples of Latin America....3
ANTH 3160 (DSS) Anthropology of Religion....3
ANTH 3200 (CI/DSS) Perspectives on Race....3
ANTH 4110 (DSS) Southwest Indian Cultures, Past and Present....3

Economics
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles....3
ECON 2010 (BSS) Introduction to Microeconomics....3

Political Science
POLS 1100 (BAI) United States Government and Politics....3
POLS 2100 Introduction to International Politics....3
POLS 2200 (BSS) Comparative Politics....3
POLS 3120 (DSS) Law and Politics....3
POLS 3140 (DSS) The Presidency....3
POLS 3190 (DSS) Gender, Power, and Politics....3
POLS 3310 (DSS) American Political Thought....3

Sociology
SOC 1010 (BSS) Introductory Sociology....3
SOC 1020 Social Problems....3
SOC 3010 Race, Class, and Gender....3
SOC 3110 (CI) Methods of Social Research....3
SOC 3120 (QI) Social Statistics I....3
SOC 3200 (DSS) Population and Society....3
SOC 3410 Juvenile Delinquency....3
SOC 3500 Social Psychology....3
SOC 3610 (DSS) Rural Sociology....3
SOC 3750 Sociology of Aging....3
SOC 4010 Contemporary Sociological Theory....3

Geography
GEOG 1300 (BSS) World Regional Geography....3
GEOG 1400 (BSS) Human Geography....3
GEOG 3850 Map, Air Photo, and GIS Interpretation....4
GEOG 4200 (CI) Regional Geography....3

History
HIST 1060 (BHU) Introduction to Islamic Civilization....3
HIST 1100 (BHU) Foundations of Western Civilization: Ancient and Medieval....3
HIST 1110 (BHU) Foundations of Western Civilization: Modern....3
HIST 1500 (BHU) Cultural and Economic Exchange in the Pre-Nineteenth Century World....3
HIST 1510 (BHU) The Modern World....3

HIST 1600 American Cultures in Film 3
HIST 2210 (BHU) Introduction to Folklore 3
HIST 2700 (BAI) United States to 1877 3
HIST 2710 (BAI) United States 1877 to Present 3
HIST 2720 Survey of American Folklore 3
HIST 3240 Modern Europe from 1789 to the Present 3
HIST 3330 The Soviet Union and its Heirs 3
HIST 3510 Africa and the World 3
HIST 3620 History of Colonial Latin America 3
HIST 3700 (CI) Regional Folklore 3
HIST 3720 Colonial America 3
HIST 3750 Civil War and Reconstruction 3
HIST 3770 Contemporary America, 1945-Present 3
HIST 3840 Twentieth Century American West 3
HIST 3850 (CI/DHA) History of Utah 3
HIST 4230 (CI/DHA) The History of Christianity in the West 3
HIST 4330 Modern Germany with Special Emphasis on the Twentieth Century 3
HIST 4390 British Imperialism from 1688 to the Present 3
HIST 4550 (CI/DHA) Women and Gender in America 3
HIST 4600 (CI/DHA) The History of the American West 3
HIST 4640 (CI) Studies in the American West 3
HIST 4710 American Indian History 3
HIST 4730 (CI) History of Black America 3

Additional Courses
NR 1010 (BSS) Humans and the Changing Global Environment 3
ENVS 5110 Environmental Education 3
PHIL 1000 (BHU) Introduction to Philosophy 3
PHIL 2400 (BHU) Ethics 3
SW 1010 Introduction to Social Welfare 3
SW 3350 Child Welfare 3

Mathematics/General Science Emphasis (12 credits)
Choose one course from each category: Mathematics, Physical Science, and Biological (Life) Science. Remaining credits may be chosen from any category.

Mathematics
MATH 1060 Trigonometry 2
MATH 1100 (QL) Calculus Techniques 3
MATH 3110 Modern Geometry 3

Physical Science
CHEM 1110 (BPS) General Chemistry I 4
CHEM 1120 (BPS) General Chemistry II 4
PHYS 1020 (BPS) Energy 3
PHYS 1040 (BPS) Introductory Astronomy 3
PHYS 1080 (BPS) Intelligent Life in the Universe 3
PHYS 3010 (DSC/QI) Space Exploration from Earth to the Solar System 3
PHYS 3020 (DSC) Great Scientists 3
PHYS 3030 (DSC/QI) The Universe 3
BMET 2000 (BPS) The Atmosphere and Weather 3
BMET 3820 (DSC/QI) Climate Change 3
SOIL 3000 Fundamentals of Soil Science 4
GEO 1110 (BPS) The Dynamic Earth: Physical Geology 4
GEO 3200 (DSC) The Earth Through Time 4
GEOG 1000 (BPS) Physical Geography 3

Biological (Life) Science
AWER 3000 (DSC) Oceanography 3
BIOL 1110 Elementary Microbiology 4
BIOL 1610 Biology I 4
BIOL 1620 (BLS) Biology II 4
BIOL 2320 Human Anatomy 4
BIOL 2420 Human Physiology 4
BIOL 3010 (CI/DSC) Evolution 3
BIOL 3030 (DSC) Genetics and Society 3
BIOL 3060 (QI) Principles of Genetics 4
BIOL 3300 General Microbiology 4
ENVS 5110 Environmental Education 3
FRWS 2200 (BLS) Ecology of Our Changing World 3
NR 1010 (BSS) Humans and the Changing Global Environment 3
NR/BIOL 2220 General Ecology 3
PUBH 3120 Family and Community Health 3
PUBH/CEE 3610 Environmental Management 3
NFS 1020 (BLS) Science and Application of Human Nutrition 3
HEP 3000 Drugs and Human Behavior 3

General Science Emphasis (12 credits)
Choose science courses from the preceding lists. One course must be from the Physical Science category and one must be from the Biological (Life) Science category. Remaining credits may be chosen from either category.

Fine Arts Emphasis (12 credits)
Early Childhood Education Majors should choose MUSC 3260 as a general elective.

Required:
ART 1020 Drawing I (3 cr) **or**
ART 3700 Elementary Art Methods (3 cr) 3
MUSC 1010 (BCA) Introduction to Music (3 cr) **or**
MUSC 3010 (DHA) Masterpieces of Music (3 cr) 3
THEA 4330 Drama and Theatre for Youth: Grades K-6 3

Choose remaining credits from the following:
ART 2110 Drawing II 3
ART 2810 Photography I 3
PEP 2500 Rhythms and Movement 1
THEA 1030 (BHU) Exploring Performance Through Aesthetic Texts 3

Art Emphasis (12 credits)
Early Childhood Education majors should consult with their advisor before choosing this emphasis.

ART 1010 (BCA) Exploring Art (3 cr) **or**
ARTH 2710 (BHU) Survey of Western Art: Prehistoric to Medieval (3 cr) **or**
ARTH 2720 (BHU) Survey of Western Art: Renaissance to Post-Modern (3 cr) 3
ART 1020 Drawing I (3 cr) **or**
ART 1120 Two-dimensional Design (3 cr) 3
ART 2650 Introduction to Ceramics 3
ART 3700 Elementary Art Methods 3

Music Emphasis (12 credits)
Required:
MUSC 1010 (BCA) Introduction to Music 3
MUSC 1110 Music Theory I 3
MUSC 1600 Voice Techniques 1
MUSC 3260 Elementary School Music 2

Choose remaining 3 credits from the following:
Appropriate piano course(s) (3 cr) **or**
Guitar course(s) (3 cr) **or**
Acceptable substitute courses, approved by advisor (3 cr) 3

Physical Education Emphasis (12 credits)
Required:
PE 3000 Dynamic Fitness 3
PEP 3200 (CI) Motor Learning and Skill Analysis 3
HEP 2000 First Aid and Emergency Care 2

Choose remaining credits from the following:
PEP 2200 Skills 2 (Lifetime Activities) 1
PEP 2300 Skills 3 (Softball, Basketball, Soccer) 1
PEP 2400 Skills 4 (Tennis, Badminton, Track and Field) 1
PEP 2500 Rhythms and Movement 1
PRP 1500 Social Recreation Leadership 3

Health/Wellness/Nutrition Emphasis (12 credits)
Choose *one* of the following two courses:
NFS 1020 (BLS) Science and Application of Human Nutrition 3
NFS 2020 Nutrition Throughout the Life Cycle 3

Choose remaining credits from the following:
NFS 1000 World of Food and Nutrition 1
NFS 3110 (DSC) Food, Technology, and Health 3
BIOL 2420 Human Physiology 4
HEP 2000 First Aid and Emergency Care 2
HEP 2500 Health and Wellness 2
HEP 3000 Drugs and Human Behavior 3
HEP 3500 Elementary School Health Education 2
PUBH 3120 Family and Community Health 3
PE 3000 Dynamic Fitness 3

Foreign Language Emphasis (12 credits)
A foreign language area of emphasis may be designed by a student, provided it is limited to one language.

School Library Media Certification
This certification will fulfill the emphasis requirement for Early Childhood Education majors. For a list of required courses, contact the Instructional Technology Department.

English as a Second Language (ESL) Endorsement
This endorsement will fulfill the emphasis requirement for Early Childhood Education majors. For a list of required courses, students should contact their advisor. (Completing 12 credits toward the ESL Endorsement will fulfill an ESL Emphasis.)

Optional Supporting Area in Parenting for Early Childhood Education Majors (17 credits)
The Early Childhood Education requirements can be met and then additional credits taken to complete a supporting area in parenting. This may enhance employment opportunities in school districts, day care, and preschools where there is a strong commitment to a parent involvement program, or as an instructor for community adult education programs.

FCHD 3510[19] Infancy and Early Childhood (Coreq: FCHD 3550) 3
FCHD 3550[19] Infant Lab (Coreq: FCHD 3510) 1
FCHD 3520[19] Children in the Middle Years (Coreq: FCHD 3560) 3
FCHD 3560[19] Middle Childhood Lab (Coreq: FCHD 3520) 1
FCHD 3110[20] Human Sexuality 3
NFS 1020 (BLS) Science and Application of Human Nutrition 3

[19]Prerequisites: Junior standing and FCHD 1500, 2610.
[20]Prerequisites: FCHD 1500, 2400.

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
Students with less than 24 semester credits may declare a premajor in FCS (PFCS). Completion of at least 24 semester credits (including FCHD 1100, 1500, 2400, and 2450) with a cumulative GPA of at least 3.0 is required for admission into the FCS major.

Departmental Program Requirements
The department has several regulations governing students' academic progress:

1. The *P/D+, D, F* option cannot be used for courses required in the FCS major

2. An overall cumulative GPA of 3.0 is required for entrance to the major. An overall GPA of 3.0 is required for graduation.

3. **Ten-year Policy.** Courses which are required for the major will be accepted *only* if they have been completed within the last 10 years.

FCHD 1100 Critical Issues in Family, Consumer, and Human Development (F,Sp,Su) 1
FCHD 1500 (BSS) Human Development Across the Lifespan (F,Sp) ... 3
FCHD 2400 (BSS) Marriage and Family Relationships (F,Sp) 3
FCHD 2450 (BSS) The Consumer and the Market (F,Sp) 3

Major Courses (51 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)
Select at least 12 credits from the following:
FCHD 2610 Child Guidance (F,Sp) 3
FCHD 3100 Abuse and Neglect in Family Context (Prereq: Sophomore standing, FCHD 1500, 2400) (F,Sp) 3
FCHD 3110 Human Sexuality (Prereq: FCHD 1500, 2400) (F,Su) 3
FCHD 3510[21] Infancy and Early Childhood (Prereq: Junior standing, FCHD 1500, 2610) (F,Sp) 3
FCHD 3550[21] Infant Lab (F,Sp) 1
FCHD 3520[21] Children in the Middle Years (Prereq: Junior standing, FCHD 1500, 2610) (F,Sp) 3
FCHD 3560[21] Middle Childhood Lab (F,Sp) 1
FCHD 3530 Adolescence (Prereq: Junior standing, FCHD 1500) (F,Sp) 3
FCHD 3540 Adult Development and Aging (Prereq: Junior standing and FCHD 1500) (F,Sp) 3
FCHD 4220 Family Crises and Interventions (Prereq: Junior standing, FCHD 2400) (F,Su) 3
FCHD 4230 Families and Social Policy (Prereq: Junior standing, FCHD 2400) (F,Sp) 3
FCHD 4240 Social and Family Gerontology (Prereq: Junior standing, FCHD 2400, 3540) (F,Sp) 3
FCHD 4550 Preschool Methods and Curriculum (Prereq: Junior standing, FCHD 1500) (F,Sp) 3

Consumer and Family Finance (12 credits)
Select at least 12 credits from the following:
FCHD 3280 Economic Issues for Individuals and Families (Sp) 3
FCHD 3310 Consumer Policy (Sp) 3
FCHD 3340 Housing: Societal and Environmental Issues (F) 3
FCHD 3350 Family Finance (F,Sp,Su) 3
FCHD 3450 Consumer Credit Problems (Prereq: FCHD 3350) (F) 3
FCHD 4330 Family Finance Career Seminar
(Prereq: FCHD 3350) (F) 1
FCHD 4350 Advanced Family Finance (Prereq: FCHD 3350) (Sp) 3
FCHD 5340 Housing Finance and Regulations
(Prereq: FCHD 3340, 3350) (majors only) (Sp) 3

Foods and Nutrition (9 credits)
Select at least 9 credits from the following:
NFS 1000 World of Food and Nutrition (F) 1
NFS 1020 (BLS) Science and Application of Human Nutrition
(F,Sp,Su) 3
NFS 1240 Culinary Basics (F,Su) 3
NFS 1250 Sanitation and Safety (Sp) 3
NFS 2020 Nutrition Throughout the Life Cycle
(Prereq: NFS 1020) (Sp) 3
NFS 3020 Nutrition and Physical Performance
(Prereq: NFS 1020) (F) 2
NFS 3110 (DSC) Food, Technology, and Health (Prereq: University
Studies Breadth Life Sciences Course) (F) 3
NFS 3070 Science of Food Preparation
(Prereq: CHEM 1120 or 2300 or 2310) (Sp) 4
NFS 4480 Community Nutrition (Prereq: NFS 1020) (F) 3

Research Methods and Professional Courses (12 credits)
The following courses are required:
FCHD 3130 (QI) Research Methods (Prereq: STAT 1040) (F,Sp)
(majors only) 3
FCHD 3210 (CI) Families and Cultural Diversity
(Prereq: FCHD 1500, 2400, CL2 fulfillment) (F,Sp) (majors only) 3

Choose one of the following:
OSS 1550 (CI) Business Correspondence 3
BIS 2200 (CI) Business Communication (F,Sp,Su) 3
FCHD 4900 (CI) Pre-Practicum Skills
(Prereq: Junior Standing, FCHD 2610, 3100, ENGL 2010) (F,Sp) 3
SPCH 1020 (CI) Public Speaking (F,Sp) 3
SPCH 2110 (CI) Interpersonal Communication (F,Sp) 3

Choose one of the following:
FCHD 4900 (CI) Pre-Practicum Skills (Prereq: Junior Standing,
FCHD 2610, 3100, ENGL 2010) (F,Sp) 3
PHIL 1120 (BHU) Social Ethics (F) 3
PHIL 2400 (BHU) Ethics (Sp) 3

Practicum (6 credits)
Complete a total of 6 credits from one or both of the following:
FCHD 4950[22] Practicum: Consumer Science (F,Sp,Su) 3-6
FCHD 4960[23] Practice Teaching in Child Development Laboratories
(Prereq: Junior Standing, FCHD 4550) (F,Sp,Su) 3

Suggested Support Courses

The following courses are *suggested* (but not required) for students in the FCS major:
FCSE 2040 Clothing Production Principles (F,Sp) 3
FCSE 3030 (DSC) Textile Science (Sp) 4
FCSE 3040 Advanced Clothing Production Principles (F,Sp) 3
FCSE 3060 (DSS/CI) Human Behavior Related to Dress (F) (3 cr) **or**
FCSE 3080 Dress and Humanity (F,Su) (3 cr) 3
ID 1790 (BCA) Interior Design Theory (Sp) 3
ID 3740 (DHA) History of Interior Furnishings and Architecture I (F) 3
ID 3750 (DHA/CI) History of Interior Furnishings and
Architecture II (Sp) 3

[21] FCHD 3550 must be taken concurrently with FCHD 3510. FCHD 3560 must be taken concurrently with FCHD 3520.
[22] Enrollment in FCHD 4950 is limited to FCS majors *only*, who have received prior approval from the Practicum Coordinator. Prior to enrollment, students must have achieved junior standing, and must have completed a total of at least 30 FCHD credits, a Communications Intensive (CI) course, and an ethics course. Practicum application deadlines are as follows: February 15 for fall semester, June 15 for spring semester, and October 15 for summer semester.
[23] Students must sign up one year in advance in Family Life 205.

Suggested Four-year Course of Study for Family and Consumer Sciences (FCS) Major

The FCS major is an interdisciplinary program. Students are required to take 12 credits in **Human Development and Family Studies**, 12 credits in **Consumer and Family Finance**, and 9 credits in **Foods and Nutrition**, as well as professional courses listed on the major requirement sheet.

The suggested course of study shown below is intended to guide students in the selection of their courses. However, students should meet with their advisor each semester to plan an individualized schedule tailored to their specific interests and needs.

Freshman Year (30-33 credits)

Fall Semester (15-18 credits)
FCHD 1100 Critical Issues in Family, Consumer,
and Human Development 1
FCHD 1500 (BSS)[24] Human Development Across the Lifespan 3
MATH 1010 Intermediate Algebra 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
USU 1000 Introduction to Computers and Information Literacy (1 cr) **or**
OSS 1400 Microcomputer Applications (3 cr) **or**
Passing scores on Computer and Information Literacy
(CIL) exams (0 cr) 0-3
(**Note:** Although USU 1000 and OSS 1400 include the CIL exams, the CIL requirement is met *only* by passing all six exams, *not* by simply passing USU 1000 or OSS 1400.)
University Studies Breadth course[25] 3
Elective course(s) 2

Spring Semester (15 credits)
FCHD 2400 (BSS)[24] Marriage and Family Relationships 3
FCHD 2450 (BSS)[24] The Consumer and the Market 3
STAT 1040 (QL) Introduction to Statistics 3
University Studies Breadth course[25] 3
Elective course(s) 3

Sophomore Year (30 credits)

Fall Semester (15 credits)
FCHD 3350 Family Finance 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a
Persuasive Mode 3
NFS 1020 (BLS)[24] Science and Application of Human Nutrition 3
FCHD Human Development and Family Studies course 3
University Studies Breadth course[25] 3

Spring Semester (15 credits)
FCHD Human Development and Family Studies course 3
FCHD Consumer and Family Finance course 3
NFS Foods and Nutrition course 3
Communications Intensive (CI) course
(as listed in FCS requirements) 3
Elective course(s) 3

Junior Year (30 credits)
Fall Semester (15 credits)
FCHD 3210 (CI) Families and Cultural Diversity 3
FCHD Human Development and Family Studies course 3
FCHD Consumer and Family Finance course 3
NFS Foods and Nutrition course 3
Elective course(s) 3

Spring Semester (15 credits)
FCHD Human Development and Family Studies course 3
FCHD Consumer and Family Finance course 3
PHIL Ethics course (as listed in FCS requirements)[24] 3
Elective course(s) 6

Senior Year (30 credits)
Fall Semester (15 credits)
FCHD 3130 (QI) Research Methods 3
Depth Life and Physical Sciences (DSC) course 3
Depth Humanities and Creative Arts (DHA) course 3
Elective course(s) 6

Spring Semester (15 credits)
FCHD 4950 Practicum: Consumer Science 6
Elective course(s) 9

[24] FCHD 1500, 2400, or 2450 meets the Breadth Social Sciences (BSS) requirement, NFS 1020 meets the Breadth Life Sciences (BLS) requirement, and the PHIL Ethics Course meets the Breadth Humanities (BHU) requirement.
[25] At least *two* of the *six* required breadth courses *must* have a USU prefix.

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in selected upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. The minimum GPA for participation in departmental honors in FCHD is 3.30, with 3.5 in the FCHD major. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level. The campus-wide Honors Program offers a rich array of cultural and social activities, special classes, and the benefit of Honors early registration. Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@cc.usu.edu. Additional information can be found online at: **http://www.usu.edu/honors/**, or by contacting Kaelin Olsen (FCHD honors advisor) at kolsen@cc.usu.edu *or* at (435) 797-8242.

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 requirement sheets are also available online at: **http://www.usu.edu/majorsheets/**

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 Services 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 101-102. 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, must be at or above the 40th percentile. Applications are expected to be completed by January 15, but may be considered throughout the year, with the *exception* of applications for the Marriage and Family Therapy (MFT) Specialization. MFT applications *must* be received by January 15.

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, human development, or consumer sciences.

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.

Department of Family, Consumer, and Human Development

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. A new group of students is enrolled every two years in the distance-delivered program, and the group takes a prescribed set of courses.

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 are required to pass a background check prior to participation in a practicum experience (FCHD 6980 or 7980).

Specializations

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 and 7070. 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* online at: **http://www.usu.edu/fchd**

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 has 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, the National Institutes on Aging, 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 details 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 (Vice Provost for Faculty Development and Diversity)

Raymond T. Coward, aging, elder care, rural health care (USU Provost)

Randall M. Jones, adolescent development, identity, problem behavior, prevention, research methods

Thomas R. Lee, parenting, family life education, family resiliency, at-risk youth, marriage education

Shelley L. Knudsen Lindauer, alternative child care, early childhood education and curriculum, child care administration, socialization, development in infancy and early childhood (Associate Dean, School of Graduate Studies)

Jean M. Lown, consumer and family economics, bankruptcy

Brent C. Miller, marriage and family relationships, adolescent pregnancy, adoption, research methods (Vice President for Research)

Thorana S. Nelson, marriage and family therapy, gender, family therapy training and supervision

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

Department of Family, Consumer, and Human Development

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
Yoon G. Lee, family and consumer sciences, family finance
D. Kim Openshaw, marriage and family therapy, research and application, typological and intervention strategy advancement of youthful sexual offending, theoretical conceptualization of self-esteem, martial arts and mental health related syndromes
Kathleen W. Piercy, midlife, older adults and family caregiving, family policy, qualitative research methodology
Susan D. Talley, prosocial behavior, attachment, early adolescence, school-age children, self efficacy, cross-cultural research

Assistant Professors
Troy E. Beckert, life span human development, adolescence, research methods, parenting
Karen Biers, clothing and textiles, home-based entrepreneurship, extension
Lucy Delgadillo, family and consumer sciences, housing
Brian J. Higginbotham, remarriage and step families, marriage education, program evaluation
David D. Law, parent education, marriage and family therapy, health care utilization
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. Skogrand, families from diverse populations, transcending traumatic childhoods, marriage and family education

Research Assistant Professor
Elizabeth B. Fauth, gerontology, ability and disability in the oldest-old, factors affecting caregiver burden

Adjunct Clinical 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

Principal 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, 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

Adjunct Lecturer
Kevin Barlow, marriage and family therapy supervision

Course Descriptions

Family, Consumer, and Human Development (FCHD), pages 627-630

Department of 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/geo/

Undergraduate Advisor:
Peter T. Kolesar, Geology 110, (435) 797-3282, peter.kolesar@usu.edu

Graduate Program Director:
W. David Liddell, Geology 212, (435) 797-1261, davel@cc.usu.edu

Degrees offered: Bachelor of Science (BS), Bachelor of Arts (BA), Master of Science (MS), and Doctor of Philosophy (PhD) in Geology; BS and MS in Applied Environmental Geoscience; BS in Composite Teaching in Earth Science

Undergraduate emphases: *BS in Geology*—Hydrogeology-Engineering Geology and Geoarchaeology

Graduate Specializations: *MS in Geology*—Geochemistry, Hydrogeology, Igneous Petrology, Paleoecology, Sedimentary Petrology, Structural Geology, and Surficial Geology

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 BS in Applied Environmental Geoscience is an interdisciplinary program that combines parts of the traditional geology curriculum with a variety of courses in related subject areas, such as watershed science, soils, biology, statistics, and GIS/remote sensing. This degree prepares graduates for careers with the environmental industry, government regulatory agencies, and policy organizations. Environmental geoscience is applied in a range of diverse situations, such as urban development, waste disposal, resource management, engineering, soils and agriculture, and assessment of natural and artificial hazards.

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.

Geology Major—General Geology Option

GEO 1110 (BPS) The Dynamic Earth: Physical Geology (F,Sp) 4
GEO 3200 (DSC) The Earth Through Time (Sp) 4
GEO 3500 Mineralogy and Crystallography (F) 4
GEO 3520 Optical Mineralogy and Petrography (Sp) 2
GEO 3550 (CI) Sedimentation and Stratigraphy (F) 4
GEO 3600 Geomorphology (F) 4

GEO 3700 Structural Geology (Sp) 4
GEO 4500 Igneous and Metamorphic Petrology (Sp) 4
GEO 4700 (CI) Geologic Field Methods (F) 3
GEO 5200 Geology Field Camp (Su) 5
CHEM 1210 Principles of Chemistry I (F,Sp) 4
CHEM 1215 Chemical Principles Laboratory I (F,Sp) 1
CHEM 1220 (BPS) Principles of Chemistry II (F,Sp,Su) 4
CHEM 1225 Chemical Principles Laboratory II (F,Sp) 1
MATH 1210 (QL)[1] Calculus I (F,Sp,Su) 4
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su) (3 cr) **or**
MATH 1220 (QL) Calculus II (F,Sp,Su) (4 cr) ..... 3 or 4
CS 1050 Problem Solving with Computers (F,Sp) (3 cr) **or**
CS 1400 Introduction to Computer Science—CS 1 (F,Sp,Su) (3 cr) **or**
CEE 5190 Geographic Information Systems for Civil Engineers (Sp) (3 cr) **or**
WATS 4930 Geographic Information Systems (F) (4 cr) ..... 3 or 4
PHYS 2210 (QI) General Physics—Science and Engineering I 4
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II .. 4

Students must also select 12 credits from any Geology courses numbered 4900 or above, except GEO 5200 (Geology Field Camp).

Suggested Four-year Course of Study for General Geology Option

Freshman Year (31 credits)

Fall Semester (16 credits)
GEO 1110 (BPS) The Dynamic Earth: Physical Geology 4
CHEM 1210 Principles of Chemistry I 4
CHEM 1215 Chemical Principles Laboratory I 1
MATH 1210 (QL) Calculus I 4
University Studies course 3

Spring Semester (15 credits)
GEO 3200 (DSC) The Earth Through Time 4
CHEM 1220 (BPS) Principles of Chemistry II 4
CHEM 1225 Chemical Principles Laboratory II 1
STAT 3000 (QI) Statistics for Scientists 3
University Studies course 3

Sophomore Year (30 credits)

Fall Semester (15 credits)
GEO 3500 Mineralogy and Crystallography 4
GEO 3550 (CI) Sedimentation and Stratigraphy 4
GEO 3600 Geomorphology 4
University Studies course 3

Spring Semester (15 credits)
GEO 3520 Optical Mineralogy and Petrography 2
GEO 3700 Structural Geology 4
University Studies courses 9

Junior Year (35 credits)

Fall Semester (16 credits)
GEO 4700 (CI) Geologic Field Methods 3
PHYS 2210 (QI) General Physics—Science and Engineering I 4
Upper-division Geology elective course 3
University Studies courses or elective courses 6

Spring Semester (14 credits)
GEO 4500 Igneous and Metamorphic Petrology 4
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II 4
Upper-division Geology elective course 3
University Studies course 3

Summer Semester (5 credits)
GEO 5200 Geology Field Camp 5

Senior Year (25 credits)

Fall Semester (13 credits)
WATS 4930 Geographic Information Systems 4
Upper-division Geology elective course 3
University Studies courses and general elective courses 6

Spring Semester (12 credits)
Upper-division Geology elective course 3
General elective courses 9

Geology Major—Hydrogeology-Engineering Geology Emphasis

GEO 1110 (BPS) The Dynamic Earth: Physical Geology (F,Sp) 4
GEO 3200 (DSC) The Earth Through Time (Sp) 4
GEO 3500 Mineralogy and Crystallography (F) 4
GEO 3550 (CI) Sedimentation and Stratigraphy (F) 4
GEO 3600 Geomorphology (F) 4
GEO 3700 Structural Geology (Sp) 4
GEO 4700 (CI) Geologic Field Methods (F) 3
GEO 5200 Geology Field Camp (Su) 5
GEO 5510 (QI) Groundwater Geology (F) 3
GEO 5600 Geochemistry (F) 3
CHEM 1210 Principles of Chemistry I (F,Sp) 4
CHEM 1215 Chemical Principles Laboratory I (F,Sp) 1
CHEM 1220 (BPS) Principles of Chemistry II (F,Sp,Su) 4
CHEM 1225 Chemical Principles Laboratory II (F,Sp) 1
MATH 1210 (QL)[1] Calculus I (F,Sp,Su) 4
MATH 1220 (QL) Calculus II (F,Sp,Su) 4
MATH 2250 (QI) Linear Algebra and Differential Equations (F,Sp,Su) .. 4
CS 1050 Problem Solving with Computers (F,Sp) (3 cr) **or**
CS 1400 Introduction to Computer Science—CS 1 (F,Sp,Su) (3 cr) **or**
CEE 5190 Geographic Information Systems for Civil Engineers (Sp) (3 cr) **or**
WATS 4930 Geographic Information Systems (F) (4 cr) ..... 3 or 4
PHYS 2210 (QI) General Physics—Science and Engineering I 4
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II .. 4
ENGR 2010 Engineering Mechanics Statics (F,Sp) 2
ENGR 2030 Engineering Mechanics Dynamics (F,Sp) 3
ENGR 2140 Strength of Materials (F,Sp) 2
CEE 3430 Engineering Hydrology (Sp) (3 cr) **or**
CEE 4300 Engineering Soil Mechanics (Sp) (4 cr) ..... 3 or 4
SOIL 3000 Fundamentals of Soil Science (F,Sp) (4 cr) **or**
SOIL 5130 Soil Genesis, Morphology, and Classification (F) (4 cr) 4

Suggested Four-year Course of Study for Hydrology-Engineering Geology Emphasis

Freshman Year (32 credits)

Fall Semester (16 credits)
GEO 1110 (BPS) The Dynamic Earth: Physical Geology 4
CHEM 1210 Principles of Chemistry I 4
CHEM 1215 Chemical Principles Laboratory I 1
MATH 1210 (QL) Calculus I 4
University Studies course 3

Spring Semester (16 credits)
GEO 3200 (DSC) The Earth Through Time 4
CHEM 1220 (BPS) Principles of Chemistry II 4
CHEM 1225 Chemical Principles Laboratory II 1
MATH 1220 (QL) Calculus II 4
University Studies course 3

Department of Geology

Sophomore Year (31 credits)
Fall Semester (15 credits)
GEO 3550 (CI) Sedimentation and Stratigraphy 4
PHYS 2210 (QI) General Physics—Science and Engineering I 4
MATH 2250 (QI) Linear Algebra and Differential Equations 4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3

Spring Semester (16 credits)
GEO 3700 Structural Geology 4
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II 4
ENGR 2010 Engineering Mechanics Statics 2
University Studies courses 6

Junior Year (33 credits)
Fall Semester (14 credits)
GEO 3500 Mineralogy and Crystallography 4
GEO 3600 Geomorphology 4
GEO 4700 (CI) Geologic Field Methods 3
University Studies course or elective course 3

Spring Semester (14 credits)
ENGR 2140 Strength of Materials 2
Elective courses 6
University Studies courses 6

Summer Semester (5 credits)
GEO 5200 Geology Field Camp 5

Senior Year (26-27 credits)
Fall Semester (13 credits)
GEO 5510 (QI) Groundwater Geology 3
GEO 5600 Geochemistry 3
WATS 4930 Geographic Information Systems 4
CEE 3500 Civil and Environmental Engineering Fluid Mechanics 3

Spring Semester (13-14 credits)
SOIL 3000 Fundamentals of Soil Science 4
CEE 3430 Engineering Hydrology (3 cr) **or**
CEE 4300 Engineering Soil Mechanics (4 cr) ..... 3 or 4
University Studies courses 6

Geology Major—Geoarchaeology Emphasis

GEO 1110 (BPS) The Dynamic Earth: Physical Geology (F,Sp) 4
GEO 3200 (DSC) The Earth Through Time (Sp) 4
GEO 3500 Mineralogy and Crystallography (F) 4
GEO 3550 (CI) Sedimentation and Stratigraphy (F) 4
GEO 3600 Geomorphology (F) 4
GEO 3700 Structural Geology (Sp) 4
GEO 4700 (CI) Geologic Field Methods (F) 3
GEO 5430 Paleontology (F) 2
ANTH 2030 (CI/BSS) World Archaeology (F,Sp) 3
ANTH 4350 Archaeological Method/Theory and Cultural Resource Management (Sp) 3
ANTH 4360 (DSS) Ancient Desert West (F) 3-4
ANTH 5300 Archaeology Field School (Su) 4-5
ANTH 5310 Archaeology Lab 1-3

CHEM 1110 (BPS) General Chemistry I (F,Sp) (4 cr) **and**
CHEM 1115 General Chemistry Laboratory (Sp) (1 cr) **and**
CHEM 1120 (BPS) General Chemistry II (Sp) (4 cr) 9

Or
CHEM 1210 Principles of Chemistry I (F,Sp) (4 cr) **and**
CHEM 1215 Chemical Principles Laboratory I (F,Sp) (1 cr) **and**
CHEM 1220 (BPS) Principles of Chemistry II (F,Sp,Su) (4 cr) **and**
CHEM 1225 Chemical Principles Laboratory II (F,Sp) (1 cr) 10

BIOL 3010 (CI/DSC) Evolution (Sp) 3

Two courses selected from:
BIOL 2220 General Ecology (F,Sp) (3 cr) **and/or**
BIOL 3030 (DSC) Genetics and Society (Sp) (3 cr) **and/or**
BIOL 3040 (DSC) Plants and Civilization (F) (3 cr) **and/or**
BIOL 3220 (QI) Field Ecology (F) (2 cr) ..... 5 or 6

MATH 1210 (QL)[1] Calculus I (F,Sp,Su) 4
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su) 3
WATS 4930 Geographic Information Systems (F) 4
WATS 5930 Geographic Information Analysis (Sp) 4
SOIL 3000 Fundamentals of Soil Science (F, Sp) (4 cr) **or**
SOIL 5130 Soil Genesis, Morphology, and Classification (F) (4 cr) 4

Applied Environmental Geoscience Major

GEO 1060 (BPS) Introduction to Environmental Geoscience 3
GEO 3500 Mineralogy and Crystallography 4
GEO 3550 (CI) Sedimentation and Stratigraphy 4
GEO 3600 Geomorphology 4
GEO 3700 Structural Geology 4
GEO 4700 (CI) Geologic Field Methods 3
GEO 5200 Geology Field Camp 5
GEO 5600 Geochemistry 3

Geology Electives (12 credits required)
Students must complete at least 12 credits, selected from the following:

GEO 5150 Fluvial Geomorphology 3
GEO 5410 Introduction to Clay Mineralogy 2
GEO 5510 (QI) Groundwater Geology 3
GEO 5520 (CI) Techniques of Groundwater Investigations 3
GEO 5530 (QI) Petroleum Systems: Principles of Exploration and Development 3
GEO 5540 (QI) Quantitative Methods in Geology 3
GEO 5550 Geochemical Application of Electron Microprobe and X-Ray Fluorescence Analysis 4
GEO 5630 Photogeology 3
GEO 5650 Senior Thesis 3-4
GEO 5680 Paleoclimatology 3

Required Support Courses (39-40 credits)

Chemistry Group (10 credits)
CHEM 1210 Principles of Chemistry I 4
CHEM 1215 Chemical Principles Laboratory I 1
CHEM 1220 (BPS) Principles of Chemistry II 4
CHEM 1225 Chemical Principles Laboratory II 1

Mathematics and Statistics Group (7 credits)
MATH 1210 (QL)[1] Calculus I 4
STAT 3000 (QI) Statistics for Scientists 3

Physics Group (4 credits)
PHYS 2110 The Physics of Living Systems I (4 cr) **or**
PHYS 2210 (QI) General Physics—Science and Engineering I (4 cr) .. 4

Environmental Group (18-19 credits)
BIOL 1610 Biology I 4
BIOL 1620 (BLS) Biology II 4
WATS 3700 (CI) Fundamentals of Watershed Science 3
SOIL 3000 Fundamentals of Soil Science 4
CEE 5190 Geographic Information Systems for Civil Engineers (3 cr) **or**
WATS 4930 Geographic Information Systems (4 cr) ..... 3 or 4

Support Electives (12 credits required)
No more than 8 credits may be chosen from any one group.

Group A: Hydrologic Science
ENVS 5320 Water Law and Policy in the United States 3
SOIL 5600 (d6600) Surface Hydrologic Field Methods 3
WATS 4490 (d5490) Small Watershed Hydrology 4
WATS 5660 Watershed and Stream Restoration 2
WATS 5670 Watersheds and Stream Restoration Practicum 2

Group B: Ecology, Soils, and Environmental Chemistry
BIOL 2220 General Ecology 3
BIOL 3220 (QI) Field Ecology 2
CHEM 3650 (DSC) Environmental Chemistry 3
SOIL 5050 (d6050) Principles of Environmental Soil Chemistry 3
SOIL 5130 (d6130) Soil Genesis, Morphology, and Classification 4
SOIL 5560 (d6560) Analytical Techniques for the Soil Environment 2
SOIL 5620 Aquatic Chemistry 3

Group C: GIS/Remote Sensing
WATS 4750 Fundamentals of Remote Sensing Science 3
WATS 4930 (d6920) Geographic Information Systems 4
WATS 5250 (d6250) Remote Sensing of Land Surfaces 4
WATS 5760 Remote Sensing: Modeling and Analysis 3
WILD 5750 Applied Remote Sensing 3

Composite Teaching Major in Earth Science

GEO 1110 (BPS) The Dynamic Earth: Physical Geology (F,Sp) 4
GEO 2500[2] Geology Field Excursions (F,Sp) 2
GEO 3200 (DSC) The Earth Through Time (Sp) 4
GEO 3500 Mineralogy and Crystallography (F) 4
GEO 3550 (CI) Sedimentation and Stratigraphy (F) 4
GEO 3600 Geomorphology (F) 4
GEO 3700 Structural Geology (Sp) 4
GEO 4700 (CI) Geologic Field Methods (F) 3
PHYS 1020 (BPS)[3] Energy 3
PHYS 2210 (QI) General Physics—Science and Engineering I 4
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II 4
PHYS 3010 (QI/DSC) Space Exploration from Earth to the Solar System ..... (3 cr) **or**
PHYS 3030 (QI/DSC) The Universe (3 cr) 3
CHEM 1210 Principles of Chemistry I (F,Sp) 4
CHEM 1215 Chemical Principles Laboratory I (F,Sp) 1
CHEM 1220 (BPS) Principles of Chemistry II (F,Sp,Su) 4
CHEM 1225 Chemical Principles Laboratory II (F,Sp) 1
ENVS 5110 Environmental Education (Sp) (3 cr) **or**
WILD 2200 (BLS) Ecology of Our Changing World (F,Sp) (3 cr) 3
BMET 2000 (BPS) The Atmosphere and Weather (F,Sp) 3
WATS 3000 (DSC) Oceanography (Sp) (3 cr) **or**
GEO 3300 (DSC) Geology of the World's Oceans (Sp) (3 cr) 3
SCI 4300 Science in Society (F,Sp) 2
MATH 1210 (QL)[1] Calculus I (F,Sp,Su) 4
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su) 3
CS 1050 Problem Solving with Computers (F,Sp) (3 cr) **or**
CS 1400 Introduction to Computer Science—CS 1 (F,Sp,Su) (3 cr) 3

Students must also complete the Secondary Teacher Education Program (STEP) as follows:
Level 1
SCED 3100 Motivation and Classroom Management (F,Sp) 3
SCED 3210 (CI/DSS) Educational and Multicultural Foundations (F,Sp) 3
SCED 3300 Clinical Experience I (F,Sp) 1
SCED 3400 Teaching Science I (F,Sp) 3
INST 3500 Technology Tools for Secondary Teachers (F,Sp,Su) 1

Level 2
SPED 4000 Education of Exceptional Individuals (may be taken anytime) (F,Sp,Su) 2
SCED 4200 (CI) Reading, Writing, and Technology (F,Sp) 3
SCED 4210 Cognition and Evaluation of Student Learning (F,Sp) 3
SCED 4300 Clinical Experience II (F,Sp) 1
SCED 4400 Teaching Science II (F,Sp) 3

Level 3 (12 credits)
SCED 5500 Student Teaching Seminar (F,Sp) 2
SCED 5630 Student Teaching in Secondary Schools (F,Sp) 10

Notes
This curriculum meets the standards of the Utah Core Curriculum—Science 7-12.

Beginning in 2006, all USU teacher education candidates will be required to take and pass the content exam approved by the Utah State Office of Education in their major content area prior to student teaching.

A 2.75 minimum GPA is required for *both* admission to *and* graduation from the Secondary Teacher Education Program (STEP).

Geology Minor

GEO 1010 (BPS) Geology of National Parks: Introduction to Geology (F,Su) (3 cr) **or**
GEO 1110 (BPS)[4] The Dynamic Earth: Physical Geology (F,Sp) (4 cr) ..... 3 or 4
GEO 3200 (DSC) The Earth Through Time (Sp) 4

Students must also select 10 elective credits from Geology courses at the 3500 level or above.

[1] Students may need to complete prerequisite courses prior to enrolling in MATH 1210.
[2] GEO 2500 (a 1-credit course) is repeatable for credit, and must be taken *twice* for the student to earn the required 2 credits.
[3] PHYS 1020 may also be listed as USU 1360, ST: Energy.
[4] GEO 1110 is preferred.

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.

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. This is a departmental recognition which is separate from the University Honors program. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses.

Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school.

Geology majors with a minimum GPA of 3.30 may elect to complete the requirements for the Geology Honors degree option. For further information, students should contact their geology advisor or the geology department head.

Undergraduate Research Opportunities

The Department of Geology offers a range of opportunities for undergraduate students to participate in research activities under the guidance of a faculty mentor. All departmental undergraduate research activities are coordinated by the departmental undergraduate research coordinator, James Evans, (435) 797-1267, jpevans@cc.usu.edu. More information may be found on the Geology Department website: **http://www.usu.edu/geo/**

Learning Objectives

Upon graduation, geology majors are expected to be able to: (1) identify common minerals; (2) identify common fossils, as well as their ages and the conditions under which they lived; (3) describe sedimentary rocks and measure a stratigraphic section in the field; (4) create a surficial geologic map; (5) define and distiguish between, and determine the type of stress responsible for forming various structural features; (6) use a Brunton compass; (7) read topographic maps, as well as construct profiles from them; (8) read and make geologic maps, as well as construct cross sections from them; (9) know the ages of important geologic features and events in the Earth's history, as well as explain how and why the Earth has changed over time; (10) know the Earth's internal processes and the features produced by them; (11) collect and evaluate geologic data; (12) interpret and create graphs of quantitative data; and (13) communicate observations and interpretations, both orally and in writing.

Assessment

The Department of Geology relies on a variety of tools to periodically assess its undergraduate program, including: (1) student input in assessment; (2) value-added assessment; (3) college-level assessment; (4) alumni participation in assessment; and (5) faculty program assessment. For more information, please refer to the Geology Department assessment website at: **http://www.usu.edu/geo/assessment/assessment.htm**

Additional Information

For more information about bachelor's degree requirements for Geology programs, see the Geology Major Requirement Sheet, available from the department, or online at: **http://www.usu.edu/majorsheets/**

Graduate Programs

Admission Requirements

See general admission requirements on pages 101-102. In addition, applicants must have acceptable GRE scores and an acceptable GPA. For the Master of Science program, minimum scores of 40th percentile on the Verbal and Quantitative sections, a combined minimum of 1,000, and a GPA of 3.0 are required. For the PhD program, minimum scores of 50th percentile on the Verbal and Quantitative sections, a combined minimum of 1,200, and a GPA of 3.4 are required. For both programs, 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, 1215, 1220, 1225; PHYS 2210, 2220; MATH 1210; STAT 3000; and CS 1050 or CS 1400 or CEE 5190 or WATS 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: GEO 1110, 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 graduate study.

Degree Programs

Master of Science Degree—Geology

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 Biology; Civil and Environmental Engineering; Environment and Society; Mathematics and Statistics; Plants, Soils, and Biometeorology; Watershed Sciences; and Wildland Resources.

Master of Science Degree—Applied Environmental Geoscience

The department offers advanced study leading to the MS degree in Applied Environmental Geoscience. This terminal degree program requires a combination of advanced courses selected from Geology offerings, as well as additional courses from other units on campus, such as Civil and Environmental Engineering; Plants, Soils, Biometeorology; Biology; Chemistry and Biochemistry; Mathematics and Statistics; and the College of Natural Resources.

Doctor of Philosophy Degree

The Doctor of Philosophy degree in Geology requires original research in a specific area of geology, demonstration of broad knowledge in the field of geology, and demonstration of depth of knowledge in at least two areas of geology. The successful candidate must demonstrate a breadth of understanding in geology, as well as a depth of understanding in his or her chosen area(s) of emphasis. Potential students must show an ability to do creative research. This

research should be carried out during a significant period of time (i.e., during at least one year or three semesters in residence). 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 scope and quality that more than one journal or conference article can be derived from it.

Research Areas

Fields of graduate research include the following: geophysics, hydrogeology, igneous petrology, paleoecology (including invertebrate paleontology), sedimentology (including petrology, basin analysis, sedimentation, stratigraphy, and petroleum geology), process geomorphology, Quaternary geology, structural geology, and regional tectonics.

Degree Requirements

Master of Science Degree—Geology

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 GEO 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.

Master of Science Degree—Applied Environmental Geoscience

Only the Plan B nonthesis option is allowed for the MS degree in Applied Environmental Geoscience, which requires 32 credits. The Plan B option requires the production of a paper. 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 assistant dean or signed by the graduate dean. Plan B papers must be submitted to the Merrill-Cazier Library to be microfiched, and the binding receipt must be returned to the School of Graduate Studies.

Doctor of Philosophy Degree

There are two program tracks for this degree: academic and professional. The **academic track** is designed to prepare graduates for a career in academia or other teaching-related settings. It includes both coursework in education and classroom teaching experience under the supervision of a faculty teaching mentor. The **professional track** is designed to prepare graduates for work in professional careers with the petroleum industry, with other extractive industries, or in environmental and hydrologic consulting. It includes coursework in statistics, information systems, remote sensing, and GIS. Completion of a professional internship is encouraged.

Students completing a PhD in Geology must fulfill the following requirements:

1. Complete at least 90 credits of graduate coursework (including at least 21 credits of GEO 7970, Dissertation Research) beyond a BS degree *or* at least 60 credits (including at least 15 credits of GEO 7970, Dissertation Research) beyond an MS degree, with a minimum class grade of *B* and a minimum cumulative GPA of 3.3.

2. If an MS degree is completed first, then *no more than* 12 credits of the 60 credits required for the PhD degree may be taken in coursework numbered below the 6000 level. If an MS degree is *not* completed first, then *no more than* 21 credits of the 90 credits required for the PhD degree may be taken in coursework numbered below the 6000 level.

3. Complete at least 30 credits of advanced coursework (6000 level and above) beyond the BS degree *or* 21 credits of advanced coursework beyond the MS degree, including at least 15 credits of 7000-level geology coursework, and excluding GEO 6900, 7970, and 7990.

4. Complete 3 credits of GEO 7800 (Graduate Seminar Series).

5. **Academic Track:** Complete 9-12 credits of department-approved education or instructional technology courses, and successfully teach one geology course under the supervision of a faculty mentor. ELED/SCED 6190 and GEO 6900 (teaching internship) are required.

   Professional Track: Complete 9-12 credits of department-approved courses in statistics, remote sensing, and/or geographic information systems. Completion of a professional internship program is encouraged. Approved courses include BIE/BMET/WATS 6250, ENVS 6550, WATS 4930, 6760, WILD 6740, 6750.

6. Pass a written comprehensive examination showing depth and breadth of knowledge in geology and in the student's area(s) of emphasis. The student may be required to take additional classes to satisfy any deficiencies.

7. Successfully complete a written dissertation research proposal, present that proposal orally to the department, and defend it during an oral examination. The oral examination will include questions of a deep and probing nature, and may range beyond the dissertation proposal into areas unrelated to the student's specialization.

8. Complete at least 15 credits in GEO 7970 (Dissertation Research) if admitted with a prior master's degree, *or* 21 credits in GEO 7970 (Dissertation Research) without an earned master's degree.

9. Successfully complete and defend a dissertation. The dissertation will be a written document and may consist of several papers submitted or accepted for publication. The defense will be oral, including a presentation of the work and successful defense of the work to the faculty.

Research

There are six broad areas of research emphasis for graduate students and faculty within the department: (1) geomorphology, (2) geophysics, (3) hydrology, (4) petrology, (5) sedimentology, and (6) structural geology and regional tectonics. Summaries of these activites follow.

Department of Geology

Geomorphology research has included the study of climate, tectonic, and anthropogenic controls on landscape change, erosion, and sedimentation. This includes studies on hillslope processes, landscape evolution of the Colorado Plateau and Grand Canyon, the downstream effect of dams, and river restoration.

Geophysics examines the earth through quantitative methods, such as seismology, magnetics, GPS, geodesy, and gravity. Current geophysics research in the Department of Geology examines rates and magnitudes of crustal deformation through GPS techniques.

Research activity in **hydrogeology** has included 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.

Research in **petrology** focuses on the origin and evolution of magmatic systems, oceanic lithosphere, collisional orogens, and convergent margin systems. These efforts use field relations, phase chemistry, and whole rock geochemistry to decipher these systems, as well as determine their relationship to the tectonic and geochemical evolution of the Earth.

Research in **sedimentology** has included sedimentation and development of coral reefs and associated carbonate environments during Pleistocene and Holocene times, sequence stratigraphy of Paleozoic carbonate and detrital systems, study of mixed carbonate-siliciclastic deposition in Proterozoic and Paleozoic time, and Proterozoic basin analysis, isotope geochemistry, and paleobiology. Research activities are dominantly field-oriented, with studies ongoing in the western United States, Mexico, and the Caribbean.

Research in **structural geology** and **regional tectonics** has included the examination of the mechanical and chemical evolution of fault zones; the structural and tectonic development of extensional structures in the Great Basin; the development of fold-and-thrust structures in Idaho, Montana, Wyoming, and Utah; and the characterization of fluid-flow properties in fractured crystalline rocks.

Geology faculty members commonly interact with the faculty and staff of the Utah Water Research Laboratory, the Department of Watershed Sciences, 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 or PhD 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/geo/**

Geology Faculty

Professors
James P. Evans, structural geology, structural petrology
W. David Liddell, marine ecology, paleoecology, sedimentology
John W. Shervais, igneous petrology, geochemistry, tectonics

Adjunct Professors
John C. Schmidt, fluvial geomorphology
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. Janecke, tectonics, structural geology
Peter T. Kolesar, carbonate petrology, geochemistry
Thomas E. Lachmar, hydrogeology
Joel L. Pederson, process geomorphology, Quaternary geology

Adjunct Associate Professor
Janis L. Boettinger, soil mineralogy

Assistant Professors
Carol M. Dehler, sedimentation, geochemical cycles
Anthony R. Lowry, geophysics

Lecturer
Susan K. Morgan, science education, carbonate petrology

Course Descriptions

Geology (GEO), pages 633-636

Department of Health, Physical Education and Recreation

Interim Department Head: Dennis A. Nelson
Location: Health, Physical Education and Recreation 122A
Phone: (435) 797-1498
FAX: (435) 797-3759
E-mail: hper@cc.usu.edu
WWW: http://cehs.usu.edu/hper/

Graduate Program Coordinator:
Richard D. Gordin, Jr., HPER 136, (435) 797-1506,
gordin@cc.usu.edu

Undergraduate Academic Advisor:
Mary Lou Reynolds, HPER 145, (435) 797-1278,
reynolds@cc.usu.edu

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.

Undergraduate Research Opportunities

Undergraduate students interested in health, physical education and recreation research are encouraged to assist faculty members with grant writing, data collection, data analysis, and report writing. Additionally, students can assist faculty members with submissions of scholarly presentations and articles, as needed.

Departmental Admission Requirements

Health Education Specialist Major 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 major. Students must formally apply to the School Health minor. Pre-minor coursework must be completed before application to the school health minor.

Pre-minor coursework for the School Health minor includes:
BIOL 2320 Human Anatomy (Sp,Su) (4 cr) **or**
BIOL 2420 Human Physiology (F,Sp,Su) (4 cr).....4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose (F,Sp,Su) .3
HEP 2500 Health and Wellness (F,Sp,Su) 2
MATH 1050 (QL) College Algebra (F,Sp,Su) (4 cr) **or**
STAT 1040 (QL) Introduction to Statistics (F,Sp,Su)
(or higher) (3 cr) .....3 or 4
NFS 1020 (BLS) Science and Application of Human Nutrition
(F,Sp,Su) 3

For application materials and deadlines, contact the HPER Department Main Office (PE 122).

Physical Education Major 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.

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

The HPER Department offers a program of study leading to a Bachelor of Science degree in Health Education. The program offers two emphasis areas. The **community health** emphasis prepares students to work in state and local health departments, clinical settings, nonprofit health organizations, wellness centers, and private industry. Students in the **school health** emphasis earn a teaching license upon graduation and will primarily teach health courses in middle and high schools. All Health Education Specialist majors will be well-prepared to sit for the nationally recognized Certified Health Education Specialist exam.

A. Core Requirements (30 credits)

The following courses are required for all students in **both** the School Health Emphasis *and* the Community Health Emphasis. A grade of *C-* or higher is required in all HEP courses.

HEP 2000 First Aid and Emergency Care (F,Sp,Su) 2
HEP 2500 Health and Wellness (F,Sp,Su) 2
HEP 3000 Drugs and Human Behavior (F,Su) 3
HEP 3200 Consumer Health (F,Su).....3
HEP 3600 (CI) Introduction to Community Health (F) 3
HEP 4200 (QI)[2] Planning and Evaluation for Health Education (F).....3
HEP 5000 (CI)[8,11] Race, Culture, Class, and Gender
Issues in Health (Sp) 3
BIOL 2320 Human Anatomy (Sp,Su) 4

BIOL 2420 Human Physiology (F,Sp,Su) 4
NFS 1020 (BLS) Science and Application of Human Nutrition (F,Sp,Su) 3

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 (72 credits)

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, as well as 6 credits selected from the list of elective courses.

A. Required Professional Core (36 credits)

HEP 3900[27] Social Marketing in Health Education (Sp) 3
HEP 4100[9] Foundations of Community Health (Sp) 3
HEP 4400 Creative Methods in Teaching Health Education (F,Sp) 3
HEP 4600[10] Field Work in Health Education (F,Sp,Su) 9
HEP 5300[26] Grant Proposal Writing (Sp) 3
INST 5400 Computer Applications for Instruction and Training (F,Sp,Su) 3
NFS 4480 Community Nutrition (F) 3
PSY 2800 (QI)[12] Psychological Statistics (F,Sp) 3
PUBH 4030[13] Communicable Disease Control (F) 3
PUBH 4040[14] Fundamentals of Epidemiology (Sp) 3

B. Elective Courses (select 6 credits)

Students must complete 6 credits of elective courses, taking at least one course from two of the following three areas:

Human Nature

ANTH 3110 North American Indian Cultures (F) 3
ANTH 4130 (DSS)[8] Medical Anthropology: Matter, Culture, Spirit, and Health (Sp) 3
FCHD 1500 (BSS)[8] Human Development Across the Lifespan (F,Sp) .. 3
FCHD 3110[16] Human Sexuality (F,Su) 3
FCHD 3530[1] Adolescence (F,Sp) 3
PSY 1010 (BSS)[8] General Psychology (F,Sp,Su) 3
PSY 1100[15] Developmental Psychology: Infancy and Childhood (F,Sp) 3
PSY 1210[15] Psychology of Human Adjustment (F,Sp) 3
PSY 4240 (DSS)[8,15] Multicultural Psychology (F) 3
SOC 2370 Sociology of Gender (F) 3
SOC 3010 Race, Class, and Gender (F,Sp) 3
SOC 3330 Medical Sociology (F) 3
SW 2100[17] Human Behavior in the Social Environment (Sp) 3

Content and Methods in Education

OSS 1400[19] Microcomputer Applications (F,Sp,Su) 3
OSS 1550 (CI)[8] Business Correspondence 3
HEP 3100[22] School Health Programs (F) 3
HEP 3400 Stress Management (F,Sp) 3
HEP 3500 Elementary School Health Education (F,Sp) 2
HEP 4500[22] Sexuality Education Within the Schools (Sp) 3
HEP 5700 Special Topics in Health (Arr) 1-3
JCOM 1130[20] Beginning Newswriting for the Mass Media (F,Sp,Su) 3
JCOM 2220[21] Introduction to Video Media (F,Sp) 3
JCOM 3010 Communication Research Methods (F,Sp) 3
NFS 2020[23] Nutrition Throughout the Life Cycle (Sp) 3
PEP 4100[24] Exercise Physiology and Principles of Conditioning (F,Sp) 4
SOC 3750 Sociology of Aging (F) 3
SPCH 1020 (CI)[8] Public Speaking (F,Sp) 3

Organizational Dynamics in the Family and Community

FCHD 3100[16] Abuse and Neglect in Family Context (F,Sp) 3
JCOM 2300 Introduction to Public Relations (F,Sp) 3
JCOM 3400 (DSS) Gender and Communication 3
MHR 3110 (DSS) Managing Organizations and People (F,Sp,Su) 3
MHR 3820 (DSS)[8] International Management (F,Sp) 3
POLS 3810 (DSS)[8] Introduction to Public Policy (F) 3
PUBH 3120 Family and Community Health (Sp) 3
PUBH 3310[25] Occupational Health and Safety (F) 3
SPCH 2110 (CI)[8] Interpersonal Communication (F,Sp) 3
SPCH 3250 (CI)[8] Organizational Communication (F) 3
SW 2400[17] Social Work with Diverse Populations (Sp) 3
SW 3750[18] Medical Social Services 3

Suggested Four-year Course of Study for Health Education Specialist Major, Community Health Emphasis

Freshman Year (28 credits)

Fall Semester (14 credits)

HEP 2500 Health and Wellness 2
PSY 1010 (BSS) General Psychology (3 cr) **or**
FCHD 1500 (BSS) Human Development Across the Lifespan (3 cr) 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
STAT 1040 (QL) Introduction to Statistics 3
Breadth Creative Arts (BCA) course 3

Spring Semester (14 credits)

HEP 2000 First Aid and Emergency Care 2
NFS 1020 (BLS) Science and Application of Human Nutrition 3
Breadth American Institutions (BAI) course 3
Breadth Humanities (BHU) course 3
Breadth Physical Sciences (BPS) course 3

Sophomore Year (32 credits)

Fall Semester (16 credits)

HEP 3000 Drugs and Human Behavior 3
HEP 3200 Consumer Health 3
HEP 3600 (CI) Introduction to Community Health 3
BIOL 2420 Human Physiology 4
Health elective course(s) 3

Spring Semester (16 credits)

HEP 3900 Social Marketing in Health Education 3
HEP 5300 Grant Proposal Writing 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
BIOL 2320 Human Anatomy 4
Depth Humanities and Creative Arts (DHA) course 3

Junior Year (30 credits)

Fall Semester (15 credits)

HEP 4200 (QI) Planning and Evaluation for Health Education 3
INST 5400 Computer Applications for Instruction and Training 3
NFS 4480 Community Nutrition 3
PSY 2800 (QI) Psychological Statistics 3
PUBH 4030 Communicable Disease Control 3

Spring Semester (15 credits)

HEP 4100 Foundations of Community Health 3
HEP 4400[22] Creative Methods in Teaching Health Education (F,Sp) 3
HEP 5000 (CI) Race, Culture, Class, and Gender Issues in Health 3
PUBH 4040 Fundamentals of Epidemiology 3
Depth Social Sciences (DSS) course 3

Senior Year (30 credits)
Fall Semester (14 credits)
HEP 4600 Field Work in Health Education 9
Health elective course 3
Elective course 2

Spring Semester (16 credits)
Elective courses 16

School Health Emphasis (74 credits)
(only for students desiring teacher licensure)

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. 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 School Health Education 9-credit core, and the Secondary Education 35-credit core.

Note: Students must be formally accepted into the School Health Emphasis before enrolling for School Health Core Courses.

A. Required School Health Core (9 credits)
FCHD 1500 (BSS)[8] Human Development Across the Lifespan (F,Sp) .. 3
HEP 3100[5] School Health Programs (F) 3
HEP 4500[5] Sexuality Education within the Schools (Sp) 3

B. Secondary Teacher Education Program (STEP) (35 credits)
Level 1 (15-week courses)[3]
INST 3500 Technology Tools for Secondary Teachers (F,Sp,Su) 1
SCED 3100 Motivation and Classroom Management (F,Sp) 3
SCED 3210 (CI/DSS) Educational and Multicultural Foundations (F,Sp) 3
HEP 3300[5] Clinical Experience I (or minor Clinical Experience I) (F,Sp) 1
HEP 4400[7] Creative Methods in Teaching Health Education (F,Sp) (3 cr) **or**
Minor Special Methods Course (3 cr) 3

Level 2 (15-week courses)[4]
SPED 4000 Education of Exceptional Individuals (may be taken anytime) (F,Sp,Su) 2
SCED 4200 (CI) Reading, Writing, and Technology (F,Sp) 3
SCED 4210 Cognition and Evaluation of Student Learning (F,Sp) 3
HEP 4300[5] Clinical Experience II (or minor Clinical Experience II) (F,Sp) 1
HEP 4400[7] Creative Methods in Teaching Health Education (F,Sp) (3 cr) **or**
Minor Special Methods Course (3 cr) 3

Level 3 (includes 13 weeks of student teaching and 2 weeks of Student Teaching Seminar)[6]
HEP 5500[5] Student Teaching Seminar (2 weeks) (F,Sp) 2
HEP 5630[5] Student Teaching (13 weeks) (F,Sp) 10

Suggested Four-year Course of Study for Health Education Specialist Major, School Health Emphasis

Freshman Year (28-29 credits)
Fall Semester (14-15 credits)
HEP 2500 Health and Wellness 2
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
FCHD 1500 (BSS) Human Development Across the Lifespan 3
STAT 1040 (QL) Introduction to Statistics (3 cr) **or**
MATH 1050 (QL) College Algebra (4 cr) ..... 3 or 4
NFS 1020 (BLS) Science and Application of Human Nutrition 3

Spring Semester (14 credits)
HEP 2000 First Aid and Emergency Care 2
Breadth American Institutions (BAI) course 3
Breadth Creative Arts (BCA) course 3
Breadth Humanities (BHU) course 3
Breadth Physical Sciences (BPS) course 3

Sophomore Year (33 credits)
Fall Semester (17 credits)
BIOL 2420 Human Physiology 4
HEP 3000 Drugs and Human Behavior 3
HEP 3200 Consumer Health 3
Minor courses 7

Spring Semester (16 credits)
ENGL 2010 (CL2) Intermediate Writing: Reseach Writing in a Persuasive Mode 3
BIOL 2320 Human Anatomy 4
Depth Humanities and Creative Arts (DHA) course 3
Minor courses 6

Junior Year (32 credits)
Fall Semester (15 credits)
HEP 3100 School Health Programs 3
HEP 3600 (CI) Introduction to Community Health 3
Minor courses 9

Spring Semester (17 credits)
HEP 4500 Sexuality Education within the Schools 3
HEP 5000 (CI) Race, Culture, Class, and Gender Issues in Health 3
Level I courses 11

Senior Year (27 credits)
Fall Semester (15 credits)
HEP 4200 (QI) Planning and Evaluation for Health Education 3
Level II courses 12

Spring Semester (12 credits)
Level III courses 12

School Health Minor (33 credits)
Note: This is an approved teaching minor through the Department of Secondary Education. Students must be formally accepted into the School Health minor before enrolling for the School Health Education Core Courses. Students completing this minor *must* have a teaching major. Applications for the minor are available from the HPER Department. Prior to admission to the minor, the following courses must be completed: ENGL 1010, BIOL 2320 or 2420, HEP 2500, MATH 1050 or STAT 1040 (or higher), and NFS 1020. A grade of *C-* or higher is required in all HEP courses.

FCHD 1500 (BSS)[8] Human Development Across the Lifespan (F,Sp) .. 3
HEP 2000 First Aid and Emergency Care (F,Sp,Su) 2
HEP 2500 Health and Wellness (F,Sp,Su) 2
HEP 3000 Drugs and Human Behavior (F,Su) 3
HEP 3100[5] School Health Programs (F) 3
HEP 3200 Consumer Health (F,Su) 3
HEP 3300[5] Clinical Experience I (F,Sp) (1 cr) **or**
HEP 4300[5] Clinical Experience II (F,Sp) (1 cr) 1
HEP 4400[5] Creative Methods in Teaching Health Education (F,Sp) 3
HEP 4500[5] Sexuality Education within the Schools (Sp) 3

HEP 5000 (CI)[8,11] Race, Culture, Class, and Gender Issues in Health (Sp) 3
BIOL 2320 Human Anatomy (Sp,Su) (4 cr) **or**
BIOL 2420 Human Physiology (F,Sp,Su) (4 cr) 4
NFS 1020 (BLS) Science and Application of Human Nutrition (F,Sp,Su) 3

[1]Prerequisites: Junior standing and FCHD 1500.
[2]Prerequisites: HEP 3600; and STAT 1040 or MATH 1030 (or higher). HEP 3100 or 4100 is recommended prior to taking this course. Senior standing is also recommended.
[3]Prerequisite: Admittance to teacher education program.
[4]Prerequisite: Admission to teacher education program and completion of level 1.
[5]Prerequisite: Formal acceptance into the School Health emphasis or School Health minor.
[6]Prerequisite: Completion of Levels 1 and 2; Student Teaching Placement.
[7]Students in the School Health emphasis must receive formal acceptance into the emphasis prior to taking HEP 4400. During the level in which HEP 4400 is not taken (either Level 1 or Level 2), students should complete a minor special methods course.
[8]Course approved for University Studies credit.
[9]Prerequisite: HEP 2500.
[10]Prerequisites: HEP 3600, 4100, and consent of instructor.
[11]Prerequisite: Junior standing (or higher).
[12]Prerequisite: STAT 1040 (or higher).
[13]It is recommended that BIOL 1110 or 3300; or BIOL 2320 and 2420 be completed prior to taking PUBH 4030.
[14]It is recommended that a course in statistics, such as STAT 3000 or PSY 2800, and PUBH 4030 be completed prior to taking PUBH 4040.
[15]Prerequisite: PSY 1010.
[16]Prerequisites: FCHD 1500, 2400.
[17]Prerequisite: SW 1010.
[18]Prerequisites: SW 1010, 2100, 2400.
[19]Prerequisite: Ability to keyboard at 25 wpm minimum.
[20]Prerequisites: ENGL 1010 or equivalent, English Proficiency Test, typing test, and permission of Department of Journalism and Communication.
[21]Prerequisites: Minimum grades of *C+* in JCOM 1130, 1500, and 2010.
[22]Prerequisite: Consent of instructor for students not in the School Health emphasis or the School Health minor.
[23]Prerequisite: NFS 1020.
[24]Prerequisites: BIOL 2320, 2420, MATH 1050.
[25]Prerequisite: CHEM 1220.
[26]Prerequisites: HEP 2500, ENGL 2010, and passing score on Computer and Information Literacy (CIL) exam.
[27]Prerequisites: HEP 2500 and passing score on Computer and Information Literacy (CIL) exam.

Parks and Recreation Major (54 credits)

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. A 2.5 total GPA is required for graduation.

A. Parks and Recreation Core Courses (45 credits)

PRP 1000 Introduction to Parks and Recreation (F,Sp) 3
PRP 2100 Leisure and Aging (F) 2
PRP 2500 Outdoor Recreation Management (F) 3
PRP 3000 Recreation Programming (Sp) 3
PRP 3200 Recreation Event Planning and Management (Sp) 3
PRP 3500 (CI)[29, 30] Community Recreation Administration (F) 3
PRP 3750 Commercial Recreation and Tourism (Sp) 3
PRP 3900 Introduction of Therapeutic Recreation for Diverse Populations (F) 3
PRP 4300[33] Legal Aspects of Recreation and Leisure (Sp) 3
PRP 4400[34] Recreation Facility Design and Management (F) 3
PRP 4700 Internship Seminar (Sp) 1
PRP 4750[31] Recreation Internship (F,Sp,Su) 6
PRP 5000 (CI)[29,32] Seminar in Recreation (F,Sp) 3
INST 5400 Computer Applications for Instruction and Training (F,Sp,Su) 3
ENVS 3300 Fundamentals of Recreation Resources Management (F) 3

B. Electives (9 credits)

Select at least 9 credits from the following courses:
FCHD 1500 (BSS)[28,35] Human Development Across the Lifespan (F,Sp) 3
PRP 1500 Social Recreation Leadership (Sp) 3
HEP 2000 First Aid and Emergency Care (F,Sp,Su) 2
HEP 3400 Stress Management (F,Sp) 3
LAEP 1030 (BCA)[28] Introduction to Landscape Architecture (F,Sp,Su) 3
SOC 3010 Race, Class, and Gender (F,Sp) 3
ENVS 4130 Recreation Policy and Planning (Sp) 3
ENVS 4500 (CI)[29] Wildland Recreation Behavior (F) 3
ENVS 4600 Natural Resource Interpretation (F) 3
Activity Courses in Physical Education (numbered PE 1000-2000) 1-3

C. Additional Requirements

In addition to the above requirements for the major, students are required to select a minor from an approved area outside the major.

Suggested Four-year Course of Study for Parks and Recreation Major

Freshman Year (29-30 credits)

Fall Semester (15-16 credits)
PRP 1000 Introduction to Parks and Recreation 3
MATH 1030 (QL) Quantitative Reasoning (3 cr) **or**
STAT 1040 (QL) Introduction to Statistics (3 cr) **or**
MATH 1050 (QL) College Algebra (4 cr) ..... 3 or 4
Parks and Recreation elective course 3
Breadth American Institutions (BAI) course 3
Breadth Humanities (BHU) course 3

Spring Semester (14 credits)
PRP 2100 Leisure and Aging 2
Parks and Recreation elective course(s) 3
Breadth Life Sciences (BLS) course 3
Breadth Creative Arts (BCA) course 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3

Sophomore Year (30 credits)

Fall Semester (15 credits)
PRP 2500 Outdoor Recreation Management 3
PRP 3900 Introduction of Therapeutic Recreation for Diverse Populations 3
INST 5400 Computer Applications for Instruction and Training 3
Breadth Physical Sciences (BPS) course 3
Minor course(s) 3

Spring Semester (15 credits)
PRP 3000 Recreation Programming 3
PRP 3750 Commercial Recreation and Tourism 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Minor course(s) 3
Breadth Social Sciences (BSS) course 3

Junior Year (28 credits)

Fall Semester (15 credits)
PRP 3500 (CI) Community Recreation Administration 3
PRP 4400 Recreation Facility Design and Management 3
ENVS 3300 Fundamentals of Recreation Resources Management 3
Parks and Recreation elective course 3
Minor course(s) 3

Spring Semester (13 credits)
PRP 3200 Recreation Event Planning and Management....3
PRP 4300 Legal Aspects of Recreation and Leisure....3
PRP 4700 Internship Seminar....1
Upper-division Depth Life and Physical Sciences (DSC) course....3
Quantitative Intensive (QI) course....3

Senior Year (33 credits)
Fall Semester (17 credits)
PRP 5000 (CI) Seminar in Recreation....3
Upper-division Depth Humanities and Creative Arts (DHA) course....3
Elective courses....8
Minor course(s)....3

Spring Semester (16 credits)
PRP 4750 Recreation Internship....6
Elective courses....7
Minor course(s)....3

Parks and Recreation Minor
(for students not majoring in Parks and Recreation)

A. Required Courses (15 credits)
PRP 1000 Introduction to Parks and Recreation (F,Sp)....3
PRP 1500 Social Recreation Leadership (Sp)....3
PRP 2500 Outdoor Recreation Management (F)....3
PRP 3000 Recreation Programming (Sp)....3
PRP 3500 (CI)[29] Community Recreation Administration (F)....3

B. Elective Courses (5 credits)
Select at least 5 credits from the following courses.

PRP 2100 Leisure and Aging (F)....2
PRP 3900 Introduction of Therapeutic Recreation for Diverse Populations (F)....3
PRP 4300[33] Legal Aspects of Recreation and Leisure (Sp)....3
PRP 4400[34] Recreation Facility Design and Management (F) (prereq: PRP 3000)....3
ENVS 3300 Fundamentals of Recreation Resources Management (F)....3

[28]FCHD 1500 will meet the University Studies Breadth Social Sciences (BSS) requirement. LAEP 1030 will meet the University Studies Breadth Creative Arts (BCA) requirement.
[29]This course is approved for Communications Intensive (CI) University Studies credit.
[30]PRP 1000 and 3000 are prerequisites to PRP 3500.
[31]PRP 1000, 3000, 4300, and 4700 are prerequisites to PRP 4750. Students must complete 200 hours of related work experience prior to enrolling in PRP 4750.
[32]PRP 1000, 2500, 3500, 3750, 3900, 4000, and 4400 are prerequisites to PRP 5000.
[33]PRP 1000 and 3000 are prerequisites for PRP 4300.
[34]PRP 3000 is a prerequisite for PRP 4400.
[35]FCHD 1500 is also available online. For more information, contact the FCHD Department or see the current *Schedule of Classes*.

Physical Education Major: Exercise Science Emphasis (58 credits)
A 2.75 total GPA is required for graduation.

A. Prerequisites (12 credits)
BIOL 2320 Human Anatomy (Sp,Su)....4
BIOL 2420 Human Physiology (F,Sp,Su)....4
MATH 1050 (QL)[36] College Algebra (F,Sp,Su)....4

B. Professional Foundation (28 credits)
PE 3000 Dynamic Fitness (F,Sp,Su)....3
HEP 2500 Health and Wellness (F,Sp,Su)....2
PEP 2000 Introduction and History of Physical Education (F,Sp)....2
PEP 3100 Athletic Injuries (F,Sp)....3
PEP 3250 Anatomical Kinesiology (Sp)....3
PEP 4100[37, 53] Exercise Physiology and Principles of Conditioning (F,Sp)....4
PEP 4200 (QI)[37, 52, 53] Biomechanics (F,Sp)....4
PEP 4400 (QI)[52] Evaluation in Physical Education (F,Sp)....3
PEP 5100 Fitness Assessment and Exercise Programs (prerequisite: PEP 4100) (F)....4

C. Professional Development (15 credits)

HPER (5 credits minimum)
HEP 2000 First Aid and Emergency Care (F,Sp,Su)....2
HEP 3200 Consumer Health (F,Su)....3
HEP 3400 Stress Management (F,Sp)....3
PEP 4000 Mental Aspects of Sports Performance (F,Sp,Su)....3
PEP 5070 Sport Sociology (Sp)....3
PEP 5430 (CI)[51] The History and Philosophy of Physical Education (F)....3

Biology (4 credits minimum, including lab)
BIOL 1010 (BLS) Biology and the Citizen (F,Sp,Su)....3
BIOL 1020 Biological Discovery: A Lab Course (F,Sp)....1
BIOL 1610 Biology I (F)....4
BIOL 1620 (BLS)[38] Biology II (Sp)....4
BIOL 3060 (QI)[39, 52] Principles of Genetics (F,Sp,Su)....4
BIOL 3300[40] General Microbiology (F,Sp)....4

Chemistry (3 credits minimum)
CHEM 1010 (BPS) Introduction to Chemistry (F,Sp)....3
CHEM 1110 (BPS)[55] General Chemistry I (F,Sp)....4
CHEM 1115[41] General Chemistry Laboratory (Sp)....1
CHEM 1120 (BPS)[42] General Chemistry II (Sp)....4
CHEM 1210[43] Principles of Chemistry I (F,Sp)....4
CHEM 1215[44] Chemistry Principles Laboratory I (F,Sp)....1
CHEM 1220 (BPS)[45] Principles of Chemistry II (F,Sp,Su)....4
CHEM 1225[46] Chemistry Principles Laboratory II (F,Sp)....1

Integrated (3 credits minimum)
NFS 1020 (BLS) Science and Application of Human Nutrition (F,Sp,Su)....3
NFS 3020 Nutrition and Physical Performance (F)....2
PHYS 1100 (BPS) Great Ideas in Physics....3
PHYS 1200 (BPS) Introduction to Physics by Hands-on Exploration....4
PHYS 2110[47] The Physics of Living Systems I....4
PHYS 2120 (BPS)[48] The Physics of Living Systems II....4
PSY 1010 (BSS) General Psychology (F,Sp,Su)....3
PSY 2100[49] Developmental Psychology: Adolescence (Sp)....3
PSY 2800 (QI)[50] Psychological Statistics (F,Sp)....3
PSY 3210 (DSS) Abnormal Psychology (F,Sp)....3
STAT 1040 (QL)[54] Introduction to Statistics (F,Sp,Su)....3

D. Skill Development (3 credits)
Three **different** physical education activity courses, numbered from PE 1000 to PE 2120 (F,Sp,Su)....3

[36]Math ACT score of at least 23, MATH 1010, or satisfactory score on placement exam is a prerequisite for this course.
[37]BIOL 2320, 2420, MATH 1050 are prerequisites for this course.
[38]BIOL 1610 is a prerequisite for this course.
[39]BIOL 1610; MATH 1050; and CHEM 1110 or 1220 are prerequisites for this course.
[40]BIOL 1610 (with a grade of *C-* or better); and CHEM 1120 or 2300 or 2310 (may be taken concurrently) are prerequisites for this course.
[41]CHEM 1110 must be taken previously or concurrently.
[42]CHEM 1110 is a prerequisite for this course.
[43]MATH 1050 or higher, or Math ACT score of at least 25, is a prerequisite for this course.
[44]CHEM 1210 must be taken previously or concurrently.
[45]CHEM 1210 is a prerequisite for this course.
[46]CHEM 1215 is a prerequisite for this course.
[47]MATH 1100 or 1210 is a prerequisite for this course.
[48]MATH 1100 or 1210, and PHYS 2110 are prerequisites for this course.
[49]PSY 1010 is a prerequisite for this course.
[50]STAT 1040 is a prerequisite for this course.

[51]This course is approved for Communications Intensive (CI) University Studies credit.
[52]This course is approved for Quantitative Intensive (QI) University Studies credit.
[53]Admission to the Physical Education Major is required prior to enrolling in this course.
[54]Math ACT score of 19 or greater, or MATH 1010, or 70 percent or greater on MATH 1050 placement test is a prerequisite for this course.
[55]Math ACT score of at least 23, or MATH 1050 or higher, is a prerequisite for this course.

Suggested Four-year Course of Study for Physical Education Major, Exercise Science Emphasis

Freshman Year (32 credits)
Fall Semester (16 credits)
PEP 2000 Introduction and History of Physical Education 2
HEP 2500 Health and Wellness 2
BIOL 1010 (BLS) Biology and the Citizen 3
BIOL 1020 Biological Discovery: A Lab Course 1
MATH 1050 (QL) College Algebra 4
PE activity course 1
Elective course(s) 3

Spring Semester (16 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
PSY 1010 (BSS) General Psychology 3
PE activity course 1
Breadth American Institutions (BAI) course 3
Breadth Humanities (BHU) course 3
Elective course(s) 3

Sophomore Year (29 credits)
Fall Semester (14 credits)
PE 3000 Dynamic Fitness 3
PEP 3100 Athletic Injuries 3
BIOL 2420 Human Physiology 4
PE activity course 1
Breadth Creative Arts (BCA) course 3

Spring Semester (15 credits)
BIOL 2320 Human Anatomy 4
CHEM 1010 (BPS) Introduction to Chemistry 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
HPER elective course(s) 5

Junior Year (27 credits)
Fall Semester (15 credits)
PEP 3250 Anatomical Kinesiology 3
PEP 4400 (QI) Evaluation in Physical Education 3
Upper-division Communications Intensive (CI) course 3
Upper-division Depth Humanities and Creative Arts (DHA) course 3
Upper-division Depth Social Sciences (DSS) course 3

Spring Semester (12 credits)
PEP 4100 Exercise Physiology and Principles of Conditioning 4
PEP 4200 (QI) Biomechanics 4
Upper-division Communications Intensive (CI) course 3
Upper-division elective course 1

Senior Year (32 credits)
Fall Semester (15 credits)
PEP 5100 Fitness Assessment and Exercise Programs 4
Elective courses 11

Spring Semester (17 credits)
Elective courses 17

Physical Education Major: Pre-Physical Therapy Emphasis (76 credits)

Please note that it is the student's responsibility to check with the individual physical therapy schools concerning courses required for admission. Completion of Utah State University's Department of HPER Pre-Physical Therapy emphasis will *not guarantee* admission into physical therapy school. A 3.0 total GPA is required to graduate.

A. Prerequisites (15 credits)
BIOL 2320 Human Anatomy (Sp,Su) 4
BIOL 2420 Human Physiology (F,Sp,Su) 4
MATH 1050 (QL)[56] College Algebra (F,Sp,Su) 4
PSY 1010 (BSS) General Psychology (F,Sp,Su) 3

B. Professional Foundations (30 credits)
PE 3000 Dynamic Fitness (F,Sp,Su) 3
PEP 2020 Introduction to Physical Therapy (F) 2
PEP 3100 Athletic Injuries (F,Sp) 3
PEP 3250 Anatomical Kinesiology (Sp) 3
PEP 4100[57, 72] Exercise Physiology and Principles of Conditioning (F,Sp) 4
PEP 4200 (QI)[57, 71, 72] Biomechanics (F,Sp) 4
PEP 4250 Advanced Cooperative Work Experience (F,Sp,Su) 4
PEP 4400 (QI)[71] Evaluation in Physical Education (F,Sp) 3
PEP 5100 Fitness Assessment and Exercise Programs (prerequisite: PEP 4100) (F) 4

C. Professional Development (30-31 credits)
Biology (4 credits minimum, including lab)
BIOL 1010 (BLS) Biology and the Citizen (F,Sp,Su) 3
BIOL 1020 Biological Discovery: A Lab Course (F,Sp) 1
BIOL 1610 Biology I (F) 4
BIOL 1620 (BLS)[58] Biology II (Sp) 4
BIOL 3060 (QI)[59, 71] Principles of Genetics (F,Sp,Su) 4
BIOL 3300[60] General Microbiology (F,Sp) 4

Chemistry (9 credits minimum)
CHEM 1110 (BPS)[73] General Chemistry I (F,Sp) 4
CHEM 1115[74] General Chemistry Laboratory (Sp) 1
CHEM 1120 (BPS)[75] General Chemistry II (Sp) 4
Or
CHEM 1210[61] Principles of Chemistry I (F,Sp) 4
CHEM 1215[62] Chemistry Principles Laboratory I (F,Sp) 1
CHEM 1220 (BPS)[63] Principles of Chemistry II (F,Sp,Su) 4
CHEM 1225[64] Chemistry Principles Laboratory II (F,Sp) 1

Mathematics and Statistics (6 credits minimum)
Choose one course from the following:
MATH 1100 (QL)[65] Calculus Techniques (higher-numbered course may be substituted) (F,Sp,Su) 3
MATH 1210 (QL)[65] Calculus I (F,Sp,Su) 4

Choose one course from the following:
STAT 2000 (QI)[66] Statistical Methods (F,Sp) 3
STAT 2300 (QL)[66] Business Statistics (F,Sp,Su) 4
STAT 3000 (QI)[67] Statistics for Scientists (F,Sp,Su) 3

Physics (8 credits minimum)
PHYS 2110[68] The Physics of Living Systems I 4
PHYS 2120 (BPS)[69] The Physics of Living Systems II 4

Psychology (3 credits minimum)
PSY 1210[70] Psychology of Human Adjustment (F,Sp) 3
PSY 2100[70] Developmental Psychology: Adolescence (Sp) 3
PSY 3210[70] **(DSS)** Abnormal Psychology (F,Sp) 3

[56]Math ACT score of at least 23, MATH 1010, or satisfactory score on placement exam is a prerequisite for this course.
[57]BIOL 2320, 2420, MATH 1050 are prerequisites for this course.
[58]BIOL 1610 is a prerequisite for this course.
[59]BIOL 1610; MATH 1050; and CHEM 1110 or 1220 are prerequisites for this course.
[60]BIOL 1610 (with a grade of *C*- or better); and CHEM 1120 or 2300 or 2310 (may be taken concurrently) are prerequisites for this course.
[61]MATH 1050, or Math ACT score of at least 25, is a prerequisite for this course.
[62]CHEM 1210 must be taken previously or concurrently.
[63]CHEM 1210 is a prerequisite for this course.
[64]CHEM 1215 is a prerequisite for this course.
[65]MATH 1050, or a Math ACT score of at least 25, is a prerequisite for MATH 1100; 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, are prerequisites for MATH 1210.
[66]MATH 1050 is a prerequisite for this course.
[67]MATH 1100 or 1210 is a prerequisite for this course.
[68]MATH 1100 or 1210 is a prerequisite for this course.
[69]MATH 1100 or 1210, and PHYS 2110 are prerequisites for this course.
[70]PSY 1010 is a prerequisite for this course.
[71]This course is approved for Quantitative Intensive (QI) University Studies credit.
[72]Admission to the Physical Education Major is required prior to enrolling in this course.
[73]Math ACT score of at least 23, or MATH 1050 or higher, is a prerequisite for this course.
[74]CHEM 1110 must be taken previously or concurrently.
[75]CHEM 1110 is a prerequisite for this course.

Suggested Four-year Course of Study for Physical Education Major, Pre-Physical Therapy Emphasis

Freshman Year (27 credits)
Fall Semester (13 credits)
PEP 2020 Introduction to Physical Therapy 2
BIOL 1010 (BLS) Biology and the Citizen 3
BIOL 1020 Biological Discovery: A Lab Course 1
MATH 1050 (QL) College Algebra 4
PSY 1010 (BSS) General Psychology 3

Spring Semester (14 credits)
PEP 3100 Athletic Injuries 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MATH 1060 Trigonometry 2
USU 1300 (BAI) U.S. Institutions 3
Breadth Humanities (BHU) course 3

Sophomore Year (29 credits)
Fall Semester (14-15 credits)
PE 3000 Dynamic Fitness 3
BIOL 2420 Human Physiology 4
MATH 1100 (QL) Calculus Techniques (3 cr) **or**
MATH 1210 (QL) Calculus I (4 cr) ..... 3 or 4
Breadth Creative Arts (BCA) course 3
Elective course 1

Spring Semester (15 credits)
BIOL 2320 Human Anatomy 4
CHEM 1110 (BPS) General Chemistry I (4 cr) **or**
CHEM 1210 Principles of Chemistry I (4 cr) 4
CHEM 1115 General Chemistry Laboratory (1 cr) **or**
CHEM 1215 Chemical Principles Laboratory I (1 cr) 1
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Communications Intensive (CI) course 3

Junior Year (33-34 credits)
Fall Semester (16 credits)
PEP 4250 Advanced Cooperative Work Experience 4
PEP 3250 Anatomical Kinesiology 3
CHEM 1120 (BPS) General Chemistry II (4 cr) **or**
CHEM 1220 (BPS) Principles of Chemistry II (4 cr) 4
CHEM 1115 General Chemistry Laboratory (1 cr) **or**
CHEM 1225 Chemical Principles Laboratory II (1 cr) 1
PHYS 2110 The Physics of Living Systems I 4

Spring Semester (17-18 credits)
PEP 4100 Exercise Physiology and Principles of Conditioning 4
PHYS 2120 (BPS) The Physics of Living Systems II 4
STAT 2000 (QI) Statistical Methods (3 cr) **or**
STAT 2300 (QL) Business Statistics (4 cr) **or**
STAT 3000 (QI) Statistics for Scientists (3 cr) ..... 3 or 4
Upper-division Communications Intensive (CI) course 3
Upper-division Depth Humanities and Creative Arts (DHA) course 3

Senior Year (31 credits)
Fall Semester (13 credits)
PEP 4400 (QI) Evaluation in Physical Education 3
PEP 5100 Fitness Assessment and Exercise Programs 4
PSY 3210 (DSS) Abnormal Psychology 3
Elective course(s) 3

Spring Semester (18 credits)
PEP 4200 (QI) Biomechanics 4
Upper-division elective course(s) 3
Elective courses 11

Physical Education Major: Teaching Emphasis (K-12) (90 credits)

Students also need to complete a teaching minor. A 2.75 total GPA is required for graduation.

Note: This is an approved teaching major through the Department of Secondary Education.

A. Prerequisites (17 credits)
BIOL 2320 Human Anatomy (Sp,Su) 4
BIOL 2420 Human Physiology (F,Sp,Su) 4
MATH 1050 (QL)[76] College Algebra (F,Sp,Su) 4
HEP 2000 First Aid and Emergency Care (F,Sp,Su) 2
PE 3000 Dynamic Fitness (F,Sp,Su) 3

B. Skill Development (5 credits)
PEP 2100 Skills 1 (Swimming, Volleyball, Football) (F,Sp) 1
PEP 2200 Skills 2 (Noncompetitive Lifetime Activities) (F,Sp,Su) 1
PEP 2300 Skills 3 (Softball, Basketball, Soccer) (F,Sp) 1
PEP 2400 Skills 4 (Tennis, Badminton, Track and Field) (F,Sp) 1
PEP 2500 Rhythms and Movement (F,Sp) 1

C. Professional Development (11 credits)
PEP 2000 Introduction and History of Physical Education (F,Sp) 2
PEP 3050 Physical Education in the Elementary School (F,Sp,Su) 3
PEP 3100 Athletic Injuries (F,Sp) 3
PEP 3200 (CI)[83, 87] Motor Learning and Skill Analysis (F,Sp,Su) 3

D. Professional Foundations (16 credits)
PEP 4000 Mental Aspects of Sports Performance (F,Sp,Su) 3
PEP 4100[77, 87] Exercise Physiology and Principles of Conditioning (F,Sp) 4
PEP 4200 (QI)[77, 86, 87] Biomechanics (F,Sp) 4
PEP 4350 Administration of Physical Education (F,Sp) 2
PEP 4400 (QI)[86] Evaluation in Physical Education (F,Sp) 3

E. Methods of Teaching (3 credits)
PEP 3550 Strategies and Methods of Teaching Team, Individual, and Dual Sports and Fitness (F,Sp) 3

F. Methods of Coaching (3 credits)
PEP 4500[78] Methods of Coaching (F,Sp) 3

G. Secondary Teacher Education Program (STEP) (35 credits)

Note: Acceptance into the STEP is required prior to enrolling in the courses listed below. Students must take a minor Special Methods Course and Clinical Experience, which may be completed during Level 1 or Level 2.

Level 1 (15-week courses)
INST 3500 Technology Tools for Secondary Teachers (F,Sp,Su).....1
SCED 3100 Motivation and Classroom Management (F,Sp).....3
SCED 3210 (CI/DSS) Educational and Multicultural Foundations (F,Sp).....3
Clinical Experience I (in minor)[79].....1
Methods of Teaching (in minor)[80].....3

Level 2 (15-week courses)
SPED 4000 Education of Exceptional Individuals (may be taken anytime) (F,Sp,Su).....2
SCED 4200 (CI) Reading, Writing, and Technology (F,Sp).....3
SCED 4210 Cognition and Evaluation of Student Learning (F,Sp).....3
PEP 4300[81] Clinical Experience II (F,Sp).....1
PEP 4900 (CI)[82, 83] Methods of Physical Education (F,Sp).....3

Level 3 (includes 13 weeks of student teaching and 2 weeks of Student Teaching Seminar)
PEP 5500[84] Student Teaching Seminar (2 weeks) (F,Sp).....2
PEP 5630[85] Student Teaching in Secondary Schools (13 weeks) (F,Sp).....10

[76]Math ACT score of at least 23, MATH 1010, or satisfactory score on placement exam is a prerequisite for this course.
[77]BIOL 2320, 2420, MATH 1050 are prerequisites for this course.
[78]HEP 2000 (which may be taken concurrently) should be completed prior to taking this course.
[79]Clinical Experience I is taught under course number 3300 in various departments. Must be taken concurrently with Methods of Teaching in minor.
[80]Methods of Teaching courses are taught under various course numbers in various departments. Must be taken concurrently with Clinical Experience I in minor.
[81]Must be taken concurrently with PEP 4900.
[82]PEP 3550 should be taken prior to this course.
[83]This course is approved for Communications Intensive (CI) University Studies credit.
[84]Must be taken concurrently with PEP 5630.
[85]Must be taken concurrently with PEP 5500. Application for student teaching must be completed. Applications are available in EDUC 330.
[86]This course is approved for Quantitative Intensive (QI) University Studies credit.
[87]Admission to the Physical Education Major is required prior to enrolling in this course.

Suggested Four-year Course of Study for Physical Education Major, Teaching Emphasis

Freshman Year (30 credits)

Fall Semester (14 credits)
PEP 2000 Introduction and History of Physical Education.....2
PEP 2200 Skills 2 (Lifetime Activities).....1
PEP 2300 Skills 3 (Softball, Basketball, Soccer).....1
ENGL 1010 (CL1) Introduction to Writing: Academic Prose.....3
MATH 1050 (QL) College Algebra.....4
PSY 1010 (BSS) General Psychology.....3

Spring Semester (16 credits)
PEP 2100 Skills 1 (Swimming, Volleyball, Football).....1
PEP 2400 Skills 4 (Tennis, Badminton, Track and Field).....1
HEP 2000 First Aid and Emergency Care.....2
PEP 3100 Athletic Injuries.....3
Breadth American Institutions (BAI) course.....3
Breadth Physical Sciences (BPS) course.....3
Breadth Life Sciences (BLS) course.....3

Sophomore Year (33 credits)

Fall Semester (17 credits)
PE 3000 Dynamic Fitness.....3
PEP 2500 Rhythms and Movement.....1
BIOL 2420 Human Physiology.....4
Breadth Creative Arts (BCA) course.....3
Breadth Humanities (BHU) course.....3
Course(s) for teaching minor.....3

Spring Semester (16 credits)
PEP 3200 (CI) Motor Learning and Skill Analysis.....3
PEP 4000 Mental Aspects of Sports Performance.....3
BIOL 2320 Human Anatomy.....4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode.....3
Course(s) for teaching minor.....3

Junior Year (31 credits)

Fall Semester (15 credits)
PEP 3050 Physical Education in the Elementary School.....3
PEP 4100 Exercise Physiology and Principles of Conditioning.....4
PEP 4350 Administration of Physical Education.....2
PEP 4500 Methods of Coaching.....3
Course(s) for teaching minor.....3

Spring Semester (16 credits)
PEP 3550 Strategies and Methods of Teaching Team, Individual, and Dual Sports and Fitness.....3
PEP 4200 (QI) Biomechanics.....4
PEP 4400 (QI) Evaluation in Physical Education.....3
Courses for teaching minor.....6

Senior Year (32 credits)

Fall Semester (17 credits)
Depth Humanities and Creative Arts (DHA) course.....3
Course(s) for teaching minor.....3

Level I courses
INST 3500 Technology Tools for Secondary Teachers.....1
SCED 3100 Motivation and Classroom Management.....3
SCED 3210 (CI/DSS) Educational and Multicultural Foundations.....3
Clinical Experience course (in teaching minor).....1
Methods of Teaching course (in teaching minor).....3

Spring Semester (15 credits)
Course(s) for teaching minor.....3

Level II courses
SPED 4000 Education of Exceptional Individuals.....2
SCED 4200 (CI) Reading, Writing, and Technology.....3
SCED 4210 Cognition and Evaluation of Student Learning.....3
PEP 4300 Clinical Experience II.....1
PEP 4900 (CI) Methods of Physical Education.....3

Level III (12 credits)

Students must complete Level I and Level II field experiences prior to enrolling in PEP 5500 and 5630.
PEP 5500 Student Teaching Seminar.....2
PEP 5630 Student Teaching in Secondary Schools.....10

Physical Education Coaching Minor

This minor requires 28 credits, plus 17 credits of prerequisites and the 35-credit Secondary Teacher Education Program (STEP).

A. Required Prerequisites (17 credits)

BIOL 2320 Human Anatomy (Sp,Su) 4
BIOL 2420 Human Physiology (F,Sp,Su) 4
MATH 1050 (QL)[88] College Algebra (F,Sp,Su) 4
HEP 2000 First Aid and Emergency Care (F,Sp,Su) 2
PE 3000 Dynamic Fitness (F,Sp,Su) 3

B. Skill Development (select 3 credits)

PEP 2100 Skills 1 (Swimming, Volleyball, Football) (F,Sp) 1
PEP 2200 Skills 2 (Noncompetitive Lifetime Activities) (F,Sp,Su) 1
PEP 2300 Skills 3 (Softball, Basketball, Soccer) (F,Sp) 1
PEP 2400 Skills 4 (Tennis, Badminton, Track and Field) (F,Sp) 1
PEP 2500 Rhythms and Movement (F,Sp) 1

C. Professional Foundation (18 credits)

PEP 3100 Athletic Injuries (F,Sp) 3
PEP 3200 (CI)[91, 93] Motor Learning and Skill Analysis (F,Sp,Su) 3
PEP 4000 Mental Aspects of Sports Performance (F,Sp,Su) 3
PEP 4100[89, 93] Exercise Physiology and Principles of Conditioning (F,Sp) 4
PEP 4350 Administration of Physical Education (F,Sp) 2
PEP 4400 (QI)[92] Evaluation in Physical Education (F,Sp) 3

D. Methods of Teaching (3 credits)

PEP 3550 Strategies and Methods of Teaching Team, Individual, and Dual Sports and Fitness (F,Sp) 3

E. Methods of Coaching (4 credits)

PEP 2050 Sport Rules and Regulations of the Utah High School Athletic Association (Sp) 1
PEP 4500[90] Methods of Coaching (F,Sp) 3

F. Secondary Teacher Education Program (STEP) (35 credits)

PEP 4900, Methods of Physical Education, and PEP 3300, Clinical Experience I, should be taken as part of the STEP.

[88] Math ACT score of at least 23, MATH 1010, or satisfactory score on placement exam is a prerequisite for this course.
[89] BIOL 2320, 2420, MATH 1050 are prerequisites for this course.
[90] HEP 2000 (which may be taken concurrently) should be completed prior to taking this course.
[91] This course is approved for Communications Intensive (CI) University Studies credit.
[92] This course is approved for Quantitative Intensive (QI) University Studies credit.
[93] Admission to the Physical Education Coaching Minor is required prior to enrolling in this course.

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. Minimum GPA requirements for participation in departmental honors vary by department, but usually fall within the range of 3.30-3.50. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level. The campus-wide Honors Program, which is open to all qualified students regardless of major, offers a rich array of cultural and social activities, special classes, and the benefit of Honors early registration. Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@cc.usu.edu. Additional information can be found online at: **http://www.usu.edu/honors/**

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**

Major requirement sheets, which provide detailed information about requirements for departmental majors, can be obtained from the department, or accessed online at:
http://www.usu.edu/majorsheets/

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.

Assessment

Health Education Specialist Major Assessment

The Health Education Specialist major curriculum is based on the National Commission of Health Education Credentialing (NCHEC) seven responsibility areas for entry-level health educators. As such, each course is evaluated on a yearly basis to determine if it is meeting student needs, based on NCHEC guidelines. Coursework prepares graduating students to successfully sit for the Certified Health Education Specialist exam. Additionally, exit surveys and interviews are given to students to better assess the curriculum and the learning needs of the students. To further assess curriculum needs, follow-up surveys are sent to students one year after they graduate.

Physical Education Major Assessment

The Physical Education major curriculum is based on the standards and benchmarks of the National Association for Sport and Physical Education (NASPE). Each course is matrixed against the standards to assure quality in curriculum content. A number of assessments are available for exiting students, including Praxis 2 and a number of certifications of the American College of Sports Medicine (ACSM). Exit surveys and interviews are conducted annually, as well as post-graduation surveys.

Parks and Recreation Major Assessment

The Parks and Recreation major curriculum is accredited by the National Council on Accreditation of the National Recreation and Park Association (NRPA). To assure compliance with the national standards, the curriculum is evaluated annually. Students are eligible to sit for the National Certification Examination. Exit surveys and interviews are conducted yearly, as well as post-graduation surveys.

Graduate Programs

Please refer to the general admission requirements on pages 101-102 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 Introduction to Educational and Psychological Research (F,Sp,Su) 3
HEP 6800 Seminar in Health Behavior (F) 3
PEP 6290 Corporate Wellness Marketing (Sp) 3
PEP 6400 Exercise in Health, Fitness, and Sport (Arr) 4
PEP 6450 Fitness Assessment and Exercise Testing (Sp) 3
PEP 6500 Practicum in Corporate Wellness (F,Sp,Su) 1-10
PEP 6540 Wellness Programming (Sp) 3
PEP 6800 Biomechanics and Ergonomics of Health, Industry, and Sport (Sp) 3
PEP 6810 Research Methods in Health Sciences (F) 3
PSY 6470 Health Psychology (F) 3

MS candidates specializing in ***Exercise Science*** must complete the following courses:

EDUC 6600 Measurement, Design, and Analysis I (F,Sp,Su) 3
PEP 6400 Exercise in Health, Fitness, and Sport (Arr) 4
PEP 6800 Biomechanics and Ergonomics of Health, Industry, and Sport (Sp) 3
PEP 6810 Research Methods in Health Sciences (F) 3
PEP 6970 Thesis (F,Sp,Su) 1-9

Eleven credits must be selected from the following:

HEP 6100 Current Trends in Health Promotion (F) 3
PEP 6050 Psychological Aspects of Sports Performance (Arr) 3
PEP 6070 Sport in Society (Sp) 3
PEP 6420 Curriculum in Physical Education (F) 3
PEP 6430 History and Philosophy of Physical Education and Sport (F) 3
PEP 6450 Fitness Assessment and Exercise Testing (Sp) 3
PEP 6540 Wellness Programming (Sp) 3
PEP 6830 Motor Learning (Sp) 3
or other committee-approved electives

MS candidates specializing in ***Health Education*** must complete the following courses:

EDUC 6570 Introduction to Educational and Psychological Research (F,Sp,Su) 3
EDUC 6600 Measurement, Design, and Analysis I (F,Sp,Su) 3
HEP 6000 Evaluating Health-Promotion Programs (Sp) 3
HEP 6100 Current Trends in Health Promotion (F) 3
HEP 6600 Field Work in Health Education (F,Sp,Su) 2
HEP 6800 Seminar in Health Behavior (F) 3
HEP 6970 Thesis (F,Sp,Su) 1-9

Students must also complete 6 credits from the following:

FCHD 6020 Survey of Human Development Research (Sp) 3
FCHD 6060 Human Development Theories (F) 3
HEP 6300 Stress Management (Arr) 3
HEP 6700 Special Topics in Health (Arr) 1-6
HEP 6900 Independent Study (F,Sp,Su) 1-3
HEP 6950 Independent Research (F,Sp,Su) 1-3
INST 5230 Instructional Graphic Production (F,Su) 3
INST 6350 Instructional Design Process (F) 3
MHR 6370 Project Management 3
NFS 6200 Nutritional Epidemiology (F) 2
NFS 6210 Advanced Public Health Nutrition (Sp) 2
PEP 6290 Corporate Wellness Marketing (Sp) 3
PEP 6400 Exercise in Health, Fitness, and Sport (Arr) 4
PEP 6540 Wellness Programming (Sp) 3
PSY 6470 Health Psychology (F) 3
PSY 7700 Grant Writing (Sp) 3
PUBH 4030 Communicable Disease Control (F) 3
PUBH 4040 Fundamentals of Epidemiology (Sp) 3
PUBH 4310 Industrial Hygiene Recognition of Hazards (F) 4
PUBH 4330 Industrial Hygiene Physical Hazards (Sp) 3
SOC 6460 Sociology of Health (F) 3

Other courses may be selected on the basis of a student's need and interests, subject to the approval of the student's committee.

MEd candidates must complete the following courses:

EDUC 6410 Educational Foundations (F,Su) 2
EDUC 6550 Research for Classroom Teachers (F,Sp,Su) 3
EDUC 6710 Diversity in Education (Sp,Su) 3
PEP 6050 Psychological Aspects of Sports Performance (Arr) 3
PEP 6070 Sport in Society (Sp) 3
PEP 6400 Exercise in Health, Fitness, and Sport (Arr) 4
PEP 6420 Curriculum in Physical Education (F) 3
PEP 6430 History and Philosophy of Physical Education and Sport (F) 3
PEP 6690 Analysis of Teaching Physical Education (Arr) 3
PEP 6800 Biomechanics and Ergonomics of Health, Industry, and Sport (Sp) 3
PEP 6830 Motor Learning (Sp) 3
PEP 6960 Master's Project (F,Sp,Su) 3

Research

Research areas include health promotion, health education, exercise science, corporate wellness, sport psychology, sport in society, biomechanics, and pedagogy.

Department of Health, Physical Education and Recreation

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., sport psychology
Edward M. Heath, exercise physiology

Associate Professors
Hilda Fronske, motor learning
Julie A. Gast, community health, multicultural health issues, women's health
Donna L. Gordon, health promotion
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

Nontenure Assistant Professors
Eadric Bressel, biomechanics
Phillip Waite, community health, therapeutic reminiscence, worksite health promotion, program evaluation
Dale Wagner, exercise physiology

Principal Lecturer
Peter J. Mathesius, conditioning, sport skills, and teaching methods

Senior Lecturer
Matthew Flint, health education

Course Descriptions

Health Education Professional (HEP), pages 639-641

Physical Education Professional (PEP), pages 686-689

Parks and Recreation Professional (PRP), pages 699-700

Physical Education Activity (PE), pages 683-686

Dance West Summer, Dance Education Classes (DE), page 604

Department of History

Department Head: Norman L. Jones
Location: Main 323
Phone: (435) 797-1290
FAX: (435) 797-3899
TTY: (435) 797-1290
E-mail: monica.ingold@usu.edu
WWW: http://www.usu.edu/history

Graduate Program Coordinator: Christopher A. Conte, Main 323G, (435) 797-1303, cconte@cc.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, while 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, religious studies, 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 better.

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 1610 Biology I (F)....4
BIOL 1620 (BLS) Biology II (Sp)....4
CHEM 1210 Principles of Chemistry I (F,Sp)....4
CHEM 1220 (BPS) Principles of Chemistry II (F,Sp,Su)....4
GEO 1110 (BPS) The Dynamic Earth: Physical Geology (F,Sp)....4
GEO 3200 (DSC) The Earth Through Time (Sp)....4
PHYS 2110 The Physics of Living Systems I....4
PHYS 2120 (BPS) The Physics of Living Systems II....4
PHYS 2210 (QI) General Physics—Science and Engineering I....4
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II....4

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 1060 (BHU) Introduction to Islamic Civilization....3
HIST 1100 (BHU) Foundations of Western Civilization: Ancient and Medieval (F,Sp,Su)....3
HIST 1500 (BHU) Cultural and Economic Exchange in the Pre-Nineteenth Century World (F,Sp)....3

Each major must complete *one* of the following two courses in the area of modern civilization:

HIST 1110 (BHU) Foundations of Western Civilization: Modern (F,Sp,Su)....3
HIST 1510 (BHU) The Modern World (F,Sp,Su)....3

Each major must complete *one* of the following two courses in the area of American history:

HIST 2700 (BAI) United States to 1877 (F,Sp,Su)....3
HIST 2710 (BAI) United States 1877-Present (F,Sp,Su)....3
(**Note:** HIST 1700 does *not* count toward this 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 (Special Topics in History), 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 (Directed Readings) 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 religious studies, 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).

Sample Four-year Plan for History Major

Minimum GPA for Admission: 2.5, major; 2.5, Career
Minimum GPA for Graduation: 2.5, major courses; 2.0, USU
Minimum Grade Accepted: *C* in major courses

This is a **sample plan**. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. **Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a History Department faculty advisor, call (435) 797-1290. To make an appointment with a professional advisor, call (435) 797-3883.**

Freshman Year (30 credits)

Fall Semester (15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
History Premodern Civilization course 3
History Modern Civilization course 3
University Studies Breadth course 3
Elective course(s) 3

Spring Semester (15 credits)
MATH 1030 (QL) Quantitative Reasoning (3 cr) **or**
STAT 1040 (QL) Introduction to Statistics (3 cr) 3
History American course 3
History upper-division course 3
University Studies Breadth courses 6

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (30 credits)

Fall Semester (15 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
History upper-division course 3
Degree Requirement (BS/BA) course 4
University Studies Breadth course 3
Elective course(s) 2

Spring Semester (15 credits)
History upper-division course 3
Degree Requirement (BS/BA) course 4
Minor courses 6
Elective course(s) 2

Junior Year (32 credits)

Fall Semester (16 credits)
History upper-division courses 6
Degree Requirement (BS/BA) course 4
Minor course 3
Communications Intensive (CI) course 3

Spring Semester (16 credits)
History upper-division courses 6
Degree Requirement (BA) *or* Elective (for BS degree) course(s) 4
Minor course 3
Depth Life and Physical Sciences (DSC) course 3

Senior Year (28 credits)

Fall Semester (15 credits)
HIST 4990 (CI) Special Topics In History 3
Minor course 3
Depth Social Sciences (DSS) course 3
Quantitative Intensive (QI) course 3
Elective course 3

Spring Semester (13 credits)
History upper-division course 3
Minor course 3
Elective upper-division courses 7

History Teaching Emphasis

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 emphasis. Each student in the History Teaching Emphasis must complete *one* of the following three courses in the area of premodern civilization:
HIST 1060 (BHU) Introduction to Islamic Civilization 3
HIST 1100 (BHU) Foundations of Western Civilization: Ancient and Medieval (F,Sp,Su) 3
HIST 1500 (BHU) Cultural and Economic Exchange in the Pre-Nineteenth Century World (F,Sp) 3

Each student must complete *one* of the following two courses in the area of modern civilization:
HIST 1110 (BHU) Foundations of Western Civilization: Modern (F,Sp,Su) 3
HIST 1510 (BHU) The Modern World (F,Sp,Su) 3

Each student must complete *both* of the following two courses in the area of American history:
HIST 2700 (BAI) United States to 1877 (F,Sp,Su) 3
HIST 2710 (BAI) United States 1877-Present (F,Sp,Su) 3
(**Note:** HIST 1700 does *not* count toward this requirement.)

No student, including transfer students, may count more than 12 credits of lower-division coursework toward the history teaching emphasis.

Every student in the History Teaching Emphasis must take *one* of the following three courses as a senior capstone course:
HIST 4850 Interpreting the Past for Teachers (F,Sp) 3
HIST 4860 Teaching History (F) 3
HIST 4870 Teaching World History: Themes, Approaches, and Materials (Sp) 3

Students should complete their remaining 24 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 emphasis 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 (Directed Readings) may be applied toward the emphasis.

Sample Four-year Plan for History Major, History Teaching Emphasis

Minimum GPA for Admission: 2.5, major; 2.75, Career
Minimum GPA for Graduation: 2.75, major courses; 2.75, Career
Minimum Grade Accepted: *C* in major courses

This is a **sample plan**. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. **Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a History Department faculty advisor, call (435) 797-1290. To make an appointment with a professional advisor, call (435) 797-3883.**

Freshman Year (30 credits)
Fall Semester (15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
History Premodern Civilization course 3
History Modern Civilization course 3
University Studies Breadth courses 6

Spring Semester (15 credits)
MATH 1030 (QL) Quantitative Reasoning (3 cr) **or**
STAT 1040 (QL) Introduction to Statistics (3 cr) 3
History American course 3
History upper-division course 3
University Studies Breadth courses 6

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (32 credits)
Fall Semester (16 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
History upper-division course 3
Degree Requirement (BS/BA) course 4
Teaching Minor course 3
Quantitative Intensive (QI) course 3

Spring Semester (16 credits)
History upper-division courses 6
Degree Requirement (BS/BA) course 4
Teaching Minor courses 6

Junior Year (32 credits)
Fall Semester (16 credits)
History upper-division courses 6
Degree Requirement (BS/BA) course 4
Teaching Minor courses 6

Spring Semester (16 credits)
History upper-division course 3
History Teaching upper-division course 3
Degree Requirement (BA) *or* Elective (for BS degree) course(s) 4
Teaching Minor course 3
Depth Life and Physical Sciences (DSC) course 3

Apply for admission to the STEP Program.

Senior Year (29 credits)
Fall Semester (14 credits)
SCED 3210 (CI/DSS) Educational and Multicultural Foundations 3
History upper-division course 3
STEP courses 8

Spring Semester (15 credits)
SCED 4200 (CI) Reading, Writing, and Technology 3
History upper-division course 3
STEP courses 9

Certification Semester (12 credits)
STEP (Student Teaching) courses 12

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 1060 (BHU) Introduction to Islamic Civilization 3
HIST 1100 (BHU) Foundations of Western Civilization: Ancient and Medieval (F,Sp,Su) 3
HIST 1500 (BHU) Cultural and Economic Exchange in the Pre-Nineteenth Century World (F,Sp) 3

Every student must complete *one* of the following two courses in modern civilization:
HIST 1110 (BHU) Foundations of Western Civilization: Modern (F,Sp,Su) 3
HIST 1510 (BHU) The Modern World (F,Sp,Su) 3

Every student must complete *one* of the following courses in the area of American history:
HIST 2700 (BAI) United States to 1877 (F,Sp,Su) 3
HIST 2710 (BAI) United States 1877-Present (F,Sp,Su) 3
(**Note:** HIST 1700 does *not* count toward this requirement.)

No student, including transfer students, may count more than 12 credits of lower-division coursework toward the history minor. Students should complete their remaining 9-12 credits by taking 3000- and 4000-level history courses.

No more than 3 credits of HIST 4930 (Directed Readings) 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 1060 (BHU) Introduction to Islamic Civilization 3
HIST 1100 (BHU) Foundations of Western Civilization: Ancient and Medieval (F,Sp,Su) 3
HIST 1500 (BHU) Cultural and Economic Exchange in the Pre-Nineteenth Century World (F,Sp) 3

Every student must complete *one* of the following two courses in modern civilization:
HIST 1110 (BHU) Foundations of Western Civilization: Modern (F,Sp,Su) 3
HIST 1510 (BHU) The Modern World (F,Sp,Su) 3

Every student must complete *both* of the following courses in the area of American history:
HIST 2700 (BAI) United States to 1877 (F,Sp,Su) 3
HIST 2710 (BAI) United States 1877-Present (F,Sp,Su) 3
(**Note:** HIST 1700 does *not* count toward this 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 Interpreting the Past for Teachers (F,Sp).....3
HIST 4860 Teaching History (F) 3
HIST 4870 Teaching World History: Themes, Approaches, and Materials (Sp) 3

Students should complete their remaining 9 credits by taking 3000- and 4000-level history courses.

No more than 3 credits of HIST 4930 (Directed Readings) can be applied toward the minor.

Classics Minor
For information about the Classics Minor, which is administered through the Department of History, see page 219 of this catalog.

Academic Opportunities

Departmental Honors in History
Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. Students in the department with a minimum GPA of 3.5 may apply to pursue an honors degree in history. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level. Those interested should consult the department honors coordinator. Additional information can be found online at: **http://www.usu.edu/honors/**

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 and on the History Department website: **http://www.usu.edu/history**

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**

Major requirement sheets, which provide detailed information about requirements for the History major, can be obtained from the department, or can be accessed online at: **http://www.usu.edu/majorsheets/**

Financial Support

Scholarships, grants-in-aid, and work-study programs are available through the University. The History Department offers 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 written 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. 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 to 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 or master of science 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 archive, 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.

Department of History

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 pages 106-107.

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 or more 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 two approved minor areas, with at least two courses in each minor area. 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 to 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 100). 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 2007-2008 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 2006-2007 and 2008-2009 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**

History Faculty

Professors
Jay Anderson, folklore, folklife, film studies
C. Robert Cole, England, modern European history
Mark L. Damen, ancient world, theatre history, Latin, Greek
Norman L. Jones, medieval, early modern Europe, Britain, Christianity
David R. Lewis, American Indian, environmental, Utah, editor of *Western Historical Quarterly*
Daniel J. McInerney, American intellectual history, Nineteenth Century
Michael L. Nicholls, early American history
Leonard N. Rosenband, France, European economic and labor history
Stephen C. Siporin, folklore, oral narrative folklore, folk art
Frances B. Titchener, ancient Greece and Rome, Latin, Greek, editor of *Ploutarchos*
Charles S. Prebish, Buddhism, Hinduism
Charles Redd, religious studies

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
R. Edward Glatfelter, Russia and East Asia, associate dean of College of Humanities, Arts and Social Sciences
Peter Mentzel, Eastern Europe, Ottoman empire, Islamic civilization
Colleen O'Neill, West, Native American, labor, associate editor of *Western Historical Quarterly*
Jennifer Ritterhouse, U.S. history, African-American history, U.S. South, women's history
Susan O. Shapiro, Greek intellectual history, ancient Greek and Latin language

Assistant Professors
M. Lawrence Culver, U.S. Southwest Borderlands; U.S. West, cultural, environmental, and urban history
Victoria M. Grieve, modern American cultural and intellectual history, art and culture of the West
James Sanders, Latin America
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

Senior 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
Robert E. Parson, University Archivist, Special Collections and Archives
Elaine Thatcher, Associate Director of Mountain West Center for Regional Studies

Course Descriptions

History (HIST), pages 641-645
Latin (LATN), page 658
Greek (GRK), page 639
Classics (CLAS), page 595

Honors Program

Director: Christie L. Fox
Location: Main 15
Phone: (435) 797-2715
FAX: (435) 797-3941
E-mail: honors@cc.usu.edu
WWW: http://www.usu.edu/honors/

Honors Associate:
Danene Dustin, Main 15, (435) 797-2715, danene@cc.usu.edu

Undergraduate Program

Overview

Utah State University's Honors Program, established in 1964, provides an enhanced academic environment for highly motivated undergraduates. The Honors Program cultivates 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 entering freshmen, continuing students, and transfer students. The most important criterion for success is a student's motivation and dedication to learning.

Entrance to the Honors Program

Students having strong academic qualifications and who plan to enroll at USU as freshmen are automatically enrolled in *A Taste of Honors*, which is composed of Honors Connections, Scholars Forum, and an Honors breadth course. These students will have the opportunity to formally apply to Honors through a Scholars Forum assignment in October.

All other interested students, including continuing students, must submit an application in order to join Honors. There are Honors options appropriate for students with three to four semesters remaining, as well as for transfer students. For an application, contact the Honors Program.

Participation in Honors

To be eligible for entrance into Honors, a student must have a GPA of at least 3.50 and must complete an application. For most majors, 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 may be requested if the GPA is raised to 3.30 or higher. Honors students must also register for one Honors class per semester in order to remain active in the program. For an application, contact the Honors Program.

Honors Degrees

Utah State University offers Honors degrees designed to fill a variety of student needs. Students may work toward one of three degree options:

1. **Departmental Honors.** Requires 15 semester credits as specified in a Departmental Honors plan, including a senior thesis/project.

2. **Departmental Honors with Honors in University Studies.** Requires 27 semester credits including 12 credits from the *Honors Course List* and at least 15 credits, including Honors senior thesis/project credits, in an approved Departmental 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 on the Honors Program website: **http://www.usu.edu/honors/**

Course Descriptions

Honors (HONR), page 646

Department of Instructional Technology

Interim Department Head: Michael K. Freeman
Location: Emma Eccles Jones Education 215A
Phone: (435) 797-2692
FAX: (435) 797-2693
E-mail: melanie.bodily@usu.edu
WWW: http://inst.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** and **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 Endorsement.
3. Prepares students for employment as a School Library Media Specialist.

School Library Media Minor Requirements

This minor is delivered through distance education. Those persons wanting endorsement for positions in the public schools must have or be working toward a valid Utah teaching license and the prescribed School Library Media minor. A 2.7 grade point average is required for admission and endorsement 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 analyzing, 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 101-102. 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 213 computerized or 550 paper/pencil on the TOEFL is required for all prospective international students.

Applications for MS, EdS, and PhD degree programs must be submitted to the School of Graduate Studies by January 31. Applications for MEd programs must be submitted to the School of Graduate Studies by May 15. 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 coming academic year. All graduate students are expected to begin their programs in the fall semester.

Applicants 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.

Department of Instructional Technology

Master of Education (MEd)
This master's program is only available through distance education via distance delivery methods. 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 a USU 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**. A **Distance Learning Endorsement** is also available within the MEd. Students accepted to the MEd may also choose certain electives from the Administrative Supervisory Certificate (ASC) program. They may then apply for acceptance to the ASC.

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 (delivered through distance education) and apply for a Utah State Library Media Endorsement. 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.

The goal of the **Distance Learning Endorsement Program** is to provide public school educators with the knowledge and skills they need in order to be effective teachers of students who are participating in distance education programs. To prepare them for meeting the challenges of teaching and learning at a distance in the K-12 setting, the program aids master teachers in becoming (1) effective communicators with distant learners across the barriers of time and distance, and (2) proficient users of telecommunications technologies in instruction. Students can apply for the State Distance Learning Endorsement.

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 R. Burnham, Dean, School of Graduate Studies; adult learning
J. Nicholls Eastmond, Jr., theory and evaluation
Mimi Recker, cognitive modeling, interactive learning

Associate Professors
David A. Wiley, learning objects, instructional design theory
Linda L. Wolcott, distance education, library media, and foundations

Assistant Professors
Joanne P. Bentley, learning theory and evaluation
Yanghee Kim, human/computer interaction in learning systems with an emphasis on pedagogical agents, intelligent tutoring systems, instructional design, learning theory, teacher education with an emphasis on technology integration
Brett E. Shelton, immersive technologies, cognitive studies
Deepak P. Subramony, technology effects in non-Western cultural groups and cultural diversity among technology users
Andrew E. Walker, collaborative information filtering and problem-based learning, situated cognition

Adjunct Instructors
JaDene M. Denniston, school library media
Leong-Guan (Eddie) Loo, instructional design
Kevin L. Reeve, distance education

Lecturer
Sheri Haderlie, Instructional Technology Department Outreach Program Manager

Professors Emeritus
Alan M. Hofmeister, research
M. David Merrill, instructional design
Don C. Smellie, foundations
Ron J. Thorkildsen, research and interactive learning
R. Kent Wood, theory, foundations

Associate Professor Emeritus
J. Steven Soulier, message design, computer applications

Course Descriptions

Instructional Technology (INST), pages 648-652

Intensive English Language Institute

Director: Glenda R. Cole
Location: Main 071
Phone: (435) 797-2059
FAX: (435) 797-4050
E-mail: gcole@cc.usu.edu
WWW: http://www.usu.edu/ieli/

Assistant Director:
James E. Bame, Main 077, (435) 797-3908, fabame@cc.usu.edu

IELI Undergraduate and Graduate Advisor:
Margaret Garr, Main 069A, (435) 797-2081, mgarr@cc.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, 500 paper/pencil, or 61 on the iBT; and graduate students applying without a minimum TOEFL score of 213 computerized, 550 paper/pencil, or 79-80 on the iBT 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. (**Note:** iBT is the Internet-based TOEFL.)

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. 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
Ann E. Roemer
James R. Rogers II
Thomas J. Schroeder

Associate Professors Emeritus
Susan J. Carkin
Lee Ann Rawley

Assistant Professor
Nolan Weil

Course Descriptions

Intensive English Language Institute (IELI), pages 647-648

Interdisciplinary Studies Major

Academic Advisement:

College of Agriculture
Lisa Allen, (435) 797-2215, lisa.allen@ usu.edu

College of Education and Human Services
Terri Gass, (435) 797-1443, terri.gass@usu.edu

College of Humanities, Arts, and Social Sciences
Mary Leavitt, (435) 797-3883, mary.leavitt@usu.edu

College of Natural Resources
Maureen Wagner, (435) 797-2448, maureen@cc.usu.edu

College of Science
Richard Mueller, (435) 797-2479, rmueller@biology.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.**

The Interdisciplinary Studies major is available through the following five colleges: Agriculture; Education and Human Services; Humanities, Arts, and Social Sciences; Natural Resources; and Science. However, the major is *not* available to students enrolled in the College of Business, the College of Engineering, or the Department of Computer Science. The Interdisciplinary Studies degree is also available through the University's Continuing Education centers.

Students who think the Interdisciplinary Studies major may be right for them, but are not sure, should ask themselves the following questions:

1. Students must have a minimum of 45 semester credits completed before the major may be declared. Do I have 45 or more semester credits on my transcript? If not, how close am I?

2. Interdisciplinary Studies ***cannot*** duplicate existing majors. Have I explored the educational opportunities at USU? Have I reviewed the *General Catalog* to see what is already available at USU? Have I visited Career Services (University Inn 102) to explore career development programs? Why don't any of the existing majors meet my needs?

3. Which areas of study am I proposing to combine? Do they logically go together? Does USU offer the areas of study I am proposing to combine? What would the program I am proposing lead me to? Are there job opportunites out there?

4. If my degree crosses two or more colleges, which college would I propose to serve as the lead college?

If, after reviewing the above, students feel that they have a unique interest in a subject matter and USU can help, this may be the right major for them. Interested students should make an appointment with the advising center in the college from which the degree will be awarded.

Admission Requirements

Students may apply for admission to the Interdisciplinary Studies major after completing 45 credits with a minimum GPA of 2.0, submitting an Application for Interdisciplinary Studies, and receiving approval for the Application.

Transfer students from other institutions or from other USU majors need to complete a minimum of 45 credits, achieve the required GPA, and have an approved Application for Interdisciplinary Studies for admission to this major in good standing.

Students who wish to pursue the degree must submit a letter of application containing the following information:

1. A clear statement of the student's educational objectives.

2. A proposed program of study including specific courses and listing the faculty member the student proposes to work with on the final thesis or project.

3. A brief statement explaining why the student feels the proposed program is worthy of a college degree.

A current unofficial transcript must be attached to the application. The application should be discussed with and reviewed by the student's major advisor.

Requirements

Students will work with a faculty member or members who will assist in course selection and will oversee the successful completion of the 45 credits in the program. Courses selected must provide coherent, carefully planned programs of study in the area of interest, which must involve two or more disciplines. Courses used for University Studies Breadth Requirements and courses used for Depth Humanities and Creative Arts (DHA), Depth Life and Physical Sciences (DSC), and Depth Social Sciences (DSS) may be counted toward the degree *only with the permission of the college advisor*. However, courses meeting the Communications Intensive (CI) and Quantitative Intensive (QI) requirements may be applied toward requirements for the Interdisciplinary Studies degree.

Courses used to meet the 45-credit minimum requirement may come from any department, with the following restrictions:

1. At least 21 of the 45 credits ***must*** be numbered 3000 or above.

2. Courses used for the major must include ***at least*** 15 *credits each* from two different disciplines. A maximum of 3 internship credits may be counted toward the major. **Note:** Some colleges may require that *more than 15 credits* counted toward the major be taught by departments within their college; check with the college advisor for further information.

3. The coursework must focus on an overarching theme and must be consistent with the student's educational and career goals.

4. As part of the 45 credits, students must complete a 3-credit senior project, thesis, or capstone course supervised by their faculty advisor.

5. Students must pass every course approved for the program of study and must earn a composite GPA of at least 2.0 in the 45 credits of coursework used for the major. **Note:** Some colleges may have a higher GPA requirement; check with the college advisor for further information.

6. Courses used for the major may be used for a minor or to fill University Studies Breadth requirements *only with the permission of the college advisor*.

Additional Information

Students interested in the Interdisciplinary Studies degree should contact the advising center in the college from which the degree will be awarded. Students who would like to explore the degree, but are unsure which college they should enroll in, may discuss their interests with Susan Haddock, Office of University Advising, (435) 797-3373, susan.haddock@usu.edu.

Students exploring whether or not the Interdisciplinary Studies major is right for them should review the major requirement sheet, which can be found online at: **http://www.usu.edu/majorsheets/**

For students pursuing the Interdisciplinary Studies major, the requirement sheet provides details of major requirements, as well as a worksheet for students to record their progress toward fulfilling major requirements.

Course Description

Interdisciplinary Studies (ITDS), page 652

Interior Design Program

Interim Director: Jeannie B. Thomas
Location: Family Life 320A
Phone: (435) 797-1557
FAX: (435) 797-8245
E-mail: interiors@cc.usu.edu

Academic Advisor: Mary E. Leavitt, Taggart Student Center 302/ Family Life 320H, (435) 797-3883, mary.leavitt@usu.edu

Degrees Offered: Bachelor of Science (BS) and Bachelor of Arts (BA) in Interior Design

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**.

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. Minimum GPA requirements for participation in departmental honors vary by department, but usually fall within the range of 3.30-3.50. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level. The campus-wide Honors Program, which is open to all qualified students regardless of major, offers a rich array of cultural and social activities, special classes, and the benefit of Honors early registration. Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@cc.usu.edu. Additional information can be found online at: **http://www.usu.edu/honors/**

Course Requirements

Minimum GPA for Admission: Any student admitted to USU may take lower-division Interior Design classes.
Additional Matriculation Requirements: Space available in sophomore/second year classes is limited. All students desiring to continue in the Interior Design Program are required to submit a portfolio for review to determine placement in sophomore/second year classes. The portfolio review in April of the freshman/first year determines which students may matriculate into the program. **Transfer students wishing to enter the program are also required to submit a portfolio for review in April of the year they wish to matriculate.** The portfolio review during the sophomore/second year determines placement into either the Studio emphasis *or* the Design Sales and Marketing emphasis.
Minimum GPA for Graduation: 2.5, major; 2.0, Career
Minimum Grade Accepted: *C* in major requirements: *Studio Emphasis*—USU 1330, MHR 2050, PHIL 3810, all ID courses; *Design Sales and Marketing Emphasis*—BIS 2100, 2200, OSS 2800, BA 3500 (or BUS 3500), MHR 2050, 3110 (or BUS 3110), 3710, PHIL 3810, all ID courses

These are sample plans. They outline University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

All Majors

Freshman Year (32 credits)

Fall Semester (16 credits)

ID 1700 Interior Design Professional Seminar 1
ID 3740 History of Interior Furnishings and Architecture I 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
ART 1120 Two-dimensional Design 3
USU 1330 (BCA) Civilization: Creative Arts (section 001) 3
University Studies Breadth course 3

Spring Semester (16 credits)

ID 1700 Interior Design Professional Seminar 1
ID 1790 (BCA) Interior Design Theory 3
ID 3750 (CI) History of Interior Furnishings and Architecture II 3
ART 1020 Drawing I 3
University Studies Breadth course 3
University Studies Quantitative Literacy (QL) course 3

Submit first-year portfolio.
Complete the CIL exams by the end of the freshman year.

Sophomore Year (29-29.5 credits)

Fall Semester (14.0-14.5 credits)

ID 1700 Interior Design Professional Seminar 1
ID 2710 Architectural Graphics I 4
ID 2750 Computer Aided Drafting and Design I 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Art Elective course(s) 3.0-3.5

Spring Semester (15 credits)

ID 1700 Interior Design Professional Seminar 1
ID 2720 Architectural Graphics II 4
ID 2730 Interior Space Planning and Human Dimensions 4
ID 2760 Computer Aided Drafting and Design II 3
ARTH 2720 (BHU) Survey of Western Art: Renaissance to Post-Modern 3

Studio Emphasis

Junior Year (32-32.5 credits)
Fall Semester (14.0-14.5 credits)
ID 1700 Interior Design Professional Seminar 1
ID 3730 Interior Materials and Construction 3
ID 3760 Commercial Design Studio 4
ID 3790 Architectural Systems 3
Art Elective course(s) 3.0-3.5

Spring Semester (14 credits)
ID 1700 Interior Design Professional Seminar 1
ID 3770 Residential Design Studio 4
ID 3780 Design Detailing 3
PHIL 3810 Aesthetics 3
Depth Life and Physical Sciences (DSC) course 3

Summer Semester (4 credits)
ID 4710 Interior Design Advanced Internship I 4

Senior Year (26 credits)
Fall Semester (13 credits)
ID 1700 Interior Design Professional Seminar 1
ID 4750 Senior Design Studio I 3
MHR 2050 Legal and Ethical Environment of Business 3
University Studies Breadth courses 6

Spring Semester (13 credts)
ID 1700 Interior Design Professional Seminar 1
ID 4740 (CI) Business and Professional Practices in Interior Design ... 2
ID 4760 Senior Design Studio II 3
ID 4770 Senior Exhibit 1
Depth Social Sciences (DSS) course 3
Quantitative Intensive (QI) course 3

Design Sales and Marketing Emphasis

Junior Year (30-30.5 credits)
Fall Semester (13 credits)
ID 1700 Interior Design Professional Seminar 1
ID 3730 Interior Materials and Construction 3
ID 3790 Architectural Systems 3
MHR 2050 Legal and Ethical Environment of Business 3
University Studies Breadth course 3

Spring Semester (13.0-13.5 credits)
ID 1700 Interior Design Professional Seminar 1
BIS 2100 Principles of Management Information Systems 3
Art Elective course(s) 3.0-3.5
University Studies Breadth course 3
Depth Life and Physical Sciences (DSC) course 3

Summer Semester (4 credits)
ID 4710 Interior Design Advanced Internship I 4

Senior Year (24 credits)
Fall Semester (12 credits)
ID 1700 Interior Design Professional Seminar 1
BIS 2200 (CI) Business Communication 3
MHR 3110 (DSS) Managing Organizations and People (3 cr) **or**
BUS 3110 (DSS) Management Fundamentals (3 cr) 3
OSS 2800 Principles of Selling 2
BA 3500 Fundamentals of Marketing (3 cr) **or**
BUS 3500 Marketing Principles (3 cr) 3

Spring Semester (12 credts)
ID 1700 Interior Design Professional Seminar 1
ID 4740 (CI) Business and Professional Practices in Interior Design ... 2
PHIL 3810 Aesthetics 3
MHR 3710 Developing Team and Interpersonal Skills 3
Quantitative Intensive (QI) course 3

Freshman Review/First-Year Review

Students considering interior design as their major must participate in a Freshman Review. The review assesses basic skills and creativity. If these students are accepted into the Interior Design Program, they will be allowed to register for ID 2710 (Architectural Graphics I) and ID 2750 (Computer Aided Drafting and Design I). Students who are interested must contact the Interior Design Office (Family Life 320A) to receive a packet detailing instructions for submittal into the review. The completed projects are due the second Monday in April.

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 through a special leasing program.

Sophomore Review/Second-Year 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 1020, 1120; and one elective art skills class. Students will be expected to organize and properly label their projects, as well as deliver them to a location designated by 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 1020, 1120; three credits from ARTH 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 Program

Study Abroad

The world is expanding. In this rapidly growing environment, students need to be more globally aware of their historical and contemporary surroundings. When students are exposed to design and culture outside of the state, their world views expand. Directly applying these influences will improve their design skills. This study abroad program addresses these needs and goals through a collaborative and intensive study of design in the rich environment of Great Britain and France. The Interior Design Travel Course (ID 4780) is delivered through a variety of learning and teaching structures, which include individual and group tutorials, projects, seminars, lectures, and visits to museums, galleries, and studios. The course provides the opportunity for students to apply what is learned in its historical and cultural context.

Interior Design Programmatic Learning Objectives

1. The Interior Design Program will allow students to develop the attitudes, traits, and values of professional responsibility, accountability, and effectiveness.

2. Students will learn the fundamentals of art and design, theories of design and human behavior, and discipline-related history.

3. Students will understand and apply the knowledge, skills, processes, and theories of interior design.

4. Students will learn to communicate effectively.

5. Students will design within the context of building systems. Students will use appropriate materials and products.

6. Students will learn to apply the laws, codes, regulations, standards, and practices that protect the health, safety, and welfare of the public.

7. Students will be given a foundation in business and professional practice.

Assessment

The Interior Design Program participates in an ongoing self-assessment of the program and completes regular evaluations of the curriculum to ensure continuing growth and development. Much of this activity is stimulated by a continuing need to meet the requirements set forth by the program's accreditation. The program also conducts two major portfolio reviews each year. The first review occurs at the end of a student's sophomore year, and the second review is conducted at the conclusion of a student's senior year of classes. These reviews allow the program to determine areas of strength, as well as areas of weakness, in order to provide direction for needed revision, to meet the needs of the various industries in which graduates of the program will be employed. Additionally, information is requested from alumni, in an effort to assess how the curriculum has prepared them to meet necessary employment expectations.

Additional Information

Major requirement sheets, which provide detailed information about requirements for the Interior Design major, can be obtained from the Interior Design Program, or online at:
http://www.usu.edu/majorsheets/

Interior Design Faculty

Professor
Tom C. Peterson, design process and experiential learning

Assistant Professor
Darrin S. Brooks, residential design and interior history

Lecturers
Steven R. Mansfield, architecture and computer aided design
Susan Tibbitts, architectural graphics

Course Descriptions

Interior Design (ID), pages 646-647

International Studies Major and Minor

Contact: Veronica Ward
Location: Main 324E
Phone: (435) 797-1319
FAX: (435) 797-3751
E-mail: veronica.ward@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.

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. Minimum GPA requirements for participation in departmental honors vary by department, but usually fall within the range of 3.30-3.50. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level. The campus-wide Honors Program, which is open to all qualified students regardless of major, offers a rich array of cultural and social activities, special classes, and the benefit of Honors early registration. Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@cc.usu.edu. Additional information can be found online at: **http://www.usu.edu/honors/**

Graduation Requirements

International Studies Major (39 credits minimum) (3.0 GPA)

A. Core Courses (15 credits)

ANTH 1010 (BSS) Cultural Anthropology (F,Sp) (3 cr) **or**
ANTH 2010 (BSS) Peoples of the Contemporary World (Sp) (3 cr) 3
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp) (3 cr) **or**
ECON 3400 (DSS) International Economics for Business (F,Sp,Su) (prereq: ECON 2010) (3 cr) 3
GEOG 1300 (BSS) World Regional Geography (F) 3
HIST 1500 (BHU) Cultural and Economic Exchange in the Pre-Nineteenth Century World (F,Sp) (3 cr) **or**
HIST 1510 (BHU) The Modern World (F,Sp,Su) (3 cr) 3
POLS 2100 Introduction to International Politics (F,Sp) 3

B. Electives (6 credits)

Students may earn these credits by taking any of the courses listed in the four area options: (1) World Economy and Development, (2) Peace and Security, (3) Global Environment and Natural Resources, and (4) Peoples and Nations.

C. Language Requirement

Students must acquire at least a basic knowledge of one foreign language. Students must successfully complete *either* one course at the 3000 level *or* pass a competency examination at the same level.

D. Area Option Requirement (15 credits)

Students must choose *one* option from the four listed below. Students must complete courses from *at least two* different departments within their chosen option, for a total of 15 credits.

E. Senior Research Project (3 credits)

Each student must complete a senior research project which must fit within the area option chosen by the student.

International Studies Major and Minor

Area Options

World Economy and Development

ANTH 5160 (DSS) Cities and Development (Sp).....3
ANTH/GEOG/SOC 5650 (DSS) Developing Societies (F).....3
BA 4300 International Finance (F,Sp).....3
BA 4590 Global Marketing Strategy (F,Sp) (prereq: BA 4540, 4550).....3
BIS 4550 (CI) Principles of International Business Communications (Sp).....3
ECON 5100 History of Economic Thought (Sp) (prereq: ECON 2010).....3
ECON/POLS 5120 Economics of Russia and Eastern Europe, 9th Century to 21st Century (F).....3
ECON 5150 (DSS) Comparative Economic Systems (Sp) (prereq: ECON 2010).....3
ECON 5400 International and Development Economics (F) (prereq: ECON 4020 or 5000; ECON 4010 or 5010).....4
HIST 4610 Themes and Methods in Economic History.....3
MHR 3820 (DSS) International Management (F,Sp).....3
MHR 4890 (CI) Business Strategy in a Global Context (F,Sp,Su) (prereq: senior standing; MHR 3110; BA 3400, 3500, 3700).....3
PHIL 3520 (DHA) Business Ethics (Sp).....3
PLSC 4300 World Food Crops and Cropping Systems: The Plants That Feed Us (Sp).....3
POLS 3100 Global Issues (F).....3
POLS 4480 International Trade Policy (Sp).....3
POLS 5210 Comparative Political Change/Development (F).....3
SOC 3600 Sociology of Urban Places (F).....3
SOC 3610 (DSS) Rural Sociology (F).....3
SOC 4730 Women in International Development (Sp).....3

Peace and Security

GEOG/POLS 3430 Political Geography (Sp).....3
HIST 3230 Early Modern Europe.....3
HIST 3240 Modern Europe from 1789 to the Present.....3
HIST 3310 Balkans Since 1389.....3
HIST 3410 The Modern Middle East.....3
HIST 3460 Comparative Asian History.....3
HIST 4290 Europe and the French Revolution, 1700-1815.....3
HIST 4310 History of Nationalism.....3
HIST 4390 British Imperialism from 1688 to the Present.....3
HIST 4810 American Military History.....3
HIST 4820 World War II in Europe.....3
HIST 4821 (DHA) World War II in Asia.....3
PHIL 4610 (DHA) Social and Political Philosophy (Sp).....3
POLS 3100 Global Issues (F).....3
POLS 3190 (DSS) Gender, Power, and Politics (F).....3
POLS 3400 (DSS) United States Foreign Policy (F,Sp).....3
POLS 4210 European Union Politics (Sp).....3
POLS 4220 (CI) Ethnic Conflict and Cooperation (Sp).....3
POLS 4280 Politics and War (Sp).....3
POLS 4410 Global Negotiations (Sp).....3
POLS 4450 (CI) United States and Latin America (Sp).....3
POLS 4460 National Security Policy (Sp).....3
POLS 4470 Foreign Policy in the Pacific (Sp).....3
POLS 4890 Special Topics (F,Sp) (1-5 cr) **or**
POLS 4990 (CI) Senior Research Seminar (F,Sp) (3 cr).....1-5
(**Note:** POLS 4890 and 4990 may *only* be counted toward the major when the topic is appropriate.)

Global Environment and Natural Resources

BIOL 3100 (CI) Bioethics (Sp).....3
ECON 1550 (BSS) Introduction to Environmental and Natural Resource Economics (F).....3
ECON 5560 Natural Resource and Environmental Economics (Sp) (prereq: ECON 1550 or 2010).....3
ENVS 2340 (BSS) Natural Resources and Society (F,Sp).....3
ENVS 3330 Environment and Society (Sp).....3
ENVS 5550 Environment, Resources, and Development Policy (Sp).....3
ENVS 5640 Conflict Management in Natural Resources (Sp).....3
GEOG 1000 (BPS) Physical Geography (F,Sp,Su).....3
GEOG 2130 Population Geography (Sp).....3
HIST 3530 African Environmental History.....3
HIST 3950 (DHA/CI) Environmental History.....3
PHIL 3510 (DHA) Environmental Ethics (F,Sp).....3
POLS 3100 Global Issues (F).....3
POLS 5200 Global Environment (F).....3
SOC 4620 (DSS) Sociology of the Environment and Natural Resources (Sp).....3
WATS 4750 Fundamentals of Remote Sensing Science (F).....3
WATS 4930 Geographic Information Systems (F).....4
WILD 2200 (BLS) Ecology of Our Changing World (F,Sp).....3

Peoples and Nations

ANTH 3130 (CI) Peoples of Latin America.....3
ANTH 3160 (DSS) Anthropology of Religion (F).....3
ANTH 3200 (DSS/CI) Perspectives on Race (Sp).....3
ANTH 4100 The Study of Language (F,Sp).....3
ANTH 4130 (DSS) Medical Anthropology: Matter, Culture, Spirit, and Health (Sp).....3
ANTH 5100 (DSS) Anthropology of Sex and Gender (Sp).....3
ENGL 3060 (DHA) British and Commonwealth Cultures.....3
ENGL 4230 Language and Society (F).....3
ENGL 5320 (CI) Literature and Cultural Difference (Sp).....3
GEOG 2030 (BSS) Human Geography (Sp).....3
GEOG 2130 Population Geography (Sp).....3
GEOG 4200 (CI) Regional Geography (F,Sp,Su).....3
HIST 3240 Modern Europe from 1789 to the Present.....3
HIST 3260 History of Spain and Portugal.....3
HIST 3280 East Central Europe Since 1520.....3
HIST 3310 Balkans Since 1389.....3
HIST 3330 The Soviet Union and its Heirs.....3
HIST 3410 The Modern Middle East.....3
HIST 3460 Comparative Asian History.....3
HIST 3480 History of China.....3
HIST 3510 Africa and the World.....3
HIST 3630 History of Modern Latin America.....3
HIST 3640 History of Social Movements in Latin America.....3
HIST 3650 Caribbean History.....3
HIST 3660 History of Mexico.....3
HIST 4310 History of Nationalism.....3
HIST 4330 Modern Germany with Special Emphasis on the Twentieth Century.....3
JCOM 4020 (DSS) Mass Media and Society (Sp).....3
PHIL 3700 Philosophy of Religion (F).....3
PHIL 3710 Philosophies of East Asia (F).....3
POLS 2200 (BSS) Comparative Politics (F,Sp).....3
POLS 3190 (DSS) Gender, Power, and Politics (F).....3
POLS 3210 (DSS) Western European Government and Politics (F).....3
POLS 3220 (DSS) Russian and East European Government and Politics (F).....3
POLS 3230 Middle Eastern Government and Politics (F).....3
POLS 3250 (DSS) Chinese Government and Politics (F).....3
POLS 3270 (DSS) Latin American Government and Politics (F).....3
POLS 4220 (CI) Ethnic Conflict and Cooperation (Sp).....3
POLS 4230 Issues in Middle East Politics (Sp).....3
POLS 4260 Southeast Asian Government and Politics (Sp).....3
PSY 4240 (DSS) Multicultural Psychology (F) (prereq: PSY 1010).....3
SOC 2370 Sociology of Gender (F).....3
SOC 3200 (DSS) Population and Society (F,Sp).....3
SOC 4330 Sociology of Religion (F).....3
SOC 4710 Asian Societies (Sp).....3

Sample Four-year Plan for International Studies Major

Minimum GPA for Admission: 2.5, Career
Minimum GPA for Graduation: 3.0, major courses; 2.0, Career
Minimum Grade Accepted: *C-* in major requirements

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (32 credits)

Fall Semester (16 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
ANTH 1010 (BSS) Cultural Anthropology (3 cr) **or**
ANTH 2010 (BSS) Peoples of the Contemporary World (3 cr) 3
HIST 1500 (BHU) Cultural and Economic Exchange in the Pre-Nineteenth Century World (3 cr) **or**
HIST 1510 (BHU) The Modern World (3 cr) 3
Foreign Language 1010-level course 4
University Studies Breadth course 3

Spring Semester (16 credits)
GEOG 1300 (BSS) World Regional Geography 3
POLS 2100 Introduction to International Politics 3
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles 3
Foreign Language 1020-level course 4
Quantitative Literacy (QL) course 3

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (32 credits)

Fall Semester (16 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
International Studies Area Option courses 6
University Studies Breadth course 3
Foreign Language 2010-level course 4

Spring Semester (16 credits)
International Studies Area Option course 3
Communications Intensive (CI) course 3
University Studies Breadth course 3
Foreign Language 2020-level course 4
Elective course(s) 3

Junior Year (30 credits)

Fall Semester (15 credits)
International Studies Area Option course 3
International Studies upper-division elective course 3
Communications Intensive (CI) course 3
Quantitative Intensive (QI) course 3
Foreign Language upper-division course 3

Spring Semester (15 credits)
International Study Abroad (upper-division) (15 cr) **or**
International Internship (upper-division) (15 cr) 15

Senior Year (30 credits)

Fall Semester (15 credits)
International Studies Area Option elective course 3
International Studies upper-division elective course 3
Depth Humanities and Creative Arts (DHA) course (3 cr) **or**
Depth Social Sciences (DSS) course (3 cr) 3
Elective courses 6

Spring Semester (15 credits)
Senior Thesis (upper-division) course 3
Depth Life and Physical Sciences (DSC) course 3
Upper-division elective courses 9

International Studies Minor

(18 credits) (3.0 minimum overall GPA)

A. Core Courses (15 credits)

ANTH 1010 (BSS) Cultural Anthropology (F,Sp) (3 cr) **or**
ANTH 2010 (BSS) Peoples of the Contemporary World (Sp) (3 cr) 3
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp) (3 cr) **or**
ECON 3400 (DSS) International Economics for Business (F,Sp,Su) (prereq: ECON 2010) (3 cr) 3
GEOG 1300 (BSS) World Regional Geography (F) 3
HIST 1500 (BHU) Cultural and Economic Exchange in the Pre-Nineteeth Century World (F,Sp) (3 cr) **or**
HIST 1510 (BHU) The Modern World (F,Sp,Su) (3 cr) 3
POLS 2100 Introduction to International Politics (F,Sp) 3

B. Electives (3 credits)

Any course listed in any of the four area options is acceptable.

Additional Information

For detailed information about requirements for the International Studies major and minor, see the major requirement sheet, which can be obtained from the Political Science Department, or online at: **http://www.usu.edu/majorsheets/**

Department of Journalism and Communication

Department Head: Michael S. Sweeney
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, penny.byrne@usu.edu

Graduate Program Coordinator:
Edward C. Pease, Animal Science 308B, (435) 797-3293, tpease@cc.usu.edu

Degrees offered: Bachelor of Science (BS) and Bachelor of Arts (BA) in Journalism; BS in Agricultural Communication and Journalism (offered jointly with Agricultural Systems Technology and Education Department, see pages 143-145); Master of Science (MS) and Master of Arts (MA) in Communication

Undergraduate emphases: Broadcast/Electronic Media, Print Journalism, Public Relations/Corporate Communications

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.

Attainment of the goals articulated in the Journalism and Communication Mission Statement requires that Journalism majors exhibit proficiency in the following areas:

1. **Journalism and Communication Skills:** Writing and verbal skills, information-gathering, fact-checking, the synthesis of ideas, and deductive logic.
2. **Technological Skills:** Both the ability to use effectively, as well as the knowledge of, current delivery systems for information and their impacts.
3. **Philosophical Grounding:** Understanding of the philosophical, historical, and ethical antecedents of modern mass journalism and communication practice in the context of the First Amendment and a free and open society, and how these lessons apply in day-to-day mass media practice for media producers and consumers.
4. **Critical Thinking:** The ability to evaluate mass media messages and campaigns, to understand how media and society interact, and the implications of that interaction.
5. **Professional and Personal Responsibility:** Affirmation of the individual's responsibilities as either a producer or consumer of information in a democratic mass media age.
6. **Market Savvy:** Exposure to real-world situations that instruct and demonstrate application of classroom lessons.

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 digital (Mac) photography lab. 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 (38 for Broadcast/Electronic Media emphasis) in Journalism and Communication courses, while pursuing one of the three 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; General Education requirements, 27-31 credits; Depth Education requirements, 15 credits; courses in the minor/cognate area, 12-21 credits; electives from outside the Journalism and Communication Department, 17-33 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. 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.

The Department of Journalism and Communication, as well as Utah State University, allows students to take a class a *maximum* of three times. Failure to achieve the Journalism and Communication Department's minimum grade of *C+* in three attempts in any of the three premajor core classes, or a minimum grade of *C* in any other JCOM course required for the major, will result in the student being dropped from the Journalism major.

Students attempting to register for any JCOM class for the third time will be required to meet with the department head, who will remind them of the three-and-out rule. Students will be asked to sign a form attesting to their understanding of this rule.

Students must complete the premajor core (JCOM 1130, 1500, and 2010) with a *C+* or better before continuing in the Journalism major. Students lacking the minimum grades in the premajor core will be blocked from taking courses in the Broadcast/Electronic Media, Print Journalism, and Public Relations/Corporate Communications emphases.

Students dropped from the Journalism major for failure to achieve the minimum grades within three attempts, or for failure to maintain a GPA of at least 2.5, should speak with an advisor. Options may include switching to another major or creating an Interdisciplinary Studies major.

Premajor Core Requirement (9 credits)

The following courses are required for all majors, and must be completed prior to application for major status:

JCOM 1500 (BSS) Introduction to Mass Communication (F,Sp) 3
JCOM 1130 Beginning Newswriting for Mass Media (F,Sp,Su) 3
JCOM 2010 (BSS) Media Smarts: Making Sense of the Information Age (F,Sp).....3

Prior to taking JCOM 1130, students must complete ENGL 1010, Introduction to Writing (or equivalent) and an English proficiency 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 2160 (CI) Introduction to Online Journalism (F,Sp).....2
(prereq: min of *C+* in JCOM 1130, 1500, and 2010)
JCOM 4000 Senior Seminar in Mass Communication (F,Sp) 1
(prereq: senior standing)
JCOM 4030 Mass Media Law (F,Sp) 3
(prereq: junior standing or instructor's permission)

Emphasis Areas

Each student must select one of the following emphasis areas:

Broadcast/Electronic Media Emphasis (30-38 credits)

A. Premajor Core Requirements (9 credits)
Journalism majors must complete the Premajor Core Requirements *before* taking courses in section *B* below.

B. Broadcast/Electronic Media Requirements (12 credits)
JCOM 2220 Introduction to Video Media (F,Sp).....3
JCOM 2230 Writing for Electronic Media (F).....3
Additional major requirements (JCOM 2160, 4000, 4030) 6

C. Newscast *or* Corporate Video/Multimedia (6-8 credits)
Students should complete *one* of the two options of courses listed below.
JCOM 4210 (CI) Newscast I (F,Sp) (4 cr) **and**
JCOM 4220 (CI) Newscast II (F,Sp) (4 cr).....8
Or
JCOM 4230 Corporate Video (F,Sp) (3 cr) **and**
JCOM 5210 Website Design and Production (F,Sp) (3 cr).....6

D. Communication Electives (3-9 credits)
Students should consult with their advisor to choose appropriate electives.

Print Journalisim Emphasis (30-36 credits)

A. Premajor Core Requirements (9 credits)
Journalism majors must complete the Premajor Core Requirements *before* taking courses in section B below.

B. Print Journalism Requirements (15 credits)
JCOM 2170 (CI) Reporting Public Affairs (F,Sp) 3
JCOM 3110 (CI) Beyond the Inverted Pyramid (F,Sp) 3
JCOM 3120 (CI) Copy Editing and Publication Design (F,Sp) 3
Additional major requirements (JCOM 2160, 4000, 4030) 6

C. Communication Electives (6-12 credits)
Students should consult with their advisor to choose appropriate electives.

Public Relations/Corporate Communications Emphasis (30-36 credits)

A. Premajor Core Requirements (9 credits)
Journalism majors must complete the Premajor Core Requirements *before* taking courses in section *B* below.

B. Required Courses (12 credits, may be taken concurrently)
JCOM 2300 Introduction to Public Relations (F,Sp) 3
JCOM 2310 (CI) Writing for Public Relations (F,Sp) 3
Additional major requirements (JCOM 2160, 4000, 4030) 6

C. Upper-division Required Courses (6 credits; must be *taken in sequence after completion of JCOM 2300, 2310)*
JCOM 3300 Strategic Research Methods in Public Relations (F,Sp) ..3
JCOM 5300 (CI) Case Studies in Public Relations (F,Sp) (3 cr) **or**
JCOM 5320 Public Relations Agency (F,Sp) (3 cr) 3

D. Electives (3-9 credits; at least 3 credits in skills course and 3 credits upper division. A 3-credit upper-division skills course meets all elective requirements.)

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.

Sample Four-year Plan for Journalism Major, Broadcast/Electronic Media Emphasis

Minimum GPA for Admission: 2.5, Career
Minimum GPA for Graduation: 2.5, major courses; 2.5 USU; 2.5, Career
Minimum Grade Accepted: *C* in major courses; *C+* in JCOM 1130, 1500, and 2010

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (30 credits)
Fall Semester (15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
JCOM 1500 (BSS) Introduction to Mass Communication.....3
Quantitative Literacy (QL) course.....3
University Studies Breadth course 3
Elective course(s).....3

Spring Semester (15 credits)
JCOM 1130 Beginning Newswriting for the Mass Media 3
Minor or Cognate course 3
University Studies Breadth courses 6
Elective course(s) 3

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (29 credits)
Fall Semester (15 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
JCOM 2010 (BSS) Media Smarts: Making Sense of the Information Age 3
Minor or Cognate courses 3
University Studies Breadth courses 6

Spring Semester (14 credits)
JCOM 2160 (CI) Introduction to Online Journalism 2
JCOM 2220 Introduction to Video Media 3
Minor or Cognate course 3
Minor or Cognate upper-division course 3
Quantitative Intensive (QI) course 3

Junior Year (31 Credits)
Fall Semester (13 credits)
JCOM 2230 Writing for Electronic Media 3
JCOM 4210 (CI)[1] Newscast I 4
Minor or Cognate upper-division course 3
Depth Humanities and Creative Arts (DHA) course 3

Spring Semester (15 credits)
JCOM 4220 (CI)[1] Newscast II 4
Depth Life and Physical Sciences (DSC) course 3
Elective courses 8

Summer Semester (3 credits)
JCOM 4510 Communication Internship 3

Senior Year (30 credits)
Fall Semester (15 credits)
JCOM 4030 Mass Media Law 3
Minor or Cognate upper-division course 3
Upper-division elective courses 6
Elective course(s) 3

Spring Semester (15 credits)
JCOM 4000 Senior Seminar in Mass Communication 1
JCOM elective course 3
Upper-division elective courses 4
Elective courses 7

[1]Students completing this emphasis have the option of taking *both* **JCOM 4210 (CI)** Newscast I (4 cr) *and* **JCOM 4220 (CI)** Newscast II (4 cr) ***or*** substituting *both* **JCOM 4230** Corporate Video (3 cr) *and* **JCOM 5210** Website Design and Production (3 cr). Students choosing the second option must make up the credit difference with a 3-credit JCOM upper-division elective course to accumulate a minimum of 120 credits, as required for graduation. In addition, students completing the second option must complete two Communications Intensive (CI) courses.

Sample Four-year Plan for Journalism Major, Print Journalism Emphasis

Minimum GPA for Admission: 2.5, Career
Minimum GPA for Graduation: 2.5, major courses; 2.0 USU; 2.0, Career
Minimum Grade Accepted: *C* in major courses; *C+* in JCOM 1130, 1500, and 2010

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (30 credits)
Fall Semester (15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
JCOM 1500 (BSS) Introduction to Mass Communication 3
Quantitative Literacy (QL) course 3
University Studies Breadth course 3
Elective course(s) 3

Spring Semester (15 credits)
JCOM 1130 Beginning Newswriting for the Mass Media 3
Minor or Cognate course 3
University Studies Breadth courses 6
Elective course(s) 3

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (29 credits)
Fall Semester (15 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
JCOM 2010 (BSS) Media Smarts: Making Sense of the Information Age 3
Minor or Cognate courses 3
University Studies Breadth courses 6

Spring Semester (14 credits)
JCOM 2160 (CI) Introduction to Online Journalism 2
JCOM 2170 (CI) Reporting Public Affairs 3
Minor or Cognate upper-division course 3
Quantitative Intensive (QI) course 3
Elective course(s) 3

Junior Year (33 credits)
Fall Semester (15 credits)
JCOM 3110 (CI) Beyond the Inverted Pyramid 3
JCOM elective course 3
Minor or Cognate upper-division course 3
Depth Humanities and Creative Arts (DHA) course 3
Upper-division elective course 3

Spring Semester (15 credits)
JCOM 3120 (CI) Copy Editing and Publication Design 3
JCOM 4030 Mass Media Law 3
Depth Life and Physical Sciences (DSC) course 3
Elective courses 6

Summer Semester (3 credits)
JCOM 4510 Communication Internship 3

Senior Year (28 credits)
Fall Semester (15 credits)
JCOM elective courses 6
Minor or Cognate upper-division course 3
Upper-division elective course 3
Elective course(s) 3

Spring Semester (13 credits)
JCOM 4000 Senior Seminar in Mass Communication 1
JCOM upper-division courses 6
Elective courses 6

Sample Four-year Plan for Journalism Major, Public Relations/Corporate Communications Emphasis

Minimum GPA for Admission: 2.5, Career
Minimum GPA for Graduation: 2.5, major courses; 2.5 USU; 2.5, Career
Minimum Grade Accepted: *C* in major courses; *C+* in JCOM 1130, 1500, and 2010

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (30 credits)
Fall Semester (15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
JCOM 1500 (BSS) Introduction to Mass Communication 3
Quantitative Literacy (QL) course 3
University Studies Breadth course 3
Elective course 3

Spring Semester (15 credits)
JCOM 1130 Beginning Newswriting for the Mass Media 3
Minor or Cognate course 3
University Studies Breadth courses 6
Elective course(s) 3

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (29 credits)
Fall Semester (15 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
JCOM 2010 (BSS) Media Smarts: Making Sense of the Information Age 3
Minor or Cognate courses 3
University Studies Breadth courses 6

Spring Semester (14 credits)
JCOM 2160 (CI) Introduction to Online Journalism 2
JCOM 2300 Introduction to Public Relations 3
Minor or Cognate course 3
Minor or Cognate upper-division course 3
Quantitative Intensive (QI) course 3

Junior Year (30 credits)
Fall Semester (15 credits)
JCOM 2310 (CI) Writing for Public Relations 3
Minor or Cognate upper-division course 3
Depth Humanities and Creative Arts (DHA) course 3
Depth Life and Physical Sciences (DSC) course 3
Upper-division elective course 3

Spring Semester (12 credits)
JCOM 3300 Strategic Research Methods in Public Relations 3
JCOM 4030 Mass Media Law 3
JCOM upper-division Skills elective course 3
Communications Intensive (CI) course 3

Summer Semester (3 credits)
JCOM 4510 Communication Internship 3

Senior Year (31 credits)
Fall Semester (15 credits)
JCOM 4530 Special Topics in Communication: Integrated Marketing 3
JCOM 5300 (CI) Case Studies in Public Relations (3 cr) **or**
JCOM 5320 Public Relations Agency (3 cr) 3
Minor or Cognate upper-division course 3
Upper-division elective courses 6

Spring Semester (16 credits)
JCOM 4000 Senior Seminar in Mass Communication 1
Elective courses 15

Journalism Minor

Students may earn a minor in Journalism by completing a minimum of 18 JCOM credits. The minimum GPA requirements for Journalism minors are the same as those required for Journalism majors.

These credits must include:
JCOM 1130 Beginning Newswriting for the Mass Media (F,Sp,Su) (3 cr) **or**
JCOM 2010 (BSS) Media Smarts: Making Sense of the Information Age (F,Sp) (3 cr) 3
JCOM 1500 (BSS) Introduction to Mass Communication (F,Sp) 3

For the remaining 12 JCOM credits, students must select one of the following options:

(a)
JCOM 2170 (CI) Reporting Public Affairs (F,Sp) 3
JCOM faculty advisor-approved upper-division JCOM credits 9

(b)
JCOM 2220 Introduction to Video Media (F,Sp) 3
JCOM 2230 Writing for Electronic Media (F,Sp) 3
JCOM faculty advisor-approved upper-division JCOM credits 6

(c)
JCOM 2300 Introduction to Public Relations (F,Sp) 3
JCOM 2310 (CI) Writing for Public Relations (F,Sp) 3
JCOM faculty advisor-approved upper-division JCOM credits 6

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 won state, regional, and national awards 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, anchor, 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.

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. Minimum GPA requirements for participation in departmental honors vary by department, but usually fall within the range of 3.30-3.50. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level. The campus-wide Honors Program, which is open to all qualified students regardless of major, offers a rich array of cultural and social activities, special classes, and the benefit of Honors early registration. Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@cc.usu.edu; or contact the Journalism and Communication departmental advisor, Penny Byrne, at penny.byrne@usu.edu. Additional information can be found online at: **http://www.usu.edu/honors/**

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 Café; and the Media and Society Lecture Series; check out the Journalism and Communication Department's website: **http://www.usu.edu/journalism**

For detailed information about requirements for the Journalism major and minor, see the major requirement sheet, which can be obtained from the department, or accessed online at: **http://www.usu.edu/majorsheets/**

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 three-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.

The **Plan C**, another "Professional Option," is the same as the Plan B *except*, instead of a professional project, the student enrolls in additional coursework.

All three options—A, B, and C—require the student to pass comprehensive exit exams.

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.

Department of Journalism and Communication

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 1130 Beginning Newswriting for the Mass Media (F,Sp,Su) 3
JCOM 2010 (BSS) Media Smarts: Making Sense of the Information Age (F,Sp).....3
JCOM 3110 (CI) Beyond the Inverted Pyramid (F,Sp) 3
JCOM 4030 (DSS) Mass Media Law (F,Sp).....3

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 enroll in the Plan A (thesis), Plan B (Professional Option, with professional project), or Plan C (Professional Option with additional coursework in lieu of project) as outlined below. Plans A and B require 30 semester credits, while Plan C requires 33 semester credits. Plan A is intended for students planning to continue graduate study, teach, or enter professions requiring research skills. Plans B and C are intended for students seeking a terminal professional degree. Selection of the A, B or C 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. 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.

Cognate/Electives (9 credits). With advisor permission, students may include additional Journalism and Communication electives.

Plan B: Professional Option (Project)

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 6970 (3 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.

Cognate/Electives (12 credits). With advisor permission, students may include additional Journalism and Communication electives.

Plan C: Professional Option (Additional Coursework)

Core Requirements (15 credits). All students must complete the following courses: JCOM 6000 (3 cr.), 6020 (3 cr.), 6040 (3 cr.), and 6400 (3 cr.). In addition, students must select a 3-credit Research Tools course (from any department), in consultation with the advisor.

Cognate/Electives (18 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

Professors
Edward C. Pease, journalism, media criticism
Michael S. Sweeney, print journalism, media history

Professor Emeritus
Nelson B. Wadsworth, print journalism

Associate Professors
Penny M. Byrne, broadcasting, media law
Brenda Cooper, media criticism, gender and mass communication

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
Les A. Roka, public relations
Nancy M. Williams, print journalism, Internet

Video Lab Supervisor
S. Dean Byrne, broadcast and electronic media

Lecturer
R. Troy Oldham, public relations, corporate communications

Adjunct Instructors
Cami Boehme, Internet
Tim Vitale, public relations
Jay C. Wamsley, print journalism

Course Descriptions

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Department of Landscape Architecture and Environmental Planning

Department Head: Elizabeth A. Brabec
Location: Fine Arts Visual 230
Phone: (435) 797-0500
FAX: (435) 797-0503
E-mail: laepinfo@usu.edu
(faculty e-mail addresses available on departmental website)
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 Questions:
Kathy Allen, Fine Arts Visual 230, (435) 797-0500, laepinfo@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.

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 restricted by facility availability and faculty size. 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 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.

Students applying for matriculation must have a minimum USU GPA of 2.5. Eligibility for matriculation requires the completion of the following prerequisite courses:

LAEP 1200 Basic Graphics in Landscape Architecture (F).....4
LAEP 1300 Computer Applications in Landscape Architecture (Sp).....3
LAEP 1350 Theory of Design (Sp).....4
LAEP 2300 History of Landscape Architecture (F).....3
LAEP 2600 (QI) Landscape Construction I (F).....4
LAEP 2650 Architecture and the Built Environment (Sp).....4
LAEP 2700 (CI) Site Analysis: Social, Behavioral, and Biophysical Dimensions (F).....5
LAEP 2720 Site Planning and Design (Sp).....5
PLSC 2620 Woody Plant Materials: Trees and Shrubs for the Landscape (F).....3

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 Department website: **http://www.usu.edu/laep/**. 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

Computer competency is essential in 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 in the BLA program (beginning with LAEP 1300) 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.

Recommended High School Courses

High school students planning to major in landscape architecture may enhance their preparation with courses in art, natural sciences, social sciences, computer applications, and math through college algebra.

Department of Landscape Architecture and Environmental Planning

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 Recreation/Open Space (F) 5
LAEP 3120 Residential Planning and Design (Sp) 5
LAEP 3500 Planting Design (F) 4
LAEP 3610 Landscape Construction II (Sp) 4
LAEP 4100 Urban Theory, Systems, and Design (F) 5
LAEP 4110 Construction Document Preparation (F) 4
LAEP 4120 Emerging Areas in Landscape Architecture I (F,Sp,Su) 2
LAEP 4130 Emerging Areas in Landscape Architecture II (F,Sp,Su) 2
LAEP 4910 Professional Practice I (Sp) 1
LAEP 4920 (CI) Professional Practice II (Sp) 1

Non-LAEP Courses Required for BLA majors:

The following courses taught outside the LAEP Department are required for all BLA majors. Note that several of these courses will also assist in fulfillment of University Studies Requirements.

ASTE 3050 (CI) Technical and Professional Communication Principles in Agriculture (F,Sp) (3 cr) **or**
ENGL 3080 (CI) Introduction to Technical Communication (F,Sp) (3 cr) 3
GEO 3100 (DSC) Natural Disasters (Sp) 3
MATH 1010 Intermediate Algebra (F,Sp,Su) 3
SOC 3610 (DSS) Rural Sociology (F) (3 cr) **or**
SOC 4620 (DSS) Sociology of the Environment and Natural Resources (Sp) (3 cr) 3
PLSC 2620 Woody Plant Materials: Trees and Shrubs for the Landscape (F) 3
WATS 1200 (BLS) Biodiversity: Its Conservation and Future (F,Sp) (3 cr) **or**
WILD 2200 (BLS) Ecology of Our Changing World (F,Sp) (3 cr) 3

All required courses with an LAEP prefix must be passed with a grade of *C-* or better. Students must also complete the University Studies requirements. For more detailed information, see major requirement sheet available from the department, or online at:
http://www.usu.edu/majorsheets/

Required Courses—Four-year Sequence

Minimum GPA for Admission: 2.5, USU
Additional Matriculation Requirements: completion of prerequisite courses, portfolio review, and submission of letter of intent (usually at end of the sophomore year)
Minimum GPA for Graduation: 2.0, USU
Minimum Grade Accepted: *C-* in major courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (32 credits)

Fall Semester (16 credits)
LAEP 1200 Basic Graphics in Landscape Architecture 4
LAEP 2300 History of Landscape Architecture 3
PLSC 2620 Woody Plant Materials: Trees and Shrubs for the Landscape 3
Breadth Physical Sciences (BPS) course 3
Elective course(s) 3

Spring Semester (16 credits)
LAEP 1300 Computer Applications in Landscape Architecture 3
LAEP 1350 Theory of Design 4
WATS 1200 (BLS) Biodiversity: Its Conservation and Future (3 cr) **or**
WILD 2200 (BLS) Ecology of Our Changing World (3 cr) 3
University Studies[1] and elective courses 6

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (30 credits)

Fall Semester (15 credits)
LAEP 2600 (QI) Landscape Construction I 4
LAEP 2700 (CI) Site Analysis: Social, Behavioral, and Biophysical Dimensions 5
University Studies[2] or elective course(s) 6

Spring Semester (15 credits)
GEO 3100 (DSC) Natural Disasters 3
LAEP 2650 Architecture and the Built Environment 4
LAEP 2720 Site Planning and Design 5
University Studies or elective course 3

Junior Year (28 credits)

Fall Semester (15 credits)
LAEP 3100 Recreation/Open Space 5
LAEP 3500 Planting Design 4
University Studies or elective course(s) 6

Spring Semester (13 credits)
LAEP 3120 Residential Planning and Design 5
LAEP 3610 Landscape Construction II 4
LAEP 4910 Professional Practice I 1
ASTE 3050 (CI) Technical and Professional Communication Principles in Agriculture (3 cr) **or**
ENGL 3080 Introduction to Technical Communication (3 cr) 3

Senior Year (30 credits)

Fall Semester (15 credits)
LAEP 4100 Urban Theory, Systems, and Design 5
LAEP 4110 Construction Document Preparation 4
SOC 3610 (DSS) Rural Sociology (3 cr) **or**
SOC 4620 (DSS) Sociology of the Environment and Natural Resources (3 cr) 3
Breadth American Institutions (BAI) course 3

Spring Semester (15 credits)
LAEP 4120 Emerging Areas in Landscape Architecture I 2
LAEP 4130 Emerging Areas in Landscape Architecture II 2
LAEP 4350 Travel Course 1
LAEP 4920 (CI) Professional Practice II 1
University Studies and elective courses 9

[1] Recommended: MATH 1010, Intermediate Algebra, *or* a Quantitative Literacy (QL) course; **and** ENGL 1010 (CL1), Introduction to Writing: Academic Prose.
[2] Recommended: ENGL 2010 (CL2), Intermediate Writing: Research Writing in a Persuasive Mode.

Undergraduate Travel Requirement

The undergraduate curriculum includes a requirement for a minimum of 1 credit of travel and study outside of the bioregion. This travel requirement can be satisfied by one or more of the following courses, depending upon the specific content of the course at the time of offering. (Check with the department for specific information.)

LAEP 4120 Emerging Areas in Landscape Architecture I (F,Sp,Su).....2
LAEP 4130 Emerging Areas in Landscape Architecture II (F,Sp,Su)....2
LAEP 4350 Travel Course (F,Sp,Su).....1-3
LAEP 4900 Special Problems (F,Sp,Su).....1-5

Study Abroad

The department currently has cooperative agreements with the University of Ljubljana, Slovenia, and the Czech Agricultural University in Prague, Czech Republic, where students can study for a semester. Approved courses of study in design and planning programs offered by other institutions may count toward the travel requirement; however, course substitutions are subject to faculty approval.

Faculty-Sponsored Field Study Travel

The department already has a long tradition of a professionally oriented "Spring Break" trip, which is offered for undergraduate students under LAEP 4350. Recent trips have included San Francisco, Los Angeles, Portland, Seattle, Vancouver, Boston, and Washington DC.

The department also offers an international (2-week) field study experience, the destination of which changes from year to year. For example:

May 2005 and 2007—The Italian Renaissance Villa and Town Planning: Looks at Greek (Paestum) and Roman (Pompeii, Roman Forum) antecedents, as well as Renaissance Villas from the region surrounding Rome to Florence and the Tuscan landscape.

March 2006—Paris and Berlin: Looks at the development of the urban fabric with a concentration on contemporary urban development issues, as well as public places and architecture of historical significance.

Individual Travel

Undergraduate students desiring to count individual travel toward their degree will need to enroll for LAEP 4900 (Special Problems). Prior to enrollment, students must have a sponsoring faculty member and must submit a proposal for individual travel/study to the faculty for review. The content, objectives, and outcomes of the proposal will be evaluated for consistency with the educational objectives of the travel program.

Specialized Service Courses

The following courses 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.

LAEP 1030 (BCA) Introduction to Landscape Architecture (F,Sp,Su) 3
LAEP 1200 Basic Graphics in Landscape Architecture (F).....3
LAEP 2300 History of Landscape Architecture (F).....3

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school.

The LAEP Department offers a departmental honors program for BLA students. To qualify, students must be matriculated in the upper division of the LAEP program and must have a cumulative GPA of at least 3.50. The 15-credit honors course requirement for LAEP honors recognition is met by completion of the following: (1) a 3-credit honors thesis during the senior year, (2) two readings seminars (LAEP 6910 and 6930), and (3) an additional 10 credits of upper-division honors coursework.

Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@cc.usu.edu. Additional information can be found online at: **http://www.usu.edu/honors/**

Additional Information

For detailed information about requirements for the Bachelor of Landscape Architecture, see the major requirement sheet, which can be obtained from the department, or accessed online at: **http://www.usu.edu/majorsheets/**

Graduate Programs

The department offers three master's degrees, including two in Landscape Architecture and one in BioRegional Planning.

MLA First Professional Degree in Landscape Architecture

The department offers a three-year, first professional degree for students with a bachelor's degree in any area of study. This option allows students having a wide range of undergraduate experience to obtain an accredited degree in landscape architecture that fulfills the educational requirement for professional registration and allows entrance into the field of landscape architecture.

MLA Advanced Professional Degree

Students with a bachelor's degree in Landscape Architecture can obtain a master's degree within two years. This advanced professional degree affords landscape architects the opportunity to expand their knowledge in areas of special interest.

Master of Science in Bioregional Planning

This joint interdisciplinary program is offered by the department in conjunction with the Department of Environment and Society, College of Natural Resources.

For more information about required and recommended coursework, as well as other requirements for these degrees, visit the departmental website: **http://www.usu.edu/laep/**

Graduate Travel Requirement

All graduate students are required to complete a 1 or 2 credit travel course (LAEP 6550, Travel Course; or LAEP 6900, Special Problems) within the three years of their degree. The travel requirement may be fulfilled as part of the faculty-led international or national field trip experience (which changes venue from year to year), or it may be arranged through independent study outside of the bioregion with permission of the faculty.

Master of Landscape Architecture

The program for the Master of Landscape Architecture (MLA) emphasizes both traditional site planning and design, as well as broader areas of the profession, such as large-scale regional landscape analysis and planning, open space conservation, historic landscape preservation, and sustainable design. 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 graduate studio courses structured around real-world projects.

4. To provide opportunities for each student for exploration and development of an area of concentration 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*—Brabec, Kumble, Nicholson; *Visual Resources Management*—Ellsworth; *Urban Wildlife/Refuge Planning*—Johnson; *Riparian Systems*—Bell and Johnson; *Community Planning*—Bell, Lavoie, Nicholson, and Timmons; *Public Lands/Recreation*—Borecki, Kumble, Timmons; *Urban Design/Theory and Representation*—Lavoie; *Historic Landscapes and Preservation*—Borecki, Brabec, Lavoie, and Timmons; *Land Use Law*—Brabec; *Open Space Conservation and Greenways Development*—Brabec, Johnson, Kumble; *Site Planning*—Bell, Johnson, Lavoie, and 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.

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

Computer competency is essential in the contemporary professional environment. Appropriate computer skills are required for most entry-level opportunities in landscape architecture and environmental planning. Therefore, course content increasingly relies on computer skills and personal access to computers with the appropriate software.

All students entering the 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.

Course of Study

The graduate program director oversees academic advising; however, all incoming students are assigned a faculty mentor 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 and *Areas of Concentration* on pages 360-362) 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 area of concentration may be pursued by selecting a relevant course of study, as outlined on pages 360-362.

First Year (37 credits)

During the first year, coursework concentrates on basic professional competency.

Fall Semester (20 credits)

LAEP 1200 Basic Graphics in Landscape Architecture 4
LAEP 2600 (QI) Landscape Construction I 4
LAEP 2700 (CI) Site Analysis: Social, Behavioral, and Biophysical Dimensions 5
LAEP 6230 History of Landscape Architecture 3
LAEP 6860 Faculty/Interdisciplinary Seminar I (taught *both* fall and spring semesters) 1
PLSC 2620 Woody Plant Materials: Trees and Shrubs for the Landscape 3

Spring Semester (17 credits)

LAEP 1300 Computer Applications in Landscape Architecture 3
LAEP 1350 Theory of Design 4
LAEP 2720 Site Planning and Design 5
LAEP 3610 Landscape Construction II 4
LAEP 6890 Seminar on Thesis Proposals and Procedures 1

Second Year (27-29 credits)

During the second year, students can begin to specialize in one or more competencies.

Fall Semester (17-18 credits)

LAEP 6310 Recreation and Open Space Planning and Design (5 cr) **or**
LAEP 6410 Redefining the Urban Landscape (5 cr) 5
Or
LAEP 4120 Emerging Areas in Landscape Architecture I (2 cr) **and**
LAEP 4130 Emerging Areas in Landscape Architecture II (2 cr) 4
(With faculty approval, students may complete LAEP 4120 and 4130 *instead of* LAEP 6310 or 6410.)

LAEP 6350 Planting Design for Sustainability 4
LAEP 6740 Planning Theory and Implementation Issues.....3
LAEP 6910 Reading Seminar I 1
BIOL 6960 Graduate General Ecology (elective).....5

Additional credits should be added as electives from the student's chosen emphasis area.

Spring Semester (10-11 credits)
LAEP 6320 Residential Planning and Design 5
Or
LAEP 4120 Emerging Areas in Landscape Architecture I (2 cr) **and**
LAEP 4130 Emerging Areas in Landscape Architecture II (2 cr).....4
(With faculty approval, students may complete LAEP 4120 and 4130 *instead of* LAEP 6320.)
LAEP 6750 Implementation and Regulatory Techniques in Planning ...3
LAEP 6160 Professional Practice I 1
LAEP 6170 Professional Practice II 1
LAEP 6930 Reading Seminar II 1

Additional credits should be added as electives from the student's chosen emphasis area.

Third Year (14 credits)
Fall Semester (7 credits)
LAEP 6100 Regional Landscape Analysis and Planning (required) 5
LAEP 6970 Thesis Research (Plan A ,Thesis) (2 cr) **or**
LAEP 6960 Master's Project (Plan B, Terminal Project) (2 cr).....2

Additional credits should be added as electives from the student's chosen emphasis area.

Spring Semester (7 credits)
LAEP 6110 Landscape Planning for Wildlife (not required) 3
LAEP 6970 Thesis Research (Plan A ,Thesis) (4 cr) **or**
LAEP 6960 Master's Project (Plan B, Terminal Project) (4 cr).....4

Additional credits should be added as electives from the student's chosen emphasis area.

Note: Recommended electives are listed on emphasis area sheets, which are available from the department. Selection of electives should be related to thesis or terminal project content and should be selected in consultation with the student's mentor and/or thesis/project committee. Specific elective coursework may be required by the thesis/project committee in order to properly prepare the student for thesis or project work (Plan A or B).

Areas of Concentration

The program possesses an enviable reputation for graduating students with strong core professional skills. In addition to these skills, the department has the following four areas of concentration which reflect the strengths of the faculty, along with elective course offerings in other units of the University: (1) Open Space Conservation Planning and Green Space Design, (2) Cultural and Historic Landscapes, (3) Community Planning and Urban Design, and (4) Sustainable Landscapes. These four areas of concentration have recommended courses of study as outlined below, reflecting a depth of study in a particular area of landscape architectural theory and practice. Students may choose one of these areas, or they may create their own course of study to reflect their particular interests. Note that *all* students *must* complete the core MLA curriculum, in addition to courses noted in the various areas of concentration. For current requirements, contact the LAEP graduate program director. **Since these areas of concentration are *not* approved as graduate specializations, they will *not* appear on student transcripts or diplomas.**

Open Space Conservation Planning and Green Space Design

This area of concentration focuses on the conservation, planning, and design of open space. This focus will appeal to individuals who are interested in working for land trusts or for state and local governments in planning or land conservation roles, as well as to landscape architects in public or private practice who are interested in the design and planning of open space. With a strong basis in the Landscape Architecture program in the design and planning of open space (along with the theory, policy, and legal issues), supporting courses can be found in other units in the University. Elective courses can be found in Sociology, focusing on conflict management and the social implications of resource policy; Economics, focusing on valuation and impact analysis; and Natural Resources, focusing on ecology, spatial systems, collaborative problem-solving, and conservation biology.

Primary Courses
LAEP 6100 Regional Landscape Analysis and Planning (F) 5
LAEP 6110 Landscape Planning for Wildlife (Sp).....3
LAEP 6160 Professional Practice I (Sp) 1
LAEP 6170 (CI) Professional Practice II (Sp) 1
LAEP 6230 History of Landscape Architecture (F).....3
LAEP 6310 Recreation and Open Space Planning and Design (F).....5
LAEP 6320 Residential Planning and Design (Sp) 5
LAEP 6750 Implementation and Regulatory Techniques in Planning (F,Sp) 3
LAEP 6900 Special Problems (F,Sp,Su).....1-5
LAEP 6960 Master's Project (F,Sp,Su) (1-6 cr) **or**
LAEP 6970 Thesis Research (F,Sp,Su) (1-6 cr) 1-6

Supporting Coursework
LAEP 2700 (CI) Site Analysis: Social, Behavioral, and Biophysical Dimensions (F).....5
LAEP 2720 Site Planning and Design (Sp).....5
LAEP 6350 Planting Design for Sustainability (F).....4
LAEP 6740 Planning Theory and Implementation Issues (F) 3

Electives
ECON 5560 Natural Resource and Environmental Economics (Sp).....3
ECON 6710 Community Planning and Impact Analysis (F) 3
ENVS 4000 (DSS) Human Dimensions of Natural Resource Management (F).....3
ENVS 5000 Collaborative Problem-Solving for Environment and Natural Resources (Sp).....3
NR 6510 Biophysical and Human Dimensions of Ecosystems (F,Sp,Su) 3
SOC 6630 Natural Resources and Social Development (Sp) 3
SOC 6640 Conflict Management in Natural Resources (Sp) 3
WILD 4600 Conservation Biology (Sp) 3
WILD 6510 Topics in Spatial Ecology (Sp).....1-3
WILD 7220 Community-based Conservation Partnerships (Sp).....3

Cultural and Historic Landscapes

The graduate concentration in Cultural and Historic Landscapes prepares students for work in the research, documentation, analysis, understanding, planning, and management of human-influenced landscapes. Cultural landscapes have been defined by the World Heritage Convention of UNESCO as representing the "combined works of nature and of man. They are illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic, and cultural forces, both external and internal." They are grouped into three broad categories, which include: (1) the historic designed landscape or site, (2) the organically evolved or vernacular landscape, and (3) the associative cultural

(ethnographic) landscape. (UNESCO. World Heritage Convention. Operational Guidelines for the Implementation of the World Heritage Convention. Paris: UNESCO, 1996.) The National Park Service notes that, "Historic landscapes vary in size from small gardens to several thousand-acre national parks. In character they range from designed to vernacular, rural to urban, and agricultural to industrial spaces. Vegetable patches, estate gardens, cemeteries, farms, quarries, nuclear test sites, suburbs, and abandoned settlements all may be considered historic landscapes." (Historic American Landscapes Survey website: **http://www.cr.nps.gov/habshaer/hals/**)

Ever-expanding populations are exerting increased development pressure on historic resources, leading to a growing domestic and international demand for landscape architects trained in this area of concentration. Career application of skills can range from topics as wide-ranging as preservation planning and heritage tourism to regional land-use planning and urban design, in both the public and private sectors.

Primary Courses
LAEP 6230 History of Landscape Architecture (F).....3
LAEP 6250 Internship and Cooperative Education Program (F,Sp,Su).....1-5
LAEP 6550 Travel Course (International Field Study).....1-3
LAEP 6900 Special Problems (F,Sp,Su).....1-5
LAEP 6960 Master's Project (F,Sp,Su) (1-6 cr) **or**
LAEP 6970 Thesis Research (F,Sp,Su) (1-6 cr).....1-6

Supporting Coursework
LAEP 6100 Regional Landscape Analysis and Planning (F).....5
LAEP 6410 Redefining the Urban Landscape (F).....5
LAEP 6740 Planning Theory and Implementation Issues (F).....3
LAEP 6750 Implementation and Regulatory Techniques in Planning (Sp).....3

Electives
ANTH 6110 Southwest Indian Cultures, Past and Present (F).....3
ANTH 6130 Ethnographic Field School (Su).....3-6
ANTH 6650 Developing Societies (F).....3
HIST 6000 Historical Methods and Research (F).....3
HIST 6030 Research Seminar.....3
HIST 6460 Seminar in Environmental History.....3
HIST 6610 Seminar on the American West (F).....3-4
HIST 6620 Seminar in Native American Studies (F).....3-4
HIST 6760 Cultural and Historical Museums (Sp).....3
HIST 6770 Seminar in Folklore and Folklife (F,Sp,Su).....3
SOC 5640 Conflict Management in Natural Resources (Sp).....3

Community Planning and Urban Design

This area of concentration focuses on both large and small communities, with particular application to the Western United States. This curriculum path will appeal to students who want to apply their landscape architecture skills to community focused projects, which could range in scale from an ethnic neighborhood in a city of two million to a downtown redevelopment project for a small town in the rural West. Opportunities upon graduation would include private firms offering planning and design services, as well as public agencies at the local, state or federal level.

Primary Courses
LAEP 6100 Regional Landscape Analysis and Planning (F).....5
LAEP 6370 City and Regional Planning (Sp).....3
LAEP 6410 Redefining the Urban Landscape (F).....5
LAEP 6740 Planning Theory and Implementation Issues (F).....3
LAEP 6750 Implementation and Regulatory Techniques in Planning (F,Sp).....3
LAEP 6900 Special Problems (F,Sp,Su).....1-5

Supporting Coursework
LAEP 2700 (CI) Site Analysis: Social, Behavioral, and Biophysical Dimensions (F).....5
LAEP 2720 Site Planning and Design (Sp).....5
LAEP 6900 Special Problems: Geographic Information Systems (GIS) (F).....2

Electives
ECON 5560 Natural Resource and Environmental Economics (Sp).....3
ECON 5850 Regional and Community Economic Development (F).....3
GEOG 3610 Geography of Rural/Urban Planning (F).....3
SOC 3600 Sociology of Urban Places (F).....3
SOC 3610 (DSS) Rural Sociology (F).....3
SOC 6200 Social Demography (F).....3
SOC 6230 Techniques of Demographic Analysis (Sp).....3
SOC 6700 Advanced Rural Sociology (Sp).....3

Sustainable Landscapes

Sustainability is a broad concept. It can be integrated into virtually every aspect of landscape architecture and environmental planning. The sustainable landscapes area of concentration in the LAEP department is focused on sustainability issues associated with the built landscape and the interface between built landscapes and open space. Coursework includes such subjects as low water use landscaping, planting design, planning for urban wildlife, storm water management, community economic development, and green business. In addition to coursework and thesis writing, students in the sustainable landscapes area of concentration organize and implement the department's annual Sustainability Conference, which is now in its eighth year.

Primary Courses
LAEP 6100 Regional Landscape Analysis and Planning (F).....5
LAEP 6110 Landscape Planning for Wildlife (Sp).....3
LAEP 6350 Planting Design for Sustainability (F).....4
LAEP 6400 Low Water Landscaping (F).....3
LAEP 6900 Special Problems (F,Sp,Su).....1-5
LAEP 6960 Master's Project (F,Sp,Su) (1-6 cr) **or**
LAEP 6970 Thesis Research (F,Sp,Su) (1-6 cr).....1-6

Supporting Coursework
BIOL 2220 General Ecology (F,Sp).....3
LAEP 2600 (QI) Landscape Construction I (F).....4
LAEP 6310 Recreation and Open Space Planning and Design (F).....5
LAEP 3610 Landscape Construction II (Sp).....4
LAEP 6740 Planning Theory and Implementation Issues (F).....3
LAEP 6750 Implementation and Regulatory Techniques in Planning (F,Sp).....3

Electives
ENVS 4000 (DSS) Human Dimensions of Natural Resource Management (F).....3
GEO 3100 (DSC) Natural Disasters (Sp).....3
NR 6510 Biophysical and Human Dimensions of Ecosystems (F,Sp,Su).....3
NR 6520 Structure and Function of Ecological and Social Systems (F,Sp,Su).....3
NR 6530 Integrated Inventory, Analysis, and Assessment of Ecosystems (F,Sp,Su).....3
NR 6540 Ecosystem Management Implementation (F,Sp,Su).....3
SOC 6620 Environment, Technology, and Social Change (Sp).....3
SOC 6640 Conflict Management in Natural Resources (Sp).....3
SOC 7640 Population and Environment (Sp).....3
SOIL 4000 Soil and Water Conservation (F).....4
WATS 5490 Small Watershed Hydrology (F).....4
WATS 6530 Water Quality and Pollution (Sp).....3

WATS 7640 Riparian Ecology and Management (Sp) 3
WILD 7300/5300 Wildlife Damage Management Principles (Sp).....3
WILD 7400 Plant Population Ecology (F).....3

Certificate Programs

Interdisciplinary Graduate Certificate Program in Natural Resource and Environmental Policy: Program goals are to provide students with a more 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 will become familiar with concepts and principles of social, natural, and physical science approaches to natural resource policy.

Interdisciplinary Certificate Program in Landscape Restoration (program currently being developed): This certificate program is designed to prepare resource managers and landscape architects to meet the growing demand for professionals who can plan, design, and construct restoration projects in uplands or streams. This program is interdisciplinary, designed to train students for careers in government, education, and private consulting practice.

Graduate Travel Requirement

The graduate curriculum includes a requirement for a minimum of 1 credit of travel and study outside of the bioregion. This travel requirement can be satisfied by one or more of the following courses:

LAEP 4120 Emerging Areas in Landscape Architecture I (2 cr) **or**
LAEP 4130 Emerging Areas in Landscape Architecture II (2 cr).....2
LAEP 6550 Travel Course (F,Sp,Su).....1-3
LAEP 6900 Special Problems (F,Sp,Su).....1-5

Study Abroad

The department currently has cooperative agreements with the University of Ljubljana, Slovenia, and the Czech Agricultural University in Prague, Czech Republic, where students can study for a semester and complete research projects as appropriate. Approved courses of study in design and planning programs offered by other institutions may count toward the travel requirement; however, course substitutions are subject to faculty approval.

Faculty-Sponsored Field Study Travel

The department already has a long tradition of a professionally oriented “Spring Break” trip, which is offered for graduate students under LAEP 6550. Recent trips have included San Francisco, Los Angeles, Portland, Seattle, Vancouver, Boston, and Washington D.C.

The department also offers the opportunity to join faculty on research trips under LAEP 4120 and 4130 on an international (2-week) field study experience, the destination of which changes from year to year. For example:

May 2005 and 2007—The Italian Renaissance Villa and Town Planning: Looks at Greek (Paestum) and Roman (Pompeii, Roman Forum) antecedents, as well as Renaissance Villas from the region surrounding Rome to Florence and the Tuscan landscape.

March 2006—Paris and Berlin: Looks at the development of the urban fabric with an concentration on contemporary urban development issues, as well as public places and architecture of historical significance.

Individual Travel

Graduate students desiring to count individual travel toward their degree will need to enroll for LAEP 6900 (Special Problems). Prior to enrollment, students must have a sponsoring faculty member and must submit a proposal for individual travel/study to the faculty for review. The content, objectives, and outcomes of the proposal will be evaluated for consistency with the educational objectives of the travel program.

Additional Information

For more detailed information about currently required and recommended coursework, as well as other requirements for this degree, visit the departmental website: **http://www.usu.edu/laep/**

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 concentration.

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. Emphasis is 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 concentration. 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: SOC 6100, 6150, WILD 6500.

Biophysical (3-4 credits)

One of the following courses is required: WATS 6330, WILD 6710. For those students without a background in ecology, WILD 4600 is also required. Credits earned for WILD 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 Concentration (9 credits)
Nine credits should be available to the candidate for an area of concentration.

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
Elizabeth A. Brabec, cultural landscapes, landscape and open space conservation and management, land use law and policy
John C. Ellsworth, visual resources management, computer applications, disturbed lands rehabilitation
Craig W. Johnson, planting design, land rehabilitation, wildlife habitat planning and design, site planning

Associate Professors
David L. Bell, residential design, landscape construction, community planning and design
Caroline Lavoie, urban design and cultural landscapes, design theory, landscape and planning theory
John K. Nicholson, urban and regional planning, computer applications, transportation
Michael L. Timmons, site planning and design, recreation and open space planning, landscape history, historic preservation

Associate Professor Emeritus
Vern J. Budge, landscape construction, recreation planning

Assistant Professors
Peter Kumble, regional landscape planning, professional practice, open space preservation
Margie Borecki, basic graphics, landscape construction, sustainability practices

Course Descriptions

Landscape Architecture and Environmental Planning (LAEP), pages 656-658

Department of Languages, Philosophy, and Speech Communication

Department Head: Bradford "J" Hall
Location: Main 204
Phone: (435) 797-1209
FAX: (435) 797-1329
E-mail: langphil@cc.usu.edu
WWW: http://lpsc.usu.edu

Associate Department Head: J. P. Spicer-Escalante
Location: Main 002K
Phone: (435) 797-0709
FAX: (435) 797-1329
E-mail: langphil@cc.usu.edu

Department Section Coordinators:

Asian Languages:
Atsuko O. Neely, Main 306, (435) 797-1365, akko@cc.usu.edu

French:
Sarah Gordon, Main 002L, (435) 797-8213, sgordon@cc.usu.edu

German:
Felix W. Tweraser, Barn 103, (435) 797-7439, twerfeli@cc.usu.edu

Master of Second Language Teaching (MSLT):
Co-Directors:
Karin de Jonge-Kannan, Main 002D, (435) 797-8318, karin.dejongekan@usu.edu
John E. Lackstrom, Main 211, (435) 797-1210, fat88@cc.usu.edu

Philosophy:
Richard Sherlock, Main 202E, (435) 797-1244, ruffie@cc.usu.edu

Russian:
Taira Koybaeva, Main 202F, (435) 797-3154, taira.koybaeva@usu.edu

Spanish and Portuguese:
Mark D. Larsen, Main 202C, (435) 797-1212, marcos@cc.usu.edu

Speech:
Jennifer A. Peeples, Barn 119, (435) 797-7440, jpeeples@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 students in the teaching emphasis and teaching minors the opportunity to serve the needs of the education professions.

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 nontraditional students through faculty participation in interdisciplinary programs such as Honors, Liberal Arts, 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 16-20). 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 (3.0 in Spanish) to be in good standing in the department and to obtain official approval for graduation.

Career Information

For career and graduate school information, students should contact undergraduate advisors in the department.

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.

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. Minimum GPA requirements for participation in departmental honors vary by department, but usually fall within the range of 3.30-3.50. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level. The campus-wide Honors Program, which is open to all qualified students regardless of major, offers a rich array of cultural and social activities, special classes, and the benefit of Honors early registration. Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@cc.usu.edu. Additional information can be found online at: **http://www.usu.edu/honors/**

Additional Information

For detailed information about requirements for majors and minors within the Languages, Philosophy, and Speech Communication Department, see the major requirement sheets, which are available from the department, or which can be accessed online at:
http://www.usu.edu/majorsheets/

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 professional 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 series of research courses 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://lpsc.usu.edu

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 emphases 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 be quality teachers of these languages, literatures, and cultures in the public schools; and 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

French Major and Minor Requirements

Minimum Departmental Requirements
Total Credits:

French Major	33
French Major, Teaching Emphasis	31 FREN & 31 SCED
French Minor	12
French Minor, Teaching Emphasis	15 FREN & 31 SCED
French Major, Teaching Emphasis without licensure	35
French Minor, Teaching Emphasis without licensure	19

Grade Point Average to Declare a Major or Minor.....2.5 Career GPA
Grade Point Average to Graduate
with Major or Minor.....2.5 GPA within Major/Minor Classes

Notes:
Courses for French Majors and Minors require a minimum of *C-* or better.
Courses for French Majors and Minors *may not* be taken on a *Pass/Fail* Basis (except for FREN 3030[7]).

French Major (33 credits) (2.5 GPA)

A. Required Course (3 credits)
LING 4100[5] The Study of Language (F,Sp).....3

B. Elective Courses (30 credits minimum)
Students must complete at least 30 credits of upper-division coursework selected from the following list.

FREN 3030[7] Advanced French for Everyday Communication (graded pass/fail *only*) (Su).....3
FREN 3060 (CI)[2] French Conversation (F).....3
FREN 3070[7] Advanced French Language Study Abroad I (Su).....4
FREN 3080[7] Advanced French Language Study Abroad II (Su).....4
FREN 3090 (CI)[3] French Intermediate Written Communication (F).....3
FREN 3500 (DHA) Topics in French Literature in Translation (repeatable for credit) (F,Sp,Su).....3
FREN 3510 (CI) Business French (F).....3
FREN 3550 (DHA) French Civilization (F).....3
FREN 3570 France Today (Sp).....3
FREN 3600[6] Textual Analysis (F).....3
FREN 3820[7] Advanced Independent Study: Experiencing Paris (Su).....2
FREN 3880 Individual Readings (F,Sp,Su).....1-4
FREN 3900[1] Topics in French and Francophone Studies (F).....3
FREN 4060 (CI)[2] Advanced French Conversation (Sp).....3
FREN 4090 (CI)[3] Advanced Written Communication (F).....3
FREN 4200[5] Applied French Linguistics and Phonetics (Sp).....3
FREN 4520 Information Technologies in French (F).....3
FREN 4610 (DHA)[1] Period Studies in French Literature (Sp).....3
FREN 4620 (DHA)[1] Genre Studies in French Literature (F).....3
FREN 4880 Individual Readings (F,Sp).....1-4
FREN 4900[1] Seminar in French and Francophone Studies (Sp).....3
FREN 4920[1,4] French Language Tutoring (F,Sp,Su).....1-2
LING 4900 Analysis of Cross-Cultural Difference (Sp).....3

Students should note that *no more than two* upper-division French courses taught in English can be applied toward the French majors.

Sample Four-year Plan for French Major

Minimum GPA for Admission: 2.5, USU; 2.5, Career
Minimum GPA for Graduation: 2.5, major courses
Minimum Grade Accepted: *C-* in major courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (32 credits)
Fall Semester (16 credits)
FREN 1010 French First Year I 4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
University Studies Breadth courses 9

Spring Semester (16 credits)
FREN 1020 French First Year II 4
University Studies Quantitative Literacy (QL) course 3
University Studies Breadth courses 9

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (32 credits)
Fall Semester (16 credits)
FREN 2010 French Second Year I 4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Elective courses 9

Spring Semester (16 credits)
FREN 2020 French Second Year II 4
Depth Life and Physical Sciences (DSC) course 3
Depth Social Sciences (DSS) course 3
Quantitative Intensive (QI) course 3
Elective course(s) 3

Junior Year (28 credits)
Fall Semester (14 credits)
LING 4100 The Study of Language 3
Communications Intensive (CI) course 3
FREN upper-division courses 6
Upper-division elective course 1
Elective course 1

Spring Semester (14 credits)
FREN upper-division courses 9
Communications Intensive (CI) course 3
Elective course(s) 2

Senior Year (28 credits)
Fall Semester (14 credits)
FREN upper-division courses 9
Elective courses 5

Spring Semester (14 credits)
FREN upper-division courses 6
Elective courses 8

French Major—Teaching Emphasis *with* Secondary School Licensure (62 credits) (2.5 GPA)

Note: The following requirements *only* specify courses offered by the Department of Languages, Philosophy, and Speech Communication. To be licensed to teach in the Utah public secondary school system, students with a teaching emphasis must also complete additional courses (approximately 31 credits) required by the Department of Secondary Education. For more information, please contact the Department of Secondary Education, Education Building 330, or review the supplementary section, entitled *Secondary Teacher Education Program* (*STEP) Level Outline* on page 374. Information is also provided on the Web at:
http://secondaryeducation.usu.edu/cs_admission.php

I. French and Linguistics Courses (31 credits)

A. Required Courses (25 credits)
LING 4100[5] The Study of Language (F,Sp) 3
FREN 4200[5,9] Applied French Linguistics and Phonetics (Sp) 3
FREN 3060 (CI) French Conversation (F) (3 cr) **or**
FREN 4060 (CI)[2] Advanced French Conversation (Sp) (3 cr) 3
FREN 3090 (CI) French Intermediate Written Communication (F) (3 cr) **or**
FREN 4090 (CI)[3] Advanced Written Communication (F) (3 cr) 3
FREN 3550 (DHA) French Civilization (F) (3 cr) **or**
FREN 3570 France Today (Sp) (3 cr) 3
FREN 3600[6] Textual Analysis (F) 3
FREN 4610 (DHA)[1] Period Studies in French Literature (Sp) 3
FREN 4620 (DHA)[1] Genre Studies in French Literature (F) 3
FREN 4920[1,4] French Language Tutoring (F,Sp,Su) 1-2

B. Elective Courses (6 credits)
Students must complete 6 additional upper-division credits in coursework either not taken above or from the following list:

FREN 3500 (DHA) Topics in French Literature in Translation (repeatable for credit) (F,Sp,Su) 3
FREN 3510 (CI) Business French (F) 3
FREN 3900[1] Topics in French and Francophone Studies (F) 3
FREN 4520 Information Technologies in French (F) 3
FREN 4900[1] Seminar in French and Francophone Studies (Sp) 3
LING 4900 Analysis of Cross-Cultural Difference (Sp) 3
FREN 3030[7] Advanced French for Everyday Communication (Su) 3
FREN 3070[7] Advanced French Language Study Abroad I (Su) 4
FREN 3080[7] Advanced French Language Study Abroad II (Su) 4
FREN 3820[7] Advanced Independent Study: Experiencing Paris (Su) 2
FREN 3880 Individual Readings (F,Sp,Su) 1-4

II. Secondary Teacher Education Program (STEP) Courses (31 credits; 35 credits including courses for teaching minor)

For further information, review the *Secondary Teacher Education Program* (*STEP) Level Outline* on page 374.

Suggested Four-year Plan for French Major, French Teaching Emphasis

Minimum GPA for Admission: 2.5, USU; 2.5, Career
Minimum GPA for Graduation: 2.5, major courses
Minimum Grade Accepted: *C-* in major courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (32 credits)
Fall Semester (16 credits)
FREN 1010 French First Year I 4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
University Studies Breadth courses 9

Spring Semester (16 credits)
FREN 1020 French First Year II 4
University Studies Quantitative Literacy (QL) course 3
University Studies Breadth courses 9

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (29 credits)
Fall Semester (16 credits)
FREN 2010 French Second Year I 4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Depth Life and Physical Sciences (DSC) course 3
Quantitative Intensive (QI) course 3
Teaching Minor course 3

Spring Semester (13 credits)
FREN 2020 French Second Year II 4
Teaching Minor courses 9

Junior Year (30 credits)
Fall Semester (15 credits)
LING 4100 The Study of Language 3
Communications Intensive (CI) course 3
FREN upper-division courses 9

Spring Semester (15 credits)
FREN upper-division courses 9
Teaching Minor courses 6

Senior Year (26 credits)
Fall Semester (12 credits)
FREN upper-division courses 9
Teaching Minor course 3

Spring Semester (14 credits)
LING 3300 Clinical Experience I 1
LING 4400 Teaching Modern Languages 3
SCED 3210 (CI/DSS) Educational and Multicultural Foundations 3
FREN upper-division course 3
STEP course(s) 4

Teaching Certification Year (27 credits)
Fall Semester (15 credits)
FREN upper-division course 3
STEP courses 12

Spring Semester (12 credits)
LING 5500 Student Teaching Seminar 2
LING 5630 Student Teaching in Secondary Schools 10

French Minor (12 credits) (2.5 GPA)

To receive a French minor, students must complete 12 upper-division credits in French. Students should note that *only one credit of FREN 4920* may count toward the French minor. In addition, courses taken for the French minor programs may not be taken on a *pass/fail* basis, with the exception of FREN 3030. Students should also note that *no more than one* upper-division French course taught in English can be applied toward the French minor.

French Minor—Teaching Emphasis *with* Secondary School Licensure (46 credits) (2.5 GPA)

Note: The following requirements *only* specify courses offered by the Department of Languages, Philosophy, and Speech Communication. To be licensed to teach in Utah public secondary school system, students with a teaching emphasis must also complete additional courses (approximately 31 credits) required by the Department of Secondary Education. For more information, please contact the Department of Secondary Education, Education Building 330, or review the supplementary section, entitled *Secondary Teacher Education Program* (*STEP) Level Outline* on page 374. Information is also provided on the Web at:
http://secondaryeducation.usu.edu/cs_admission.php

Students should note that *only one credit of FREN 4920* may count toward the French Minor—Teaching Emphasis. In addition, courses taken for the French minor programs may not be taken on a *pass/fail* basis, with the exception of FREN 3030.

I. French and Linguistics Courses (15 credits)

A. Required Courses (12 credits)
FREN 3090 (CI)[3] French Intermediate Written Communication (F) (3 cr) **or**
FREN 4090 (CI)[3] Advanced Written Communication (F) (3 cr) 3
FREN 3550 (DHA) French Civilization (F) (3 cr) **or**
FREN 3570 France Today (Sp) (3 cr) 3
FREN 3600[6] Textual Analysis (F) 3
FREN 4200[9] Applied French Linguistics and Phonetics (Sp) 3

B. Elective Courses (3 credits)
Students must complete an additional three credits in coursework selected from the following list:

FREN 4610 (DHA)[1] Period Studies in French Literature (Sp) 3
FREN 4620 (DHA)[1] Genre Studies in French Literature (F) 3
LING 4900 Analysis of Cross-Cultural Difference (Sp) 3
FREN 3030[7] Advanced French for Everyday Communication (Su) 3
FREN 3070[7] Advanced French Language Study Abroad I (Su) 4
FREN 3080[7] Advanced French Language Study Abroad II (Su) 4
FREN 3500 (DHA) Topics in French Literature in Translation (repeatable for credit) (F,Sp,Su) 3
FREN 3510 (CI) Business French (F) 3
FREN 3820[7] Advanced Independent Study: Experiencing Paris (Su) 2
FREN 3880 Individual Readings (F,Sp,Su) 1-4
FREN 4900[1] Seminar in French and Francophone Studies (Sp) 3
FREN 4920[1,8] French Language Tutoring (F,Sp,Su) 1-2

II. Secondary Teacher Education Program (STEP) Courses (31 credits; 35 credits including courses for teaching emphasis)

For further information, review the *Secondary Teacher Education Program* (*STEP) Level Outline* on page 374.

French Major and/or Minor—Teaching Emphasis *without* Secondary School Licensure (major 35 credits, minor 19 credits) (2.5 GPA)

It is possible to have a teaching emphasis within a major or minor in French without receiving Secondary School teaching licensure. However, unless the student is an elementary education major, he or she *would not* be able to teach in Utah public schools (nor at many private ones). Graduating without licensure may allow employment at some community colleges and universities.

In order to complete the French Major—Teaching Emphasis *without* Secondary School Licensure, students must fulfill all of the requirements listed under Section I (French and Linguistics Courses) of the French Major—Teaching Emphasis *with* Secondary School Licensure (31 credits), plus either LING 3300[10] or 4300[10] (1 credit) and LING 4400[10] (3 credits), for a total of 35 credits.

Similarly, to complete a French Minor—Teaching Emphasis *without* Secondary School Licensure, students must fulfill all of the requirements listed under Section I (French and Linguistics Courses) of the French Minor—Teaching Emphasis *with* Secondary School Licensure (15 credits), plus either LING 3300[10] or 4300[10] (1 credit) and LING 4400[10] (3 credits), for a total of 19 credits.

[1]This course requires FREN 3600 or instructor's permission. FREN 3900, 4900, and 4920 may be repeated for credit with different content.
[2]Students with foreign experience may be advised to enroll in FREN 3060 or 4060, depending upon results of a placement test and/or instructor's determination.
[3]Students with foreign experience may be advised to enroll in FREN 3090 or 4090, depending upon results of a placement test and/or instructor's determination.
[4]Only two credits of FREN 4920 may count toward the French Major or French Major—Teaching Emphasis.
[5]It is recommended that LING 4100 be taken before FREN 4200.
[6]This course may be repeated one time for credit with different content.
[7]Offered only through USU's Summer Study Abroad program in France.
[8]Only one credit of FREN 4920 may count toward the French Minor or French Minor—Teaching Emphasis.
[9]Students should take FREN 4200 near the end of their coursework. Please note that FREN 4200 is offered every other year.
[10]LING 3300 or 4300 and LING 4400 must be taken *during the same semester*, and should be the *last* courses taken for the major or minor.

German Major and Minor Requirements

Minimum Departmental Requirements

Total Credits:

German Major 33
German Major, Teaching Emphasis ..... 31 GERM & 31 SCED
German Minor 12
German Minor, Teaching Emphasis ..... 15 GERM & 31 SCED
German Major, Teaching Emphasis without licensure 35
German Minor, Teaching Emphasis without licensure 19

Grade Point Average to Declare a Major or Minor ..... 2.5 Career GPA
Grade Point Average to Graduate with Major or Minor ..... 2.5 GPA within Major/Minor Classes

Notes:

Courses for German Majors and Minors require a minimum of *C-* or better.

Courses for German Majors and Minors *may not* be taken on a *Pass/Fail* Basis.

German Major (33 credits) (2.5 GPA)

A. Required Courses (9 credits)

GERM 3000 (DHA) Introduction to German Studies (F) 3
GERM 3040 (CI) Advanced German Grammar and Composition (F) ... 3
LING 4100 The Study of Language (F,Sp) 3

B. Elective Courses (24 credits)

Students must complete at least 24 credits of upper-division coursework from the following list.

GERM 3050 (CI) Advanced German Grammar and Composition (Sp) 3
GERM 3300 (DHA) Contemporary German Speaking Cultures (Sp) ... 3
GERM 3510 (CI) Business German (Sp) 3
GERM 3540 (CI) Techniques in Translating German Texts (F) 3
GERM 3550 (DHA) Cultural History of German Speaking Peoples (F) 3
GERM 3600 (DHA) Survey of German Literature I (F) 3
GERM 3610 (DHA) Survey of German Literature II (Sp) 3
GERM 3800[11] German III Study Abroad (Su) 3
GERM 3880[11] Individual Readings (F,Sp) 1-4
GERM 4200 Applied German Linguistics and Phonetics (Sp) 3
GERM 4610 German Narratives (Sp) 3
GERM 4650 (DHA) Trends in Modern German Literature (F) 3
GERM 4800[11] German IV Study Abroad (Su) 1-4
GERM 4880[11] Individual Readings (F,Sp) 1-4
GERM 4900[11] Special Topics (Sp) 3
GERM 4910 German for Special Purposes (Sp) 3
GERM 4920[11,12] German Language Tutoring (F,Sp,Su) 1
LING 4900 Analysis of Cross-Cultural Difference (Sp) 3

Note: Credits obtained in lower-division German courses *cannot* be applied toward the German major programs.

Sample Four-year Plan for German Major

Minimum GPA for Admission: 2.5, USU; 2.5, Career
Minimum GPA for Graduation: 2.5, major courses; 2.0, Career
Minimum Grade Accepted: *C-* in major courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (32 credits)

Fall Semester (16 credits)

GERM 1010 German First Year I 4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
University Studies Breadth courses 9

Spring Semester (16 credits)

GERM 1020 German First Year II 4
University Studies Quantitative Literacy (QL) course 3
University Studies Breadth courses 9

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (32 credits)

Fall Semester (16 credits)

GERM 2010 German Second Year I 4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Depth Life and Physical Sciences (DSC) course 3
Depth Social Sciences (DSS) course 3
Quantitative Intensive (QI) course 3

Spring Semester (16 credits)

GERM 2020 German Second Year II 4
Elective courses 12

Junior Year (28 credits)
Fall Semester (14 credits)
LING 4100 The Study of Language....3
Communications Intensive (CI) course....3
GERM upper-division courses....6
Upper-division elective course....1
Elective course....1

Spring Semester (14 credits)
Communications Intensive (CI) course....3
GERM upper-division courses....9
Elective course(s)....2

Senior Year (28 credits)
Fall Semester (14 credits)
GERM upper-division courses....9
Elective courses....5

Spring Semester (14 credits)
GERM upper-division courses....6
Elective courses....8

German Major—Teaching Emphasis *with* Secondary School Licensure (62 credits) (2.5 GPA)

Note: The following requirements *only* specify courses offered by the Department of Languages, Philosophy, and Speech Communication. To be licensed to teach in the Utah public secondary school system, students with a teaching emphasis must also complete additional courses (approximately 31 credits) required by the Department of Secondary Education. For more information, please contact the Department of Secondary Education, Education Building 330, or review the supplementary section, entitled *Secondary Teacher Education Program* (*STEP) Level Outline* on page 374. Information is also provided on the Web at:
http://secondaryeducation.usu.edu/cs_admission.php

I. German and Linguistics Courses (31 credits)

A. Required Courses (18 credits)
LING 4100[13] The Study of Language (F,Sp)....3
LING 4900 Analysis of Cross-Cultural Difference (Sp)....3
GERM 3000 (DHA) Introduction to German Studies (F)....3
GERM 3040 (CI) Advanced German Grammar and Composition (F)....3
GERM 3050 (CI) Advanced German Grammar and Composition (Sp)....3
GERM 4200[14] Applied German Linguistics and Phonetics (Sp)....3

B. Elective Courses (13 credits)
GERM 3300 (DHA) Contemporary German Speaking Cultures (Sp)....3
GERM 3510 (CI) Business German (Sp)....3
GERM 3540 (CI) Techniques in Translating German Texts (F)....3
GERM 3550 (DHA) Cultural History of German Speaking Peoples (F)....3
GERM 3600 (DHA) Survey of German Literature I (F)....3
GERM 3610 (DHA) Survey of German Literature II (Sp)....3
GERM 3800[11] German III Study Abroad (Su)....1-4
GERM 3880[11] Individual Readings (F,Sp)....1-4
GERM 4610 German Narratives (Sp)....3
GERM 4650 (DHA) Trends in Modern German Literature (F)....3
GERM 4800[11] German IV Study Abroad (Su)....1-4
GERM 4880[11] Individual Readings (F,Sp)....1-4
GERM 4900[11] Special Topics (Sp)....3
GERM 4910 German for Special Purposes (Sp)....3
GERM 4920[11,12] German Language Tutoring (F,Sp,Su)....1

II. Secondary Teacher Education Program (STEP) Courses (31 credits; 35 credits including courses for teaching minor)

For further information, review the *Secondary Teacher Education Program* (*STEP) Level Outline* on page 374.

Sample Four-year Plan for German Major, German Teaching Emphasis

Minimum GPA for Admission: 2.5, USU; 2.5, Career
Minimum GPA for Graduation: 2.5, major courses
Minimum Grade Accepted: *C*- in major courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (32 credits)
Fall Semester (16 credits)
GERM 1010 German First Year I....4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose....3
University Studies Breadth courses....9

Spring Semester (16 credits)
GERM 1020 German First Year II....4
University Studies Quantitative Literacy (QL) course....3
University Studies Breadth courses....9

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (29 credits)
Fall Semester (16 credits)
GERM 2010 German Second Year I....4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode....3
Depth Life and Physical Sciences (DSC) course....3
Quantitative Intensive (QI) course....3
Teaching Minor course....3

Spring Semester (13 credits)
GERM 2020 German Second Year II....4
Teaching Minor courses....9

Junior Year (30 credits)
Fall Semester (15 credits)
LING 4100 The Study of Language....3
Communications Intensive (CI) course....3
GERM upper-division courses....9

Spring Semester (15 credits)
GERM upper-division courses....9
Teaching Minor courses....6

Senior Year (26 credits)
Fall Semester (12 credits)
GERM upper-division courses....9
Teaching Minor courses....3

Spring Semester (14 credits)
LING 3300 Clinical Experience I....1
LING 4400 Teaching Modern Languages....3
SCED 3210 (CI/DSS) Educational and Multicultural Foundations....3
GERM upper-division courses....3
STEP course(s)....4

Teaching Certification Year (27 credits)
Fall Semester (15 credits)
GERM upper-division course 3
STEP courses..... 12

Spring Semester (12 credits)
LING 5500 Student Teaching Seminar..... 2
LING 5630 Student Teaching in Secondary Schools 10

German Minor (12 credits) (2.5 GPA)

To receive a German minor, students must complete 12 upper-division credits in German. Students should note that ***only one credit*** of GERM 4920 may count toward the German minor. In addition, courses taken for the German minor programs ***may not*** be taken on a ***pass/fail*** basis.

German Minor—Teaching Emphasis *with* Licensure (46 credits) (2.5 GPA)

Note: The following requirements *only* specify courses offered by the Department of Languages, Philosophy, and Speech Communication. To be licensed to teach in the Utah public secondary school system, students with a teaching emphasis must also complete additional courses (approximately 31 credits) required by the Department of Secondary Education. For more information, please contact the Department of Secondary Education, Education Building 330, or review the supplementary section, entitled *Secondary Teacher Education Program* (*STEP) Level Outline* on page 374. Information is also provided on the Web at:
http://secondaryeducation.usu.edu/cs_admission.php

Students should note that *only 1 credit* from GERM 4920 may count toward the German Minor—Teaching Emphasis. In addition, courses taken for the German minor programs *may not* be taken on a *pass/fail* basis.

I. German and Linguistics Courses (15 credits)

A. Required Courses (12 credits)
LING 4900 Analysis of Cross-Cultural Difference (Sp)..... 3
GERM 3040 (CI) Advanced German Grammar and Composition (F)..... 3
GERM 3050 (CI) Advanced German Grammar and Composition (Sp)..... 3
GERM 4200[14] Applied German Linguistics and Phonetics (Sp)..... 3

B. Elective Courses (3 credits)
GERM 3300 (DHA) Contemporary German Speaking Cultures (Sp) ... 3
GERM 3510 (CI) Business German (Sp) 3
GERM 3540 (CI) Techniques in Translating German Texts (F) 3
GERM 3550 (DHA) Cultural History of German Speaking Peoples (F)..... 3
GERM 3600 (DHA) Survey of German Literature I (F) 3
GERM 3610 (DHA) Survey of German Literature II (Sp) 3
GERM 3800[11] German III Study Abroad (Su)..... 1-4
GERM 3880[11] Individual Readings (F,Sp) 1-4
GERM 4610 German Narratives (Sp) 3
GERM 4650 (DHA) Trends in Modern German Literature (F)..... 3
GERM 4800[11] German IV Study Abroad (Su)..... 1-4
GERM 4880[11] Individual Readings (F,Sp) 1-4
GERM 4900[11] Special Topics (Sp)..... 3
GERM 4910 German for Special Purposes (Sp)..... 3
GERM 4920[11,12] German Language Tutoring (F,Sp,Su) 1

II. Secondary Teacher Education Program (STEP) Courses (31 credits; 35 credits including courses for teaching emphasis)

For further information, review the *Secondary Teacher Education Program* (*STEP) Level Outline* on page 374.

German Teaching Emphasis and/or Minor—Teaching Emphasis *without* Secondary School Licensure (major 35 credits) (minor 19 credits) (2.5 GPA)

It is possible to have a teaching emphasis within a major or minor in German without receiving Secondary School teaching licensure. However, unless the student is an elementary education major, he or she *would not* be able to teach in Utah public schools (nor at many private ones). Graduating without licensure may allow employment at some community colleges and universities.

In order to complete the German Major—Teaching Emphasis *without* Secondary School Licensure, students must fulfill all of the requirements listed under Section I (German and Linguistics Courses) of the German Major—Teaching Emphasis *with* Secondary School Licensure (31 credits), plus either LING 3300[15] or LING 4300[15] (1 credit) and LING 4400[15] (3 credits), for a total of 35 credits.

Similarly, to complete a German Minor—Teaching Emphasis *without* Secondary School Licensure, students must fulfill all of the requirements listed under Section I (German and Linguistics Courses) of the German Minor—Teaching Emphasis *with* Secondary School Licensure (15 credits), plus either LING 3300[15] or 4300[15] (1 credit) and LING 4400[15] (3 credits) for a total of 19 credits.

[11] This course may be repeated for credit.
[12] Only 2 credits of GERM 4920 may count toward the German major.
[13] LING 4100 should be taken at the beginning of the student's coursework.
[14] GERM 4200 should be taken near the end of the student's coursework. However, GERM 4200 is not offered every year. Therefore, students should check to see when the course will be offered.
[15] LING 3300 or 4300 and LING 4400 must be taken *during the same semester*, and should be the last courses taken for the major or minor.

Spanish Major and Minor Requirements

Minimum Departmental Requirements
Total Credits:
Spanish Major 34
Spanish Major, Teaching Emphasis ..... 38 SPAN & 31 SCED
Spanish Minor 16
Spanish Minor, Teaching Emphasis ..... 20 SPAN & 31 SCED
Spanish Major, Teaching Emphasis without licensure..... 38
Spanish Minor, Teaching Emphasis without licensure..... 20
Grade Point Average to Declare a Major or Minor..... 2.75 Career GPA
Grade Point Average to Graduate with Major or Minor..... 3.00 GPA within Major/Minor Classes

Notes:
Courses for Spanish Majors and Minors require a minimum of *C-* or better.
Courses for Spanish Majors and Minors *may not* be taken on a *Pass/Fail* Basis (except for courses designated as *Pass/Fail*, such as LING 3300[23], 4300[23], SPAN 3010, 3520, 4920).
At least half (50 percent) of the credits earned for these degrees must be completed in upper-division USU courses offered by the Department of Languages, Philosophy, and Speech Communication, and having prefixes of SPAN or LING. All other credits (including transfer and study abroad credits) must be approved by the Spanish faculty in order to be counted toward these degrees.[16]
Students with prior language experience are required to take a placement test before admission to the Spanish Major.

Spanish Major (34 credits) (3.00 GPA)

A. Required Courses (25 credits)

LING 4100 The Study of Language (F,Sp) 3

Select at least *one* of the following two courses:
SPAN 3040 Advanced Spanish Grammar (F,Sp) 3
SPAN 3800[17] Spanish III Study Abroad (Su) 1-4

Select at least *one* of the following three courses:
SPAN 3550 (DHA) Spanish Culture and Civilization (F,Sp) 3
SPAN 3570 (DHA) Latin American Culture and Civilization (F,Sp) 3
SPAN 4800[17] Hispanic Culture and Civilization—Study Abroad (Su) 1-4

Select at least *three* of the following six courses:

Select *one or two* courses from this group:
SPAN 3600 (DHA) Survey of Spanish Literature I (F,Sp) 3
SPAN 3610 (DHA) Survey of Spanish Literature II (F,Sp) 3
SPAN 3650[17] Spanish Literature—Study Abroad (Su) 1-4

Select *one or two* courses from this group:
SPAN 3620 (DHA) Survey of Latin American Literature I (F,Sp) 3
SPAN 3630 (DHA) Survey of Latin American Literature II (F,Sp) 3
SPAN 3660[17] Latin American Literature—Study Abroad (Su) 1-4

Complete *all* of the following three courses:
SPAN 4900[17] Topics of Spanish Literature (F,Sp) 3
SPAN 4910[17] Topics of Latin American Literature (F,Sp) 3
SPAN 4990 Spanish Degree Assessment (F,Sp)[18,24] 1

B. Elective Courses (9 credits)

Students must complete 9 additional credits in courses either *not taken above* or *selected from the following list*:

SPAN 3010[17,18,19] Hispanic Outreach Practicum (*P/F* only) (F,Sp,Su) 1-4
SPAN 3060 (CI) Advanced Spanish Conversation and Composition (F,Sp) 3
SPAN 3510 Business Spanish (F,Sp) 3
SPAN 3520[17,18,19] Business Spanish Practicum (*P/F* only) (F,Sp,Su) 1-4
SPAN 4200[20] Applied Spanish Linguistics and Phonetics (Sp) 3
SPAN 4880[17,18,21] Individual Readings (F,Sp) 1-4
SPAN 4920[17,18,19,22] Spanish Language Tutoring (*P/F* only) (F,Sp,Su) .. 1
LING 4900 Analysis of Cross-Cultural Difference (Sp) 3

Sample Four-year Plan for Spanish Major

Minimum GPA for Admission: 2.75, Career
Minimum GPA for Graduation: 3.0, major courses
Minimum Grade Accepted: *C-* in major courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (32 credits)

Fall Semester (16 credits)
SPAN 1010 Spanish First Year I 4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
University Studies Breadth courses 9

Spring Semester (16 credits)
SPAN 1020 Spanish First Year II 4
University Studies Quantitative Literacy (QL) course 3
University Studies Breadth courses 9

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (29 credits)

Fall Semester (16 credits)
SPAN 2010 Spanish Second Year I 4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Depth Social Sciences (DSS) course 3
Quantitative Intensive (QI) course 3
Elective course(s) 3

Spring Semester (13 credits)
SPAN 2020 Spanish Second Year II 4
Depth Life and Physical Sciences (DSC) course 3
Communications Intensive (CI) course 3
Elective Course(s) 3

Junior Year (30 credits)

Fall Semester (15 credits)
LING 4100 The Study of Language 3
SPAN 3040 Advanced Spanish Grammar 3
SPAN 3060 (CI) Advanced Spanish Conversation and Composition 3
SPAN 3550 (DHA) Spanish Culture and Civilization 3
Elective course(s) 3

Spring Semester (15 credits)
SPAN 3570 (DHA) Latin American Culture and Civilization 3
SPAN 3600 (DHA) Survey of Spanish Literature I 3
SPAN 3620 (DHA) Survey of Latin American Literature I 3
Elective courses 6

Senior Year (30 credits)

Fall Semester (15 credits)
SPAN 3610 (DHA) Survey of Spanish Literature II 3
SPAN 3630 (DHA) Survey of Latin American Literature II 3
SPAN 4200 Applied Spanish Linguistics and Phonetics 3
Elective courses 6

Spring Semester (15 credits)
SPAN 4900 Topics of Spanish Literature 3
SPAN 4910 Topics of Latin American Literature 3
SPAN 4990 Spanish Degree Assessment 1
Elective courses 8

Spanish Major—Teaching Emphasis (65 credits) (3.00 GPA)

Note: The following requirements *only* specify courses offered by the Department of Languages, Philosophy, and Speech Communication. To be licensed to teach in the Utah public secondary school system, students with a teaching emphasis must also complete additional courses (approximately 31 credits) required by the Department of Secondary Education. For more information, please contact the Department of Secondary Education, Education Building 330, or review the supplementary section, entitled *Secondary Teacher Education Program* (*STEP) Level Outline* on page 374. Information is also provided on the Web at: **http://www.coe.usu.edu/seced/**

Department of Languages, Philosophy, and Speech Communication

I. Spanish and Linguistics Courses (34 credits)

A. Required Courses (29 credits)

LING 4100 The Study of Language (F,Sp) 3
SPAN 4200[20] Applied Spanish Linguistics and Phonetics (Sp) 3
SPAN 4920[17,18,19,22] Spanish Language Tutoring (*P/F* only) (F,Sp,Su) .. 1

Select at least *one* of the following two courses:
SPAN 3040 Advanced Spanish Grammar (F,Sp) 3
SPAN 3800[17] Spanish III Study Abroad (Su) 1-4

Select at least *one* of the following three courses:
SPAN 3550 (DHA) Spanish Culture and Civilization (F,Sp) 3
SPAN 3570 (DHA) Latin American Culture and Civilization (F,Sp) 3
SPAN 4800[17] Hispanic Culture and Civilization—
Study Abroad (Su) 1-4

Select at least *three* of the following six courses:

Select *one or two* courses from this group:
SPAN 3600 (DHA) Survey of Spanish Literature I (F,Sp) 3
SPAN 3610 (DHA) Survey of Spanish Literature II (F,Sp) 3
SPAN 3650[17] Spanish Literature—Study Abroad (Su) 1-4

Select *one or two* courses from this group:
SPAN 3620 (DHA) Survey of Latin American Literature I (F,Sp) 3
SPAN 3630 (DHA) Survey of Latin American Literature II (F,Sp) 3
SPAN 3660[17] Latin American Literature—Study Abroad (Su) 1-4

Complete *all* of the following three courses:
SPAN 4900[17] Topics of Spanish Literature (F,Sp) 3
SPAN 4910[17] Topics of Latin American Literature (F,Sp) 3
SPAN 4990 Spanish Degree Assessment (F,Sp,Su)[18,24] 1

B. Elective Courses (5 credits)

Students must complete 5 additional credits in courses either *not taken above* or *selected from the following list*:
SPAN 3010[17,18,19] Hispanic Outreach Practicum (*P/F* only)
(F,Sp,Su) 1-4
SPAN 3060 (CI) Advanced Spanish Conversation and Composition
(F,Sp) 3
SPAN 3510 Business Spanish (F,Sp) 3
SPAN 3520[17,18,19] Business Spanish Practicum (*P/F* only) (F,Sp,Su) . 1-4
SPAN 4880[17,18,21] Individual Readings (F,Sp) 1-4
LING 4900 Analysis of Cross-Cultural Difference (Sp) 3

Sample Four-year Plan for Spanish Major, Spanish Teaching Emphasis

Minimum GPA for Admission: 2.75, Career
Minimum GPA for Graduation: 3.0, major courses
Minimum Grade Accepted: *C-* in major courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (26 credits)

Fall Semester (13 credits)
SPAN 1010 Spanish First Year I 4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
University Studies Breadth courses 6

Spring Semester (13 credits)
SPAN 1020 Spanish First Year II 4
University Studies Quantitative Literacy (QL) course 3
University Studies Breadth courses 6

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (32 credits)

Fall Semester (16 credits)
SPAN 2010 Spanish Second Year I 4
ENGL 2010 (CL2) Intermediate Writing: Research Writing
in a Persuasive Mode 3
Teaching Minor course 3
University Studies Breadth courses 6

Spring Semester (16 credits)
SPAN 2020 Spanish Second Year II 4
Depth Life and Physical Sciences (DSC) course 3
Quantitative Intensive (QI) course 3
Teaching Minor courses 6

Junior Year (28 credits)

Fall Semester (15 credits)
LING 4100 The Study of Language 3
SPAN 3040 Advanced Spanish Grammar 3
SPAN 3060 (CI) Advanced Spanish Conversation and Composition 3
SPAN 3550 Spanish Culture and Civilization 3
Teaching Minor course 3

Spring Semester (13 credits)
LING 3300 Clinical Experience I 1
LING 4400 Teaching Modern Languages 3
SPAN 3570 Latin American Culture and Civilization 3
SPAN 3600 Survey of Spanish Literature I 3
SPAN 3620 Survey of Latin American Literature I 3

Senior Year (31 credits)

Fall Semester (16 credits)
SPAN 3610 Survey of Spanish Literature II 3
SPAN 3630 Survey of Latin American Literature II 3
SPAN 4200 Applied Spanish Linguistics and Phonetics 3
SPAN 4920 Spanish Language Tutoring 1
Teaching Minor courses 6

Spring Semester (15 credits)
SCED 3100 Motivation and Classroom Management 3
SCED 3210 (CI/DSS) Educational and Multicultural Foundations 3
SCED 4200 (CI) Reading, Writing, and Technology 3
SCED 4210 Cognition and Evaluation of Student Learning 3
SPAN 4900 Topics of Spanish Literature 3

Certification Year (25 credits)

Fall Semester (12 credits)
INST 3500 Technology Tools for Secondary Teachers 1
SPAN 4910 Topics of Latin American Literature (3 cr) 3
SPED 4000 Education of Exceptional Individuals 2
Teaching Minor Certification courses 6

Spring Semester (13 credits)
LING 5500 Student Teaching Seminar 2
LING 5630 Student Teaching in Secondary Schools 10
SPAN 4990 Spanish Degree Assessment 1

Spanish Minor (16 credits) (3.00 GPA)

A. Required Courses (13 credits)

Select at least *one* of the following two courses:

SPAN 3040 Advanced Spanish Grammar (F,Sp) 3
SPAN 3800[17] Spanish III Study Abroad (Su) 1-4

Select at least *three* of the following nine courses:

Select *one or two* courses from this group:
SPAN 3550 (DHA) Spanish Culture and Civilization (F) 3
SPAN 3570 (DHA) Latin American Culture and Civilization (Sp) 3
SPAN 4800[17] Hispanic Culture and Civilization—Study Abroad (Su) 1-4

Select *one or two* courses from this group:
SPAN 3600 (DHA) Survey of Spanish Literature I (F,Sp) 3
SPAN 3610 (DHA) Survey of Spanish Literature II (F,Sp) 3
SPAN 3620 (DHA) Survey of Latin American Literature I (F,Sp) 3
SPAN 3630 (DHA) Survey of Latin American Literature II (F,Sp) 3
SPAN 3650[17] Spanish Literature—Study Abroad (Su) 1-4
SPAN 3660[17] Latin American Literature—Study Abroad (Su) 1-4

SPAN 4990 Spanish Degree Assessment (F,Sp,Su)[18,24] 1

B. Elective Courses (3 credits)

Students must complete 3 additional credits in courses either *not taken above* or *selected from the following list*:
SPAN 3010[17,18,19] Hispanic Outreach Practicum (*P/F* only) (F,Sp,Su) 1-4
SPAN 3060 (CI) Advanced Spanish Conversation and Composition (F,Sp) 3
SPAN 3510 Business Spanish (F,Sp) 3
SPAN 3520[17,18,19] Business Spanish Practicum (*P/F* only) (F,Sp,Su) 1-4
SPAN 4200[20] Applied Spanish Linguistics and Phonetics (Sp) 3
SPAN 4920[17,18,19,22] Spanish Tutoring Practicum (*P/F* only) (F,Sp,Su) 1
LING 4100 The Study of Language (F,Sp) 3
LING 4900 Analysis of Cross-Cultural Difference (Sp) 3

Spanish Minor—Teaching Emphasis (16 credits) (3.00 GPA)

Note: The following requirements *only* specify courses offered by the Department of Languages, Philosophy, and Speech Communication. To be licensed to teach in the Utah public secondary school system, students with a teaching emphasis must also complete additional courses (approximately 31 credits) required by the Department of Secondary Education. For more information, please contact the Department of Secondary Education, Education Building 330, or review the supplementary section, entitled *Secondary Teacher Education Program* (*STEP) Level Outline* on page 374. Information is also provided on the Web at:
http://secondaryeducation.usu.edu/cs_admission.php

Required Courses (16 credits)

SPAN 4200[20] Applied Spanish Linguistics and Phonetics (Sp) 3

Select at least *one* of the following two courses:

SPAN 3040 Advanced Spanish Grammar (F,Sp) 3
SPAN 3800[17] Spanish III Study Abroad (Su) 1-4

Select at least *three* of the following nine courses:

Select *one or two* courses from this group:
SPAN 3550 (DHA) Spanish Culture and Civilization (F) 3
SPAN 3570 (DHA) Latin American Culture and Civilization (Sp) 3
SPAN 4800[17] Hispanic Culture and Civilization—Study Abroad (F,Sp,Su) 1-4

Select *one or two* courses from this group:
SPAN 3600 (DHA) Survey of Spanish Literature I (F,Sp) 3
SPAN 3610 (DHA) Survey of Spanish Literature II (F,Sp) 3
SPAN 3620 (DHA) Survey of Latin American Literature I (F,Sp) 3
SPAN 3630 (DHA) Survey of Latin American Literature II (F,Sp) 3
SPAN 3650[17] Spanish Literature—Study Abroad (Su) 1-4
SPAN 3660[17] Latin American Literature—Study Abroad (Su) 1-4

SPAN 4990 Spanish Degree Assessment (F,Sp,Su)[18,24] 1

Teaching Emphasis for Spanish Major and Minor

Spanish Major and/or Minor—Teaching Emphasis *with* Secondary School Licensure

To receive secondary school licensure, students must complete the Secondary Teacher Education Program (STEP). For further information, review the *Secondary Teacher Education Program* (*STEP) Level Outline* shown on page 374.

Spanish Major and/or Minor—Teaching Emphasis *without* Secondary School Licensure

It is possible to have a teaching emphasis within a major or minor in Spanish without receiving Secondary School teaching licensure. However, unless the student is an elementary education major, he or she *would not* be able to teach in Utah public schools (nor at many private ones). Graduating without licensure may allow employment at some community college and universities.

In order to complete the Spanish Major—Teaching Emphasis *without* Secondary School Licensure, students must fulfill all of the requirements listed under Section I (Spanish and Linguistics Courses) of the Spanish Major—Teaching Emphasis (34 credits), plus either LING 3300[23] or LING 4300[23] (1 credit) and LING 4400[23] (3 credits), for a total of 38 credits.

Similarly, to complete a Spanish Minor—Teaching Emphasis *without* Secondary School Licensure, students must fulfill all of the requirements listed under the Spanish Minor—Teaching Emphasis (16 credits), plus either LING 3300[23] or 4300[23] (1 credit) and LING 4400[23] (3 credits) for a total of 20 credits.

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[16] Students desiring to apply study abroad credits toward these degrees must obtain approval from the Spanish faculty prior to participating.
[17] This course may be repeated for additional credit.
[18] Enrollment in this course is by permission of instructor only.
[19] Only 3 credits maximum in practicum courses may count toward a Spanish major or minor.
[20] This course is required for a teaching emphasis in the Spanish major or minor.
[21] This course is only open to those who have first completed 45 credits in the program.
[22] This practicum is required for a teaching emphasis in the Spanish major.
[23] LING 3300 or 4300, and LING 4400 must be taken *during the same semester*, and should be the *last* courses taken for the major or minor.
[24] SPAN 4990 is the *final* requirement for all Spanish majors and minors, and should be completed during the *last semester* of major or minor classes.

Secondary Teacher Education Program (STEP) Level Outline
(31 credits; 35 credits including courses for teaching emphasis/minor)

Most of the courses listed below count for *both* the teaching emphasis *and* the teaching minor.

A. Level 1 (first semester in program)

SCED 3100 Motivation and Classroom Management (F,Sp) 3
SCED 3210 (CI/DSS) Educational and Multicultural Foundations (F,Sp) 3
LING 3300/4300[25,27] Clinical Experience I and II (F,Sp) (P/F *only*) 1
LING 4400[26,27] Teaching Modern Languages (F,Sp) 3
(LING 3300/4300 and 4400 may be taken in *either* Level 1 *or* Level 2.)
INST 3500 Technology Tools for Secondary Teachers (F, Sp, Su) 1

B. Level 2

SPED 4000 Education of Exceptional Individuals (may be taken earlier) (F,Sp,Su) 2
SCED 4200 (CI) Reading, Writing, and Technology (F,Sp) 3
SCED 4210 Cognition and Evaluation of Student Learning (F,Sp) 3

C. Level 3

Because student teaching requires a major commitment of time and energy, students should take *only* the courses listed below during this semester. Students are also urged to forgo outside employment, if possible, during the student teaching experience.

LING 5500 Student Teaching Seminar (F,Sp) 2
LING 5630 Student Teaching in Secondary Schools (F,Sp) 10

[25]The Clinical Experience II course is taught under course number 4300 in various departments. Course title varies among departments.
[26]The Special Methods II course is taught under course number 4400.
[27]LING 3300 or 4300 and LING 4400 must be taken *during the same semester*, and should be the *last* courses taken for the major or minor.

Additional Language Minor Requirements

Minimum Departmental Requirements

Total Credits:

Chinese Minor 12
Japanese Minor 12
Portuguese Minor 12
Russian Minor 12
Linguistics Minor 12

Grade Point Average to Declare Minor ..... 2.5 Career GPA
Grade Point Average to Graduate with Minor ..... 2.0 Career GPA and 2.5 GPA within Minor Classes

Notes:

Courses for Minors *may not* be taken on a *Pass/Fail* basis.
Courses for Minors require a minimum grade of *C-* or better.
At least half (50 percent) of credits for Minors must be completed through USU, and approved by the department head.
Any 4920 course is repeatable; however, *only 1 credit* may be applied toward the minor.

Chinese Minor

Select 12 upper-division credits in Chinese from the following courses:
CHIN 3010 Chinese Third Year I (F) 4
CHIN 3020 Chinese Third Year II (Sp) 4
CHIN 3100 (DHA) Readings in Contemporary Chinese Culture (Sp) 3
CHIN 3510 Chinese Business Language (F) 3
CHIN 3880 Individual Readings in Chinese (F,Sp) 1-2
CHIN 4920[28] Chinese Language Tutoring (F,Sp,Su) 1

Japanese Minor

Select 12 credits from the following courses:
JAPN 3010 Japanese Third Year I (F) 4
JAPN 3020 Japanese Third Year II (Sp) 4
JAPN 3050[28] Japanese Calligraphy (Sp) 1
JAPN 3100 Readings in Contemporary Japanese Culture (F) 3
JAPN 3510 Japanese for the Business Environment (Sp) 3
JAPN 4920[28] Japanese Language Tutoring (F,Sp) 1

Portuguese Minor

PORT 2020 Portuguese Second Year II (Sp) 4
PORT 3040 (CI) Advanced Portuguese Grammar and Composition (must be completed at USU) (F,Sp) 3
PORT 3570 Brazilian Culture and Civilization (must be completed at USU) (F) 3
PORT 3630 Survey of Brazilian Literature (must be completed at USU) (Sp) 3

Russian Minor

Select 12 credits from the following courses:
RUSS 3040 Advanced Russian Grammar and Composition (F) 3
RUSS 3050 Advanced Russian Grammar and Composition (Sp) 3
RUSS 3300 (DHA) Contemporary Russian Language and Culture (Sp 2007, F 2008) 3
RUSS 3510 (CI) Business Russian (F 2007) 3
RUSS 3540 Russian Translation for Science, Business, and Culture (Sp 2008) 3
RUSS 4880[28] Individual Readings (F,Sp) 1-4
RUSS 4920[28] Russian Language Tutoring (F,Sp) 1

[28]This course is repeatable for credit, and may be taken a *maximum* of three times.

Linguistics Minor

Select 3 credits from the following courses:
LING 4100 The Study of Language (F,Sp) 3
ENGL 3020 (DHA) Perspectives in Linguistics (Sp) 3
ENGL 4200 Linguistic Structures (F,Sp,Su) 3

Select 9 credits from the following courses:
LING 4400 Teaching Modern Languages (F,Sp) 3
LING 4520 Technology for Language Teaching (Su) 3
LING 4900 Analysis of Cross-Cultural Difference (Sp) 3
ENGL 4210 History of the English Language (Sp) 3
ENGL 4220 Ethnic Literacy (F,Sp) 3
ENGL 4230 Language and Society (F) 3
ENGL 5210 Topics in Linguistics (F) 3

Four-year Plan for Linguistics Minor

It is suggested that students completing the Linguistics Minor take the courses listed above in the following sequence:

Freshman Year
ENGL 3020 (DHA) or LING 4100 or ENGL 4200

Sophomore Year
LING 4900 or ENGL 4230

Junior Year
ENGL 4210 or ENGL 4230

Senior Year
LING 4400 or LING 4520 or ENGL 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, Placement in Language Courses, and Obtaining Credit by Special Examination

Students who have completed one or more years of language study may take proficiency tests to determine their proper placement in language courses.

When basic skills in a department-taught language (other than French, German, and Spanish) have been acquired by means other than college courses, students can receive 4-20 lower-division credits with a letter grade 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.

These credits will count as transfer credits. They will not count toward a certain semester or the USU GPA, but will be counted into the cumulative GPA. Please contact the department for further details.

Technology Assisted Language Center

The department operates a technology assisted language center, located in Main 004, 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, as well as audio equipment.

Exchange Programs, Semester Abroad Programs, and Summer Study Abroad Programs

The Department of Languages, Philosophy, and Speech Communication assists students with academic advising for study abroad exchange programs, semester abroad programs, and summer study abroad programs. Students must be in good standing at the University, and it is recommended that the students have some language preparation in order to participate in these programs. Students desiring to count study abroad credits toward a major or minor in this department must obtain approval for these courses prior to their participation in the study abroad program. For information about Spanish study abroad programs, contact the department office at (435) 797-1209 or visit the Spanish website at:
http://www.usu.edu/spanish/sois/index.html

For other study abroad program information, contact the USU Study Abroad Office, Taggart Student Center 313, or visit their website at:
http://www.usu.edu/stdyabrd

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.

Phi Sigma Iota (PSI) is an international language honor society for juniors, seniors, and graduate students who excel in foreign language. PSI promotes international communication and understanding, as well as a sentiment of unity among nations. Phi Sigma Iota helps members further their training through scholarship and graduation honors. The society also promotes trips abroad.

Languages Course Descriptions

Chinese (CHIN), page 595

French (FREN), pages 631-633

German (GERM), pages 638-639

Italian (ITAL), page 652

Japanese (JAPN), pages 652-653

Korean (KOR), page 656

Language (LANG), page 658

Linguistics (LING), page 659

Navajo (NAV), page 676

Portuguese (PORT), page 699

Russian (RUSS), page 708

Spanish (SPAN), pages 716-717

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.

Minimum Departmental Requirements
Total Credits:

Philosophy Major	30
Philosophy Minor	18

Grade Point Average to Declare a Major or Minor.....2.5 Career GPA
Grade Point Average to Graduate with Major or Minor...2.5 Career GPA and 2.5 GPA within Major/Minor Classes

Notes:
Courses for Philosophy Majors and Minors require a minimum grade of *C-* or better.
Bachelor of Arts (BA) degree additional requirements include two years of language, or same as University Requirement (see *Bachelor of Arts* section, page 60).
Bachelor of Science (BS) degree additional requirements include PHIL 2200 and 4310 and 12 credits of Math and/or Science.

Course Requirements

Bachelor of Arts in Philosophy (30 credits) (2.5 GPA)

All philosophy majors must complete 30 credits of philosophy. Up to 6 pass/fail credits in philosophy courses may be applied toward the philosophy major. PHIL 3100, 3120, 4300, and 4400 may *not* be taken on a *pass/fail* basis for the philosophy major. The requirements are distributed as follows:

A. Required Courses (21 credits)

PHIL 1120 (BHU) Social Ethics (F) (3 cr) **or**
PHIL 2400 (BHU) Ethics (Sp) (3 cr) 3
PHIL 1200 (BHU)[29] Practical Logic (Sp) (3 cr) **or**
PHIL 2200 (QI) Deductive Logic (F,Sp) (3 cr) 3
PHIL 3100 (CI)[30] Ancient Philosophy (F) 3
PHIL 3120 (CI)[30] Early Modern Philosophy (F) 3

Choose one course from the following:
PHIL 3500 Medical Ethics (F) 3
PHIL 3510[29] Environmental Ethics (F,Sp) 3
PHIL 3520[29] Business Ethics (Sp) 3
PHIL 4500[29] Contemporary Ethical Theory (Sp) 3
PHIL 4530 (DSC)[29] Ethics and Biotechnology (Sp) 3
PHIL 4540 (DHA)[29] Human Values and Information Technology (Sp) 3
PHIL 4610 (DHA)[29] Social and Political Philosophy (Sp) 3

Choose two of the following courses, at least one of which must be PHIL 4300 or 4400:
PHIL 4300 (DHA)[30] Epistemology (F) 3
PHIL 4310 (DHA) Philosophy of Science (Sp) 3
PHIL 4400[30] Metaphysics (F) 3
PHIL 4410 (DHA) Philosophy of Mind (F) 3
PHIL 4420[29] Philosophy of Language (Sp) 3

B. Elective Courses (9 credits)

Choose three other upper-division philosophy courses from the following list of courses:
PHIL 3110[29] Medieval Philosophy (Sp) 3
PHIL 3150 (CI)[29] Kant and His Successors (Sp) 3
PHIL 3160 (CI)[30] Contemporary Philosophy (F) 3
PHIL 3180 (CI)[30] Contemporary European Philosophy (F) 3
PHIL 3500 Medical Ethics (F) 3
PHIL 3510 (DHA) Environmental Ethics (F,Sp) 3
PHIL 3520 (DHA) Business Ethics (Sp) 3
PHIL 3700 Philosophy of Religion (F) 3
PHIL 3710[30] Philosophies of East Asia (F) 3
PHIL 3720[30] Philosophical Theology After Kant (F) 3
PHIL 3730 (CI)[29] Philosophy of the New Testament (Sp) 3
PHIL 3750 Religion and Science in the Modern World (Sp) 3
PHIL 3800 (DHA) Philosophy in Literature (F) 3
PHIL 3810 (DHA) Aesthetics (Sp) 3
PHIL 4300 (DHA)[30] Epistemology (F) 3
PHIL 4310 (DHA) Philosophy of Science (Sp) 3
PHIL 4320 (DHA)[29] History of Scientific Thought (Sp) 3
PHIL 4400[30] Metaphysics (F) 3
PHIL 4410 (DHA) Philosophy of Mind (F) 3
PHIL 4420[29] Philosophy of Language (Sp) 3
PHIL 4500[29] Contemporary Ethical Theory (Sp) 3
PHIL 4530 (DSC) Ethics and Biotechnology (Sp) 3
PHIL 4540 (DHA)[29] Human Values and Information Technology (Sp) 3
PHIL 4600[30] Philosophy of Law (F) 3
PHIL 4610 (DHA)[29] Social and Political Philosophy (Sp) 3
PHIL 4900[31] Special Topics (F,Sp) 3
PHIL 4910[31] Readings and Research (F,Sp) 1-4
PHIL 4920H Senior Honors Seminar (Sp) 1
PHIL 4930H[31] Senior Honors Thesis (F,Sp,Su) 1-4
PHIL 4990 Philosophy Seminar (Sp) 3
PHIL 5200[29] Symbolic Logic (Sp) 3
PHIL 5510[30] Ethics and the Environment (F) 3
PHIL 5600 Legal Ethics (F) 3

In addition, other University Studies courses, as required by the University, must be completed. To receive a Bachelor of Arts (BA) degree, students must also complete the foreign language requirement.

[29]This course is taught spring semester, alternate years.
[30]This course is taught fall semester, alternate years.
[31]This course is repeatable for credit.

Bachelor of Science in Philosophy (30 credits) (2.5 GPA)

All philosophy majors must complete 30 credits of philosophy. Up to 6 *pass/fail* credits in philosophy courses may be applied toward the philosophy major. PHIL 3100, 3120, 4300, and 4400 may *not* be taken on a *pass/fail* basis for the philosophy major.

The requirements for the Bachelor of Science (BS) in Philosophy are the same as those for the Bachelor of Arts (BA), with these additional limitations: (1) no foreign language instruction is necessary, (2) PHIL 2200 and 4310 must be taken, and (3) 12 credits in Mathematics and/or Science courses beyond the University Studies requirements must be completed.

Sample Four-year Plan for Philosophy Major

Minimum GPA for Admission: 2.5, Career
Minimum GPA for Graduation: 2.5, major courses; 2.5, USU; 2.5, Career
Minimum Grade Accepted: *C-* in major courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (30 credits)

Fall Semester (15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
PHIL 1200 (BHU) Practical Logic 3
University Studies Breadth courses 6
Degree Requirement (BS or BA) course 3

Spring Semester (15 credits)
Quantitative Literacy (QL) course....3
University Studies Breadth courses....6
Degree Requirement (BS or BA) course....3
Elective course(s)....3

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (30 credits)
Fall Semester (15 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode....3
PHIL 1120 (BHU) Social Ethics (3 cr) **or**
PHIL 2400 (BHU) Ethics (3 cr)....3
PHIL 2200 (QI) Deductive Logic....3
Degree Requirement (BS or BA) course....3
Elective course(s)....3

Spring Semester (15 credits)
PHIL upper-division courses[32]....6
Degree Requirement (BS or BA) course....3
Depth Life and Physical Sciences (DSC) course....3
Depth Social Sciences (DSS) course....3

Junior Year (30 credits)
Fall Semester (15 credits)
PHIL upper-division courses[32]....6
Elective courses....9

Spring Semester (15 credits)
PHIL upper-division courses[32]....6
Elective courses....9

Senior Year (30 credits)
Fall Semester (15 credits)
PHIL upper-division course[32]....3
Upper-division elective courses....10
Elective course(s)....2

Spring Semester (15 credits)
Upper-division elective course....3
Elective courses....12

[32]These courses should be selected from the upper-division philosophy courses (numbered 3000 or higher) shown under *A. Required Courses* and *B. Elective Courses* on page 376.

Philosophy Minor (18 credits) (2.5 GPA)

A minor in philosophy may be obtained by completing six philosophy courses, at least four of which must be at the upper-division level. Up to 3 *pass/fail* credits in philosophy courses may be applied toward the philosophy minor.

Philosophy Course Descriptions

Philosophy (PHIL), pages 690-691

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.

This major focuses on how people communicate to create meanings across a wide range of contexts, including interactions that occur in personal relationships and public interactions, with those from other cultures, and with those in business and other applied settings. Students learn to think critically about the messages they receive and to develop skills promoting the understanding and practice of effective and ethical communication behaviors.

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.

Minimum Departmental Requirements
Total Credits:
Speech Major....30
Organizational Communication Minor....15
Speech Communication Teaching Minor....19

Grade Point Average to Declare a Major or Minor.....2.5 Career GPA
Grade Point Average to Graduate with Major or Minor...2.0 Career GPA and 2.5 GPA within Major/Minor Classes

Course Requirements

Speech Major (30 credits) (2.5 GPA in major classes)

As many as 15 credits completed at other colleges or universities may be used to partially satisfy these requirements. For more information, students should contact their advisor. Students must earn an overall GPA of at least 2.5 in all classes applied toward the major.

A. Communication Core (6 credits)

SPCH 1020 (CI) Public Speaking (F,Sp) 3
SPCH 2110 (CI) Interpersonal Communication (F,Sp) 3

B. Senior Year Capstone Course (3 credits)

This course, which is offered spring semester *only*, must be taken during the student's senior year.

SPCH 5100 (CI) Theories of Speech Communication (Sp) 3

C. Organizational Communication Theory (9-12 credits)

SPCH 3250 (CI) Organizational Communication (F) 3
SPCH 3330 (DSS) Intercultural Communication (F) 3
SPCH 3400 (CI) Persuasion (F) 3
SPCH 4200 Language, Thought, and Action (Sp) 3
SPCH 5000 Studies in Speech Communication (repeatable) (F,Sp) 3
SPCH 5090 Small Group Theory (Sp) 3
SPCH 5250 Environmental Rhetoric (Sp) 3
SPCH 5280 Communication Education Theory (Sp) 3
JCOM 3400 (DSS) Gender and Communication (F,Sp) 3

D. Organizational Communication Application (9-12 credits)

SPCH 2250[33] Introductory Internship/Co-op (F,Sp,Su) 1-5
SPCH 2270 Argumentation and Debate (F) 3
SPCH 2280 Listening (Sp) 2
SPCH 3000 Speech Communication Teaching Practicum (repeatable) (Sp) 1
SPCH 3050 (DSS) Technical and Professional Communication (Sp) 3
SPCH 3600 Communication and Conflict (F) 3
SPCH 4250[33] Advanced Internship/Co-op (F,Sp,Su) 1-5
SPCH 4460 Communication Criticism (Sp) 3
LING 4900 Analysis of Cross-Cultural Difference (Sp) 3
BIS 4350 Introduction to Training and Development (Sp) 3
BIS 5660 The Adult Business Learner 3
MHR 3710 Developing Team and Interpersonal Skills (F,Sp) 3
MHR 3820 (DSS) International Management (F,Sp) 3

[33] Internship project and number of credits must be approved by advisor.

Sample Four-year Plan for Speech Major

Minimum GPA for Admission: 2.5, Career
Minimum GPA for Graduation: 2.5, major courses; 2.5, USU; 2.0, Career

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (30 credits)

Fall Semester (15 credits)

ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
SPCH 1020 (CI) Public Speaking 3
Quantitative Literacy (QL) course 3
University Studies Breadth courses 6

Spring Semester (15 credits)

University Studies Breadth courses 9
Elective courses 6

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (30 credits)

Fall Semester (15 credits)

ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
SPCH 2110 (CI) Interpersonal Communication 3
University Studies Breadth course 3
Elective courses 6

Spring Semester (15 credits)

Organizational Communication Application course[34] 3
Quantitative Intensive (QI) course 3
Elective courses 9

Junior Year (30 credits)

Fall Semester (15 credits)

Organizational Communication Theory upper-division course[34] 3
Depth Social Sciences (DSS) course 3
Elective courses 9

Spring Semester (15 credits)

Organizational Communication Application course[34] 3
Organizational Communication Theory upper-division course[34] 3
Depth Life and Physical Sciences (DSC) course 3
Elective courses 6

Senior Year (30 credits)

Fall Semester (15 credits)

Organizational Communication Application upper-division course[34] 3
Organizational Communication Theory upper-division course[34] 3
Upper-division elective courses 9

Spring Semester (15 credits)

SPCH 5100 (CI) Theories of Speech Communication 3
Organizational Communication Application upper-division course[34] (3 cr) **or**
Organizational Communication Theory upper-division course[34] (3 cr) 3
Upper-division elective course 7
Elective course(s) 2

[34] See sections *C. Organizational Communication Theory* and *D. Organizational Communication Application* for approved courses (shown on this page).

Speech Communication Minor Programs

Organizational Communication Minor (15 credits) (2.5 GPA)

As many as 6 credits completed at other colleges or universities may be used to partially satisfy these requirements. For more information, students should contact their advisor. Students must earn an overall GPA of at least 2.5 in all classes applied toward the minor.

A. Required Courses (6 credits)
SPCH 1020 (CI) Public Speaking (F,Sp) (3 cr) **or**
SPCH 2110 (CI) Interpersonal Communication (F,Sp) (3 cr).....3
SPCH 3250 (CI) Organizational Communication (F).....3

B. Elective Courses (9 credits)
In consultation with a program advisor, select 9 credits from courses having the SPCH prefix. Of these 9 credits, at least 3 credits must be completed in a course offered at the 4000 or 5000 level.

Speech Communication Minor—Teaching Emphasis (19 credits) (2.5 GPA)

Note: The following requirements *only* specify courses offered by the Department of Languages, Philosophy, and Speech Communication. To be licensed to teach in the Utah public secondary school system, students with a teaching emphasis must also complete an approved teaching major and STEP courses required by the Department of Secondary Education. SPCH 5370 and *either* SPCH 3300 *or* 4300 are part of the STEP requirements. For more information, please contact the Department of Secondary Education, Education Building 330, or review the supplementary section, entitled *Secondary Teacher Education Program* (*STEP) Level Outline* on page 374. Information is also provided on the Web at:
http://secondaryeducation.usu.edu/cs_admission.php

Also Note: SPCH 1020, 2110, and 3000 should be completed prior to enrollment in the 4000- and 5000-level courses. A minimum grade of *C-* is required in each of these classes.

Speech Communication Courses (19 credits)
SPCH 1020 (CI) Public Speaking (F,Sp).....3
SPCH 2110 (CI) Interpersonal Communication (F,Sp).....3
SPCH 2270 Argumentation and Debate (F).....3
SPCH 3000 Speech Communication Teaching Practicum (Sp).....1
SPCH 5100 (CI) Theories of Speech Communication (Sp).....3
SPCH 5280 Communication Education Theory (Sp).....3
SPCH 3330 (DSS) Intercultural Communication (F) (3 cr) **or**
SPCH 5090 Small Group Theory (Sp) (3 cr).....3

To fulfill the Secondary Teacher Education Program (STEP) requirements, students should complete SPCH 3300, 4300, and 5370.

Speech Communication Course Descriptions

Speech Communication (SPCH), pages 717-718

Languages, Philosophy, and Speech Communication Faculty

Professors
Bradford "J" Hall, speech communication
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
John S. Seiter, interpersonal communication, intercultural relations, social influence
Richard Sherlock, medical and environmental ethics, ethical theory, ethical issues in genetics, political philosophy, philosophy of religion

Professors Emeritus
Lynn R. Eliason, 19th century Russian and German novels, Russian culture
Hans K. Mussler, 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
María-de Jesús Cordero, colonial Spanish-American literature
Charlie Huenemann, history of modern philosophy, Kant, metaphysics
Harold J. Kinzer, organizational communication
Taira Koybaeva, Russian, Linguistics, intercultural relationships in business and politics
Jennifer A. Peeples, environmental rhetoric
Renate Posthofen, German language and literature, contemporary culture and film
J. P. Spicer-Escalante, 19th century Latin American literature
Gordon Steinhoff, philosophy of science, logic, metaphysics
Felix W. Tweraser, 20th century Austrian 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
Javier Domínguez-García, Spanish medieval and golden age
Susan J. Dudash, late medieval French literature
Sarah Gordon, medieval French
Cacilda Rego, Portuguese
Xenia Srebrianski Harwell, German and Russian literature
Maria Luisa Spicer-Escalante, Hispanic applied linguistics

Visiting Assistant Professor
Brian McInnis, German

Assistant Professor Emeritus
Valentine Suprunowicz, Russian literature

Principal Lecturer Emeritus
Viva L. Lynn, Spanish literature

Lecturers
Karin de Jonge-Kannan, second language acquisition
Annie Kim, Korean, second language acquisition, Asian culture
Kevin L. Krogh, Spanish
Atsuko O. Neely, Japanese, second language acquisition
Jilda Yap, second language teaching

Latin American Studies Minor

Coordination:

M. Isela Chiu-Olivares, Associate Professor of Spanish and Portuguese, Department of Languages, Philosophy, and Speech Communication, isela@cc.usu.edu

William L. Furlong, Professor, Department of Political Science, bill.furlong@usu.edu

Bonnie Glass-Coffin, Associate Professor, Department of Sociology, Social Work and Anthropology, glasscob@cc.usu.edu

James Sanders, Assistant Professor, History Department, jsanders@hass.usu.edu

J.P. Spicer-Escalante, Associate Professor of Spanish, Department of Languages, Philosophy, and Speech Communication, jpspicer@cc.usu.edu

The Latin American Studies minor, an interdepartmental program within the College of Humanities, Arts, and Social Sciences, provides students with an interdisciplinary and rigorous introduction to Latin America. The minor complements existing majors through the expansion and development of regional knowledge and expertise. After completing the minor, students will have demonstrated language competence and enhanced political, economic, cultural, and sociological understanding of the countries and peoples of Latin America.

Admission Requirements

1. USU students in good standing who are enrolled in any major or department and who have a 2.75 minimum GPA qualify for admission to this minor.

2. Transfer students from other institutions need a 2.75 minimum total GPA for admission to this minor.

Latin American Studies Minor Requirements
(18 credits, plus language competency)

A. Language Requirement
A minimum of *two years* (16 credits or four semesters) of Introductory Spanish (SPAN 1010, 1020, 2010, and 2020) or Introductory Portuguese (PORT 1010, 1020, 2010, and 2020), or the completion of an equivalent competency exam, is required.

B. Required Course (3 credits)
LATS 2200 Introduction to Latin America (F) 3

C. Electives (15 credits)
Students must choose a *minimum of five courses* from the following list. The courses must be chosen from *at least two different disciplines*.

ANTH 3130 (CI) Peoples of Latin America.....3
ANTH/SOC 5130/6130 Ethnographic Field School (Su).....6

GEOG 4200 (CI) Regional Geography: Latin America (F,Sp,Su).....3

HIST 3620 History of Colonial Latin America 3
HIST 3630 History of Modern Latin America 3
HIST 3640 History of Social Movements in Latin America 3
HIST 3650 Caribbean History 3
HIST 3660 History of Mexico.....3

POLS 3270 (DSS) Latin American Government and Politics (F) 3
POLS 4450 (CI) United States and Latin America (Sp) 3

PORT 3570 Brazilian Culture and Civilization (F) 3
PORT 3630[1] Survey of Brazilian Literature (Sp) 3
PORT 3800[1] Portuguese III Study Abroad (Su) 3

SPAN 3510 Business Spanish (F,Sp).....3
SPAN 3570 (DHA) Latin American Culture and Civilization (Sp) 3
SPAN 3620 (DHA)[1] Survey of Latin American Literature I (F,Sp) 3
SPAN 3630 (DHA)[1] Survey of Latin American Literature II (F,Sp).....3
SPAN 3800[1] Spanish III Study Abroad (Su).....1-4
SPAN 4800[2] Hispanic Culture and Civilization—Study Abroad (Su)..1-4
SPAN 4910[1] Topics of Latin American Literature (F,Sp).....3

D. Restricted Electives (3 credits)
Students may choose one course from the following list to count toward their total elective credits.

ENGL 3300 Period Studies in American Literature: The Mexican Revolution and its Aftermath in the United States (F,Sp).....3
ENGL 5300 (CI) Literature and Gender: Chicana Literature (F,Sp) 3

HIST 3670 Slavery in the Atlantic World.....3
HIST 4630 The History of Mexican Americans.....3

SOC 4730 Women in International Development (Sp).....3

[1]Requires a proficiency in Spanish or Portuguese at the 3000 level or above.
[2]Requires a proficiency in Spanish at the 2000 level or above.

Additional Information

For additional information about the Latin American Studies minor, see the minor requirement sheet, which can be accessed online at: **http://www.usu.edu/majorsheets/**

Course Description

Latin American Studies (LATS), page 659

Liberal Arts Major

Contact and Advising: College of HASS Advising Center
Location: Student Center 302
Phone: (435) 797-3883
FAX: (435) 797-2096
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Degree Offered: Bachelor of Arts (BA) in Liberal Arts

The Liberal Arts 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. The Liberal Arts Major 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 2.0 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 49-59 in this catalog. Students should consult with the program advisor to determine which University Studies courses will best meet their learning goals.

Foreign Language Requirement

A Bachelor of Arts (BA) degree signifies proficiency in one or more foreign languages. Specifically, the BA requirement may be completed in one of the following ways:

1. Demonstration of proficiency in *one* foreign language by successful completion of one course at the 2020-level or higher (or its equivalent).
   Or
2. Demonstration of proficiency in *two* foreign languages by successful completion of the 1020 course level in one language ***and*** the 2010 course level in the second language (or its equivalent).
   Or
3. Completion of an upper-division (3000-level or higher) foreign language grammar or literature course requiring the 2020 course level (or its equivalent) as a prerequisite. Conversation courses *cannot* be considered for satisfying this requirement.

For nonnative English-speaking students *only*, the following options are available:

1. Successful completion of the Intensive English Language Institute (IELI) program for international students.
   Or
2. TOEFL, Michigan, or IELI placement scores high enough to meet the University admission criteria.

Focus of Study

The focus of study for the Liberal Arts 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.

Sample Four-year Plan for Liberal Arts Major

Minimum GPA for Admission: 2.3, Career
Minimum GPA for Graduation: 2.3, major courses; 2.0, USU
Minimum Grade Accepted: *C* in major courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their professional advisor to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (32 credits)
Fall Semester (16 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
Foreign Language 1010-level course 4
University Studies Breadth courses 6
Elective course(s) 3

Spring Semester (16 credits)
Foreign Language 1020-level course 4
University Studies Breadth courses 6
Quantitative Literacy (QL) course 3
Elective course(s) 3

Complete the CIL exams by the end of the Freshman Year.

Liberal Arts Major

Sophomore Year (32 credits)
Fall Semester (16 credits)
Goal Three—Arts or Literature Course[1] 3
Foreign Language 2010-level course 4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
University Studies Breadth course 3
Upper-division elective course(s) 3

Spring Semester (16 credits)
Goal One—Historical/Cultural Traditions course[1] 3
Goal Two—Social Sciences course[1] 3
Goal Four—Critical/Ethical Inquiry course[1] 3
Foreign Language 2020-level course 4
Quantitative Intensive (QI) course 3

Junior Year (30 credits)
Fall Semester (15 credits)
University Studies Breadth course 3
Goal Two—Social Sciences course[1] 3
Goal Four—Critical/Ethical Inquiry course[1] 3
Communications Intensive (CI) course 3
Upper-division elective course 3

Spring Semester (15 credits)
Goal One—Historical/Cultural Traditions course[1] 3
Goal Three—Arts or Literature course[1] 3
Goal Four—Critical/Ethical Inquiry course[1] 3
Upper-division elective course 3
Liberal Arts "Methods" course 3

Senior Year (26 credits)
Fall Semester (12 credits)
Goal One—Historical/Cultural Traditions course[1] 3
Depth Social Sciences (DSS) course 3
Communications Intensive (CI) course 3
Upper-division elective course 3

Spring Semester (14 credits)
Goal Two—Social Sciences course[1] 3
Goal Three—Arts or Literature course[1] 3
Depth Life and Physical Sciences (DSC) course 3
Upper-division elective courses 4
Elective course 1

[1] Of the 36 credits required for the major, 18 credits must be completed in upper-division courses numbered 3000 or higher.

Additional Information

Details of requirements for the Liberal Arts major, as well as a worksheet for students to record their progress, can be found on the major requirement sheet, available from the College of HASS Advising Center, or online at: **http://www.usu.edu/majorsheets/**

Department of Management and Human Resources

Department Head: Gaylen N. Chandler
Location: Business 415
Phone: (435) 797-1789
FAX: (435) 797-1091
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WWW: http://www.usu.edu/cob/mhr/

Undergraduate Advisor:
Lindsey Thurgood, Business 309, (435) 797-2272,
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Graduate Program Director:
Glenn M. McEvoy, Business 807, (435) 797-2375,
glenn.mcevoy@usu.edu

Graduate Program Advisor:
Katherine E. McConkie, Business 809, (435) 797-2360,
katherine.mcconkie@usu.edu

Degrees offered: Bachelor of Science (BS) and Bachelor of Arts (BA) in Entrepreneurship; 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 202-203. 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 Entrepreneurship 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.

Entrepreneurship focuses on the development of entrepreneurial and leadership capabilities. These include recognizing viable business opportunities and developing business concepts that allow firms to take advantage of unique competencies and capabilities. In addition, there is substantial emphasis on the acquisition and allocation of resources, as well as on 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.

Departmental Honors

See *Honors in Business* description in the College of Business section of this catalog (page 114).

Learning Objectives and Assessment

Assessment information for the Management and Human Resources Department can be found online at:
http://www.usu.edu/cob/mhr/assessment/index.cfm

College of Business Admission Requirements

All students majoring in entrepreneurship or human resource management must satisfy the College of Business admission requirements, provided on pages 114-115. Academic advising about these requirements is available in the College of Business Career and Education Opportunities Center, Business 309.

All students enrolled at USU are required to satisfy the General Education requirements and the University Studies Depth Education requirements of the University, as described on pages 49-59 of this catalog.

Matriculation Requirement and Transfer Limitation

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 College of Business credits added to previously earned transfer business credits may not exceed a combined total of 15. Furthermore, to earn a bachelor's degree in a College of Business major, at least 50 percent of the required College of Business credits must be earned from coursework taken from the Utah State University College of Business.

USU Credits and Business Credits

At least 30 of the last 60 semester credits must be taken from Utah State University, at least 20 of which must be completed in upper-division courses, of which at least 10 credits must be completed in courses required by the student's major. At least 50 percent of the College of Business credits required for a College of Business degree must be taken from the Utah State University College of Business or its departments, which include: School of Accountancy, Business Administration, Economics, Management and Human Resources, and Management Information Systems.

College of Business Core

All majors in the Department of Management and Human Resources must complete the following prerequisite courses and business core courses, in addition to the specific courses listed for the major.

Business majors must take these courses as prerequisite to 3000-, 4000-, and 5000-level courses in the College of Business.

Pre-Business Course Requirements (13 credits)

ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp) 3
MATH 1100 (QL) Calculus Techniques (F,Sp,Su) 3
STAT 2300 (QL) Business Statistics (F,Sp,Su) 4
PSY 1010 (BSS) General Psychology (F,Sp,Su) (3 cr) **or**
SOC 1010 (BSS) Introductory Sociology (F,Sp) (3 cr) 3

Department of Management and Human Resources

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.

College of Business Core (37 credits)
ACCT 2010 Survey of Accounting I (F,Sp,Su).....3
ACCT 2020 Survey of Accounting II (F,Sp,Su).....3
BA 3400 (QI) Corporate Finance (F,Sp,Su).....3
BA 3500 Fundamentals of Marketing (F,Sp,Su).....3
BA 3700 Operations Management (F,Sp,Su).....3
BIS 2100 Principles of Management Information Systems (F,Sp,Su).....3
BIS 2200 (CI) Business Communication (F,Sp,Su).....3
BUS 3250 Discussions With Business Leaders (F,Sp).....1
ECON 2010 (BSS) Introduction to Microeconomics (F,Sp).....3
ECON 3400 International Economics for Business (F,Sp,Su).....3
MHR 2050 Legal and Ethical Environment of Business (F,Sp,Su).....3
MHR 3110 Managing Organizations and People (F,Sp,Su).....3
MHR 4880 (CI) Business Strategy in an Entrepreneurial Context (F,Sp,Su) (3 cr) **or**
MHR 4890 (CI) Business Strategy in a Global Context (F,Sp,Su) (3 cr).....3

Requirements for Majors

Entrepreneurship (15 credits)
MHR 3510 Fundamentals of Entrepreneurship (F).....3
MHR 3520 Relationship and Organizational Competencies for Entrepreneurs (Sp).....3
MHR 3710 Developing Team and Interpersonal Skills (F,Sp).....3
MHR 3820 International Management (F,Sp).....3
MHR 4510 Senior Seminar in Entrepreneurship (F).....3

Students completing the Entrepreneurship major requirements must take **MHR 4880** as their senior capstone course in the Business Core requirements. Students should also note that **MHR 3510 and 3520** must be taken prior to **MHR 4510**.

Human Resource Management (15 credits)

Required Courses (9 credits)
MHR 3710 Developing Team and Interpersonal Skills (F,Sp).....3
MHR 3820 International Management (F,Sp).....3
MHR 4630 Human Resource Management (F,Sp).....3

Elective Courses (select 6 credits)
Students must complete at least **two** of the following:
MHR 3810 (DSS) Employment Law and Policy Development (F,Sp).....3
BIS 4350 Introduction to Training and Development (Sp) (3 cr) **or**
ECON 5660 Training and Organizational Development (Sp) (2 cr).....2 or 3
ECON 5680 Labor Economics (Sp).....3
PUBH 3310 Occupational Health and Safety (F).....3
ANTH 3200 (DSS/CI) Perspectives on Race (Sp).....3
SOC 3500 Social Psychology (F,Sp).....3
SPCH 3250 (CI) Organizational Communication (F) (3 cr) **or**
SPCH 3330 (DSS) Intercultural Communication (F) (3 cr) **or**
SPCH 3600 Communication and Conflict (F) (3 cr).....3
PHIL 3520 (DHA) Business Ethics (Sp).....3

Elective Course Requirements
Because the University requires a minimum of 120 credits for a bachelor's degree, students will need to take some elective credits. These credits may be chosen from any course (1000-level or above) offered by the University. If a student wants to complete a minor or a dual major in another department, the use of elective credits should be planned carefully with an advisor in the other department.

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.

Four-Year Degree Plans (8 Semesters)

Four-year degree plans for majors in the Management and Human Resources Department can be found on pages 385-386 and at:
http://www.usu.edu/cobssc/web/fouryeardegreeplans.htm

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 who expect to work in an organization where they will assume supervisory or management responsibilities. The Management minor consists of a minimum of 12 credits.

Required:
MHR 3110 Managing Organizations and People (F,Sp,Su).....3

Select three courses from the following:
MHR 2050 Legal and Ethical Environment of Business (F,Sp,Su).....3
MHR 3510 Fundamentals of Entrepreneurship (F).....3
MHR 3520 Relationship and Organizational Competencies for Entrepreneurs (Sp).....3
MHR 3710 Developing Team and Interpersonal Skills (F,Sp).....3
MHR 3810 Employment Law and Policy Development (Prerequisite: MHR 2050) (F,Sp).....3
MHR 3820 International Management (F,Sp).....3
MHR 4510 Senior Seminar in Entrepreneurship (Prerequisites: MHR 3510 and 3520) (F).....3
MHR 4630 Human Resource Management (F,Sp).....3
PHIL 3520 (DHA) Business Ethics (Sp).....3
BIS 4350 Introduction to Training and Development (Sp) (3 cr) **or**
ECON 5660 Training and Organizational Development (Sp) (2 cr).....2 or 3
ECON 5680 Labor Economics (Sp).....3

Minor in Human Resource Management
This minor is for students who want to work in any of the human resource functions of an organization. The Human Resource Management minor consists of a minimum of 12 credits.

Required:
MHR 3110 Managing Organizations and People (F,Sp,Su).....3
MHR 4630 Human Resource Management (F,Sp).....3

Select two courses from the following:
MHR 2050 Legal and Ethical Environment of Business (F,Sp,Su).....3
MHR 3710 Developing Team and Interpersonal Skills (F,Sp).....3
MHR 3810 Employment Law and Policy Development (Prerequisite: MHR 2050) (F,Sp).....3
MHR 3820 International Management (F,Sp).....3
PHIL 3520 (DHA) Business Ethics (Sp).....3

BIS 4350 Introduction to Training and Development (Sp) (3 cr) **or**
ECON 5660 Training and Organizational Development (Sp) (2 cr) ..... 2 or 3
ECON 5680 Labor Economics (Sp) 3
PUBH 3310 Occupational Health and Safety (F) 3
ANTH 3200 (DSS/CI) Perspectives on Race (Sp) 3
SOC 3500 Social Psychology (F,Sp) 3
SPCH 3250 (CI) Organizational Communication (F) (3 cr) **or**
SPCH 3330 (DSS) Intercultural Communication (F) (3 cr) **or**
SPCH 3600 Communication and Conflict (F) (3 cr) 3

Note: An overall GPA of 2.67 and admission into a degree-seeking major are required for enrollment in 3000- or 4000-level courses in 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 College of Business core and major requirement courses, as well as an overall GPA of 2.50. This includes transfer credits. 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 309.

Student Organizations

The department sponsors two student organizations. Membership in the organizations is open to all students, both undergraduate and graduate, who meet the membership requirements.

Collegiate Entrepreneurs' Asssociation (CEO) is the premier global entrepreneurship network serving more than 500 colleges and universities.

Society for Human Resource Management (SHRM) is the professional Human Resource Management organization co-sponsored by the Bridgerland Chapter of SHRM.

Additional Information

A major requirement sheet, which includes further information about career opportunities and course requirements for the majors and minors within the Management and Human Resources Department, can be found online at: **http://www.usu.edu/majorsheets/**

Further information about undergraduate programs in the College of Business can be obtained from the Career and Education Opportunities Center, Business 309, or found on the Web at: **http://www.usu.edu/cobceo**

Four-Year Degree Plans (8 Semesters)

The following are suggested four-year plans for majors offered by the Department of Management and Human Resources.

Suggested Four-year Course of Study for Entrepreneurship Major

The following curriculum is required for the BS degree in entrepreneurship. Students enrolled in the entrepreneurship major should consult with their advisor to determine which breadth, depth, and elective courses they should complete. Each student should also consult with his or her advisor to develop an individualized plan of study that is applicable to his or her own interests.

Freshman Year (30 credits)
Fall Semester (15 credits)
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles 3
MATH 1050 (QL) College Algebra 4
USU 1010 University Connections 2
OSS 1400[2] Microcomputer Applications (3 cr) **or**
Passing scores on Computer and Information Literacy (CIL) exams (0 cr) 0-3
(**Note:** Although OSS 1400 includes the CIL exams, the CIL requirement is met *only* by passing all six exams, *not* by simply passing OSS 1400.)
Breadth Creative Arts (BCA) course[1] 3
Elective course(s)[2] 0-3

Spring Semester (15 credits)
ECON 2010 (BSS) Introduction to Microeconomics 3
ENGL 1010 (CL) Introduction to Writing: Academic Prose 3
MATH 1100 (QL) Calculus Techniques 3
PSY 1010 (BSS) General Psychology (3 cr) **or**
SOC 1010 (BSS) Introductory Sociology (3 cr) 3
Breadth Humanities (BHU) course[1] 3

Sophomore Year (31 credits)
Fall Semester (16 credits)
ACCT 2010 Survey of Accounting I 3
BIS 2100 Principles of Management Information Systems 3
MHR 2050 Legal and Ethical Environment of Business 3
STAT 2300 (QL) Business Statistics 4
Breadth Life Sciences (BLS) course[1] 3

Spring Semester (15 credits)
ACCT 2020 Survey of Accounting II 3
BIS 2200 (CI) Business Communication 3
MHR 3110 Managing Organizations and People 3
Breadth Physical Sciences (BPS) course[1] 3
Elective course(s) 3

Junior Year (29 credits)
Fall Semester (15 credits)
BA 3400 (QI) Corporate Finance 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
MHR 3510 Fundamentals of Entrepreneurship 3
Elective courses 6

Spring Semester (14 credits)
BA 3700 Operations Management 3
BUS 3250 Discussions With Business Leaders 1
ECON 3400 International Economics for Business 3
MHR 3520 Relationship and Organizational Competencies for Entrepreneurs 3
Elective courses 4

Senior Year (30 credits)
Fall Semester (15 credits)
BA 3500 Fundamentals of Marketing....3
MHR 3710 Developing Team and Interpersonal Skills....3
MHR 4510 Senior Seminar in Entrepreneurship....3
Depth Humanities and Creative Arts (DHA) course....3
Elective course(s)....3

Spring Semester (15 credits)
MHR 3820 International Management....3
MHR 4880 (CI) Business Strategy in an Entrepreneurial Context....3
Depth Life and Physical Sciences (DSC) course....3
Elective courses....6

Suggested Four-year Course of Study for Human Resource Management Major

The following curriculum is required for the BS degree in human resource management. Students enrolled in the human resource management major should consult with their advisor to determine which breadth, depth, and elective courses they should complete. Each student should also consult with his or her advisor to develop an individualized plan of study that is applicable to his or her own interests.

Freshman Year (30 credits)
Fall Semester (15 credits)
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles....3
MATH 1050 (QL) College Algebra....4
USU 1010 University Connections....2
OSS 1400[2] Microcomputer Applications (3 cr) or Passing scores on Computer and Information Literacy (CIL) exams (0 cr)....0-3
(**Note:** Although OSS 1400 includes the CIL exams, the CIL requirement is met *only* by passing all six exams, *not* by simply passing OSS 1400.)
Breadth Creative Arts (BCA) course[1]....3
Elective course(s)[2]....0-3

Spring Semester (15 credits)
ECON 2010 (BSS) Introduction to Microeconomics....3
ENGL 1010 (CL) Introduction to Writing: Academic Prose....3
MATH 1100 (QL) Calculus Techniques....3
PSY 1010 (BSS) General Psychology (3 cr) or
SOC 1010 (BSS) Introductory Sociology (3 cr)....3
Breadth Humanities (BHU) course[1]....3

Sophomore Year (31 credits)
Fall Semester (16 credits)
ACCT 2010 Survey of Accounting I....3
BIS 2100 Principles of Management Information Systems....3
MHR 2050 Legal and Ethical Environment of Business....3
STAT 2300 (QL) Business Statistics....4
Breadth Life Sciences (BLS) course[1]....3

Spring Semester (15 credits)
ACCT 2020 Survey of Accounting II....3
BIS 2200 (CI) Business Communication....3
MHR 3110 Managing Organizations and People....3
Breadth Physical Sciences (BPS) course[1]....3
Elective course(s)....3

Junior Year (29 credits)
Fall Semester (15 credits)
BA 3400 (QI) Corporate Finance....3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode....3
MHR 3710 Developing Team and Interpersonal Skills....3
Elective courses....6

Spring Semester (14 credits)
BA 3700 Operations Management....3
BUS 3250 Discussions With Business Leaders....1
ECON 3400 International Economics for Business....3
MHR 3820 International Management....3
Elective courses....4

Senior Year (30 credits)
Fall Semester (15 credits)
BA 3500 Fundamentals of Marketing....3
MHR 4630 Human Resource Management....3
Human Resource Management approved elective[3]....3
Depth Humanities and Creative Arts (DHA) course....3
Elective course(s)....3

Spring Semester (15 credits)
MHR 4880 (CI) Business Strategy in an Entrepreneurial Content (3 cr) **or**
MHR 4890 (CI) Business Strategy in a Global Context (3 cr)....3
Depth Life and Physical Sciences (DSC) course....3
Human Resource Management approved elective[3]....3
Elective courses....6

[1]At least *two* of the required Breadth courses *must* be University Studies courses having a USU prefix.
[2]If opting out of OSS 1400, students must take an extra 3 elective credits.
[3]For approved courses, students should contact the Human Resource Management advisor.

Graduate Programs

Master of Science in Human Resources (MS HR)

Objectives

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, performance management, selection, placement, compensation and benefits, career planning, training and organizational development, labor and employee relations, ethical/legal employment practices, statistical methods, and program evaluation.

Admission Requirements

See Admission Procedures on pages 101-102. Students are required to submit scores on the Graduate Management Admissions Test (GMAT) or the Graduate Record Examination (GRE). Prospective students may request information on the expected test performance standards for acceptance. Applicants are expected to have strong written and oral communication skills.

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. The Human Resource Certification Institute (HRCI) exam will be included as part of coursework.

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 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 MS in Human Resources degree requires a minimum of 36 credits beyond the Business Core taken as part of an AACSB-International accredited undergraduate business degree. The total number of credits is typically 50 for students without an undergraduate business degree. See *Accelerated Business Core* (in Master of Business Administration section, page 202) for information about satisfying the Business Core requirements. Coursework beyond the Business Core includes MHR 6310, 6330; MHR 6510 or 6680; MHR 6550, 6620, 6630, 6650, 6670, 6690, 6760; BUS 6250; and one 3-credit elective approved by the steering committee. Students may substitute MHR 6900 for BUS 6250 (Graduate Internship) on approval of the MS in Human Resources steering committee. Students with an undergraduate degree from an AACSB-International accredited business school will not be required to take the business core. Students will take the HRCI (Human Resource Certification Institute) exam as part of coursework.

Additional information about the MS in Human Resources degree may be obtained by contacting the Department of Management and Human Resources.

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 online through the School of Graduate Studies. More information can be found at:
http://www.usu.edu/gradsch/financial/assistantships.cfm
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 202-203 of this catalog.

Management and Human Resources Faculty

Professors
Douglas D. Anderson, strategy, leadership, and change
Gaylen N. Chandler, entrepreneurship, management
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
Ross E. Robson, lean manufacturing, management

Adjunct Associate Professor
Steven H. Hanks, business strategy, management, and entrepreneurship

Associate Professor Emeritus
David R. Daines

Assistant Professors
Alison Cook, organizational behavior, human resource management
Konrad S. Lee, employment law, business law
Troy V. Mumford, organizational behavior, human resource management, compensation
Brenda C. Sun, strategic and international management

Principal Lecturer
Alan P. Warnick, human resource management

Lecturers
Chester F. Brough, business law
David G. Herrmann, management and entrepreneurship
Henry Nowak, entrepreneurship

Course Descriptions

Management and Human Resources (MHR), pages 666-668

Department of Management Information Systems

Department Head: John D. Johnson
Location: Business 711
Phone: (435) 797-2342
FAX: (435) 797-2351
E-mail: john.johnson@usu.edu
WWW: http://www.usu.edu/cob/mis/

Undergraduate Advisor:
Peggy Buttars, Business 309, (435) 797-2272,
peggy.buttars@usu.edu

Degrees offered: Bachelor of Science (BS), Bachelor of Arts (BA), and Master of Science (MS) in Management Information Systems; participates in the Interdepartmental Doctor of Philosophy (PhD) in Education and Doctor of Education (EdD) with a specialization in Management Information Systems

Undergraduate emphases: *Management Information Systems BS, BA*—Technical, Managerial, and Training and Development

Graduate specializations: *Management Information Systems MS*—Management Information Systems, Training and Development

Undergraduate Programs

Objectives

The Management 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, and systems trainers. The training and development emphasis prepares students to become trainers within business and private industry.

Departmental Honors

See *Honors in Business* description in the College of Business section of this catalog (page 114).

Learning Objectives and Assessment

Assessment information for the Management Information Systems Department can be found online at:
http://www.usu.edu/cob/mis/assessment/index.cfm

Requirements

College of Business Requirements

All bachelor's degree students majoring in Management Information Systems must satisfy the College of Business entrance requirements provided on pages 114-115. Academic advising about these requirements is provided by the College of Business Career and Education Opportunities Center, Business 309. Management Information Systems majors must also follow College of Business prebusiness course requirements for admission to a major, detailed on page 115.

Matriculation Requirement and Transfer Limitation

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 College of Business credits added to previously earned transfer business credits may not exceed a combined total of 15. Furthermore, to earn a bachelor's degree in a College of Business major, at least 50 percent of the required College of Business credits must be earned from coursework taken from the Utah State University College of Business.

USU Credits and Business Credits

At least 30 of the last 60 semester credits must be taken from Utah State University, at least 20 of which must be completed in upper-division courses, of which at least 10 credits must be completed in courses required by the student's major. At least 50 percent of the College of Business credits required for a College of Business degree must be taken from the Utah State University College of Business or its departments, which include: School of Accountancy, Business Administration, Economics, Management and Human Resources, and Management Information Systems.

Information Systems Programs

Programs in information systems are offered in both the departments of Management Information Systems and Computer Science. The curricula and objectives of the programs differ substantially. Each department's program is described below.

The **Management Information Systems major with a technical, managerial, or training and development emphasis** is offered in the Management 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. MIS 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 AACSB International—The Association to Advance Collegiate Schools of Business. The department also offers a Master of Science in Management 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 pages 229-231 and 233 for additional details.

Department of Management Information Systems

Requirements for Bachelor's Degree in Management Information Systems

To earn a bachelor's degree in Management Information Systems, a student must complete the USU requirements for a bachelor's degree and the following categories of coursework in the College of Business: Pre-Business, College of Business Core, MIS Department Core, and one of three areas of emphasis: technical, managerial, or training and development.

Pre-Business Course Requirements (13 credits)

ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp) 3
MATH 1100 (QL) Calculus Techniques (F,Sp,Su) 3
STAT 2300 (QL) Business Statistics (F,Sp,Su) 4
PSY 1010 (BSS) General Psychology (F,Sp,Su) (3 cr) **or**
SOC 1010 (BSS) Introductory Sociology (F,Sp) (3 cr) 3

College of Business Core (37 credits)

ACCT 2010 Survey of Accounting I (F,Sp,Su) 3
ACCT 2020 Survey of Accounting II (F,Sp,Su) 3
BA 3400 (QI) Corporate Finance (F,Sp,Su) 3
BA 3500 Fundamentals of Marketing (F,Sp,Su) 3
BA 3700 Operations Management (F,Sp,Su) 3
BIS 2100 Principles of Management Information Systems (F,Sp,Su) ... 3
BIS 2200 (CI) Business Communication (F,Sp,Su) 3
BUS 3250 Discussions With Business Leaders (F,Sp) 1
ECON 2010 (BSS) Introduction to Microeconomics (F,Sp) 3
ECON 3400 International Economics for Business (F,Sp,Su) 3
MHR 2050 Legal and Ethical Environment of Business (F,Sp,Su) 3
MHR 3110 Managing Organizations and People (F,Sp,Su) 3
MHR 4880 (CI) Business Strategy in an Entrepreneurial Context (F,Sp) (3 cr) **or**
MHR 4890 (CI) Business Strategy in a Global Context (F,Sp,Su) (3 cr) 3

MIS Department Core Requirements (10 credits)

BIS 3330 Database Management (F,Sp) 3
BIS 5100 Systems Design and Implementation (F,Sp) 3
BIS 5110 Systems Design Laboratory (must be taken concurrently with BIS 5100) (F,Sp) 1
BUS 4250 Advanced Internship (F,Sp,Su) 3

Students must select one of the following emphases.

Technical Emphasis (19 credits)

Required Courses (16 credits)
CS 1400 Introduction to Computer Science—CS1 (F,Sp,Su) 3
CS 1405 Introduction to Computer Science—CS1 Lab (take with CS 1400) (F,Sp,Su) 1
CS 1410 (QI) Introduction to Computer Science—CS2 (F,Sp,Su) 3
BIS 4100 Information Technology and System Software (F,Sp) 3
BIS 4330 Database Implementation (F,Sp) 3
BIS 5650 Advanced Website Development (F,Sp) 3

Elective Course (3 credits)
Choose one course from the following:
BIS 5300 Advanced Data Communications (F,Sp) 3
BIS 5450 Designing Graphical User Interfaces for Electronic Commerce (F,Sp) 3
BIS 5700 Internet Management and Electronic Commerce (F,Sp) 3
BIS 5800 Security of Business Information Systems (F) 3
CS 2420 (QI) Algorithms and Data Structures—CS 3 (F,Sp,Su) 3

Managerial Emphasis (18 credits)

Required Courses (12 credits)
BIS 3500 Introduction to Business Applications Programming (F,Sp) ... 3
BIS 5700 Internet Management and Electronic Commerce (F,Sp) 3
BIS 5300 Advanced Data Communications (F,Sp) 3
BIS 5800 Security of Business Information Systems (F) 3

Elective Courses (6 credits)
Choose two courses from the following:
BIS 4100 Information Technology and System Software (F,Sp) 3
BIS 4330 Database Implementation (F,Sp) 3
BIS 5450 Designing Graphical User Interfaces for Electronic Commerce (F,Sp) 3
BIS 5650 Advanced Website Development (F,Sp) 3

Training and Development Emphasis (18 credits)

Required Courses (9 credits)
BIS 4350 Introduction to Training and Development (Sp) 3
BIS 5450 Designing Graphical User Interfaces for Electronic Commerce (F,Sp) 3
Any 5000-level **INST** course 3

Elective Courses (9 credits)
Choose three courses from the following:
BIS 3500 Introduction to Business Applications Programming (F,Sp) ... 3
BIS 5700 Internet Management and Electronic Commerce (F,Sp) 3
BIS 5800 Security of Business Information Systems (F) 3
MHR 3710 Developing Team and Interpersonal Skills (F,Sp) 3
Any 5000-level **INST** course 3

Four-Year Degree Plans (8 Semesters)

Four-year degree plans for each of the Management Information Systems major emphases can be found on pages 390-392 and at:
http://www.usu.edu/cobssc/web/fouryeardegreeplans.htm

Management Information Systems Minor (21-22 credits)

A minimum 2.50 GPA is required in all courses counted toward the minor.

Required Courses (15 credits)

ACCT 2010 Survey of Accounting I (F,Sp,Su) 3
BIS 2100 Principles of Management Information Systems (F,Sp,Su) ... 3
BIS 3330 Database Management (F,Sp) 3
BIS 3500 Introduction to Business Applications Programming (F,Sp) ... 3
CS 1400 Introduction to Computer Science—CS 1 (F,Sp,Su) (3 cr) **or**
CS 3410 (CI/DSC) Algorithm Development: JAVA/Internet (F,Su) (3 cr) 3

Elective Courses (6-7 credits)

Choose two of the following courses:
ACCT 4500 Accounting Information Systems (F,Sp) 3
BIS 4330 Database Implementation (F,Sp) 3
BIS 5100 Systems Design and Implementation (F,Sp) (3 cr) **and**
BIS 5110 Systems Design Laboratory (F,Sp) (1 cr) 4
BIS 5300 Advanced Data Communications (F,Sp) 3
BIS 5450 Designing Graphical User Interfaces for Electronic Commerce (F,Sp) 3
BIS 5700 Internet Management and Electronic Commerce (F,Sp) 3
CS 1400[1] Introduction to Computer Science—CS 1 (F,Sp,Su) (3 cr) **or**

Department of Management Information Systems

CS 3410 (CI/DSC)[1] Algorithm Development: JAVA/Internet (F,Su) (3 cr) **or**
CS 3510 (QI/DSC) Algorithm Development: COBOL/Business (F) (3 cr) 3

[1]CS 1400 or 3410 may be chosen as an elective if not taken as a required course for the section above.

Student Organizations

The Department of Management Information Systems sponsors or co-sponsors two 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 management 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 management information systems majors so that they will contribute to their field.

Society for Information Management (SIM)

SIM is an organization of senior-level IT managers in the industry. Since 1968 SIM has inspired the minds of the most prestigious IT leaders in the industry. Highly regarded as the premier network for IT leadership, SIM is a community of thought leaders who share experiences and rich intellectual capital and who explore future IT direction.

The USU student chapter of SIM is associated with the Utah chapter located in Salt Lake City. The goal of the chapter is to allow students in MIS to interface and network with leaders in the field. Student members become knowledgeable about the opportunities and career paths in the field of technology management.

Additional Information

For more information about requirements for the majors and minors within the Management Information Systems Department, see the major requirement sheets, available from the department, or online at: **http://www.usu.edu/majorsheets/**

Four-year Degree Plans (8 semesters)

The following are suggested four-year plans for each emphasis of the Management Information Systems major.

Suggested Four-year Course of Study for Management Information Systems Major, Technical Emphasis

Students enrolled in the management information systems major should consult with their advisor to determine which breadth, depth, and elective courses they should complete. Each student should also consult with his or her advisor to develop an individualized plan of study that is applicable to his or her own interests.

Freshman Year (28 credits)
Fall Semester (13 credits)
OSS 1400 Microcomputer Applications 3
MATH 1050 (QL) College Algebra 4
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles 3
PSY 1010 (BSS) General Psychology (3 cr) **or**
SOC 1010 (BSS) Introductory Sociology (3 cr) 3

Spring Semester (15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
ECON 2010 (BSS) Introduction to Microeconomics 3
MATH 1100 (QL) Calculus Techniques 3
University Studies Breadth courses 6

Sophomore Year (32 credits)
Fall Semester (16 credits)
ACCT 2010 Survey of Accounting I 3
BIS 2100 Principles of Management Information Systems 3
STAT 2300 (QL) Business Statistics 4
MHR 2050 Legal and Ethical Environment of Business 3
University Studies Breadth course 3

Spring Semester (16 credits)
ACCT 2020 Survey of Accounting II 3
BIS 2200 (CI) Business Communication 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
ECON 3400 International Economics for Business 3
CS 1400 Introduction to Computer Science—CS 1 3
CS 1405 Introduction to Computer Science—CS 1 Lab 1

Junior Year (31 credits)
Fall Semester (15 credits)
BA 3400 (QI) Corporate Finance 3
BA 3500 Fundamentals of Marketing 3
CS 1410 (QI) Introduction to Computer Science—CS 2 3
University Studies Breadth course 3
Elective course(s) 3

Spring Semester (16 credits)
BUS 3250 Discussions With Business Leaders 1
BIS 3330 Database Management 3
BIS 4100 Information Technology Hardware and System Software 3
BA 3700 Operations Management 3
BIS elective course 3
University Studies Depth course 3

Senior Year (29 credits)
Fall Semester (15 credits)
BIS 4330 Database Implementation 3
BIS 5650 Advanced Website Development 3
MHR 3110 Managing Organizations and People 3
BUS 4250 Advanced Internship 3
University Studies Depth course 3

Spring Semester (14 credits)
BIS 5100 Systems Design and Implementation 3
BIS 5110 Systems Design Laboratory 1
MHR 4880 (CI) Business Strategy in an Entrepreneurial Context (3 cr) **or**
MHR 4890 (CI) Business Strategy in a Global Context (3 cr) 3
Elective courses 7

Note: Students must pass MATH 1050 with a grade of *C-* or better. Students who do not take OSS 1400 must take an additional 3 credits of electives. Students should apply for College of Business admission during their third semester.

Suggested Four-year Course of Study for Management Information Systems Major, Managerial Emphasis

Students enrolled in the Management Information Systems major should consult with their advisor to determine which breadth, depth, and elective courses they should complete. Each student should also consult with his or her advisor to develop an individualized plan of study that is applicable to his or her own interests.

Freshman Year (28 credits)
Fall Semester (13 credits)
OSS 1400 Microcomputer Applications....3
MATH 1050 (QL) College Algebra....4
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles....3
PSY 1010 (BSS) General Psychology (3 cr) **or**
SOC 1010 (BSS) Introductory Sociology (3 cr)....3

Spring Semester (15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose....3
ECON 2010 (BSS) Introduction to Microeconomics....3
MATH 1100 (QL) Calculus Techniques....3
University Studies Breadth courses....6

Sophomore Year (31 credits)
Fall Semester (16 credits)
ACCT 2010 Survey of Accounting I....3
BIS 2100 Principles of Management Information Systems....3
STAT 2300 (QL) Business Statistics....4
MHR 2050 Legal and Ethical Environment of Business....3
University Studies Breadth course....3

Spring Semester (15 credits)
ACCT 2020 Survey of Accounting II....3
BIS 2200 (CI) Business Communication....3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode....3
BIS 3330 Database Management....3
Elective course(s)....3

Junior Year (31 credits)
Fall Semester (15 credits)
BIS 3500 Introduction to Business Applications Programming....3
BA 3400 (QI) Corporate Finance....3
ECON 3400 International Economics for Business....3
BIS elective course....3
Elective course(s)....3

Spring Semester (16 credits)
BUS 3250 Discussions With Business Leaders....1
BIS 5700 Internet Management and Electronic Commerce....3
BA 3700 Operations Management....3
BIS elective course....3
University Studies Breadth course....3
University Studies Depth course....3

Senior Year (30 credits)
Fall Semester (15 credits)
BA 3500 Fundamentals of Marketing....3
BIS 5300 Advanced Data Communications....3
MHR 3110 Managing Organizations and People....3
BUS 4250 Advanced Internship....3
University Studies Depth course....3

Spring Semester (15 credits)
BIS 5100 Systems Design and Implementation....3
BIS 5110 Systems Design Laboratory....1
BIS 5800 Security of Business Information Systems....3
MHR 4880 (CI) Business Strategy in an Entrepreneurial Context (3 cr) **or**
MHR 4890 (CI) Business Strategy in a Global Context (3 cr)....3
Elective courses....5

Note: Students must pass MATH 1050 with a grade of *C-* or better. Students who do not take OSS 1400 must take an additional 3 credits of electives. Students should apply for College of Business admission during their third semester.

Suggested Four-year Course of Study for Management Information Systems Major, Training and Development Emphasis

Students enrolled in the management information systems major should consult with their advisor to determine which breadth, depth, and elective courses they should complete. Each student should also consult with his or her advisor to develop an individualized plan of study that is applicable to his or her own interests.

Freshman Year (28 credits)
Fall Semester (13 credits)
OSS 1400 Microcomputer Applications....3
MATH 1050 (QL) College Algebra....4
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles....3
PSY 1010 (BSS) General Psychology (3 cr) **or**
SOC 1010 (BSS) Introductory Sociology (3 cr)....3

Spring Semester (15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose....3
ECON 2010 (BSS) Introduction to Microeconomics....3
MATH 1100 (QL) Calculus Techniques....3
University Studies Breadth courses....6

Sophomore Year (31 credits)
Fall Semester (16 credits)
ACCT 2010 Survey of Accounting I....3
BIS 2100 Principles of Management Information Systems....3
STAT 2300 (QL) Business Statistics....4
MHR 2050 Legal and Ethical Environment of Business....3
University Studies Breadth course....3

Spring Semester (15 credits)
ACCT 2020 Survey of Accounting II....3
BIS 2200 (CI) Business Communication....3
BIS 3330 Database Management....3
BIS 4350 Introduction to Training and Development....3
University Studies Breadth course....3

Junior Year (31 credits)
Fall Semester (15 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
BA 3400 (QL) Corporate Finance 3
ECON 3400 International Economics for Business 3
BIS elective courses 6

Spring Semester (16 credits)
BUS 3250 Discussions With Business Leaders 1
BA 3700 Operations Management 3
INST course at 5000-level or higher 3
University Studies Depth course 3
Elective courses 6

Senior Year (30 credits)
Fall Semester (15 credits)
BA 3500 Fundamentals of Marketing 3
BIS 5450 Designing Graphical User Interfaces for Electronic Commerce 3
MHR 3110 Managing Organizations and People 3
University Studies Depth course 3
BIS elective course 3

Spring Semester (15 credits)
BIS 5100 Systems Design and Implementation 3
BIS 5110 Systems Design Laboratory 1
BUS 4250 Advanced Internship 3
MHR 4880 (CI) Business Strategy in an Entrepreneurial Context (3 cr) **or**
MHR 4890 (CI) Business Strategy in a Global Context (3 cr) 3
Elective courses 5

Note: Students must pass MATH 1050 with a grade of *C-* or better. Students who do not take OSS 1400 must take an additional 3 credits of electives. Students should apply for College of Business admission during their third semester.

Graduate Programs

Master of Science

Students applying for admission to the Master of Science program in Management 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 3.2 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 MIS Department require the following core: BIS 6440 and 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 management information systems.

Students are expected to have a background in management information systems. Required courses are BIS 6120, 6200, 6330, and 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 Management Information Systems, Computer Science, Instructional Technology, Business Administration, Accounting, Economics, or other approved electives to complete the 12 credits of electives required.

The specialization in **Training and Development** is designed for those who wish to work in training and development in business and industry. Required courses for the Training and Development specialization are BIS 6250, 6350, and 6450, in addition to the departmental core. Students must complete 15 credits of electives chosen from the following list: BIS 6120, 6200, 6330, 6510, 6700, 6800, or others with committee approval.

For a current checklist of requirements, students should contact the departmental graduate advisor.

The USU MS in Management Information Systems is the only master's program in Management Information Systems in the State of Utah. Graduates are placed in the West and throughout the nation.

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 Management 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 Management Information Systems cooperates with other departments in offering the interdepartmental Doctor of Philosophy (PhD) and Doctor of Education (EdD). 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 teaching business-teacher education in colleges and universities. Positions may also be secured in business and industry. Former graduates are currently in various positions in higher education, including higher education administration, 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.

Research

Faculty in the Department of Management Information Systems are active in research and scholarly endeavors. Current and published research topics include business communication, international communication, neural networks, genetic algorithms, data mining management 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, and other areas related to management information systems.

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. 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

Management 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.

Management Information Systems Faculty

Professors
John D. Johnson, management information systems, electronic commerce, neural networks, genetic algorithms communication, data management, computer security
David H. Olsen, management information systems
David J. Paper, management information systems

Professors Emeritus
Dennis J. LaBonty
H. Robert Stocker
William A. Stull
John F. Vinsonhaler

Associate Professors
Jeffrey J. Johnson, management information systems
Robert J. Mills, management information systems

Assistant Professors
Karina Hauser, lean manufacturing, artificial intelligence, and systems analysis and design
Yong Seog Kim, management information systems and data mining
Zsolt Ugray, management information systems, electrical commerce, and optimization

Principal Lecturers
Susan M. Jones, management information systems, business communication, and security management
Marianna P. Larsen, business communication and international business communication
Craig J. Peterson, management information systems, electronic commerce management, information technology, and web design
Dana H. Swensen, business communication

Senior Lecturer and Executive in Residence
Ralph B. "Bernie" Lantz, computer technology, network security, management information systems, computer literacy, software development, and programming languages

Lecturer
Janet Bringhurst, microcomputer applications and business communication

Course Descriptions

Business Information Systems (BIS), pages 581-583

Department of 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 310, (435) 797-2815,
coster@math.usu.edu

Undergraduate Program Coordinator:
Joseph V. Koebbe, Lund Hall 301C, (435) 797-2825,
joe.koebbe@usu.edu

Graduate Program Coordinator:
James Powell, Lund Hall 304, (435) 797-1953,
jim.powell@usu.edu

Mathematics Education Program Director:
James S. Cangelosi, Lund Hall 325C, (435) 797-1415,
jim.cangelosi@usu.edu

Undergraduate Advisors:
Mathematics:
Daniel C. Coster, Lund Hall 310, (435) 797-2815,
coster@math.usu.edu

Statistics:
Christopher D. Corcoran, Lund Hall 204, (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; BS in Composite Mathematics/Statistics; 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

Current mathematics ACT/SAT scores, Math Placement Test scores, and Advanced Placement (AP) calculus and statistics scores are used for placement in 1000-level and 2000-level mathematics and statistics courses. *A current score is defined as a score from an exam taken within the* ***Math Prerequisite Acceptability Time Limit (MPATL)***, which *is one calendar year or three successive semesters in length, including summer semester.* In addition, prerequisite courses taken concurrently or courses that transfer from other institutions taken within the MPATL can be used for advisement and placement in 1000-level and 2000-level courses.

Prerequisites for MATH 1030, 1050, 1060, 1100, 1210, and 2020, *must* be met by the following dates, in order to fall within the MPATL for the listed semester: **fall semester—**August 15 of the previous year; **spring semester—**January 1 of the previous year; **summer semester—**June 1 of the previous year.

New students and students who are registering for a math class at USU for the first time who have a math ACT score of less than 23 or a math SAT score of less than 540 (whether current or not) are required to take the Math Placement Test administered by the Department of Mathematics and Statistics. The student's score on the Math Placement Test will be used to place him or her in the appropriate mathematics or statistics course.

New students and students who are registering for a math class for the first time who have a current math ACT score of at least 23 or a current math SAT score of at least 540 do not need to take the Math Placement Test. However, for each of the courses listed below, ***one* of the following prerequisites, achieved within the MPATL**, is required for enrollment.

MATH 1010
Math ACT test score of 23 or higher
Math SAT test score of 540 or higher
Grade of *C*- or better in MATH 0900
Satisfactory score on Math Placement Exam

MATH 1030
Math ACT test score of 23 or higher
Math SAT test score of 540 or higher
Grade of *C*- or better in MATH 1010
Satisfactory score on Math Placement Exam

MATH 1050
Math ACT test score of 23 or higher
Math SAT test score of 540 or higher
AP Calculus AB test score of 3 or higher
Grade of *C*- or better in MATH 1010
Satisfactory score on Math Placement Exam

MATH 1060
Math ACT test score of 23 or higher
Math SAT test score of 540 or higher
AP Calculus AB test score of 3 or higher
Grade of *C*- or better in MATH 1010 or 1050
Satisfactory score on Math Placement Exam

MATH 1100
Math ACT test score of 25 or higher
Math SAT test score of 580 or higher
Grade of *C*- or better in MATH 1050
Satisfactory score on Math Placement Exam

MATH 2020
Math ACT test score of 25 or higher
Math SAT test score of 580 or higher
Grade of *C*- or better in MATH 1050
Satisfactory score on Math Placement Exam

MATH 1210
Math ACT test score of 27 or higher
Math SAT test score of 620 or higher
AP Calculus AB test score of 3 or higher
Grade of *C*- or better in MATH 1050 and 1060
Satisfactory score on Math Placement Exam

STAT 1040
Math ACT test score of 23 or higher
Math SAT test score of 540 or higher
Grade of *C-* or better in MATH 1010
Satisfactory score on Math Placement Exam

After a student has registered for MATH 1210 there are *no time limits*.

Entering students with current passing scores on AP calculus or statistics exams will be awarded credits as shown below:

AP Test	Score	Credits	USU Credit Awarded
Calculus AB	3	6	3 (QL) credits + 3 elective credits
	4-5	6	MATH 1210 (QL) (4) + 2 elective credits
Calculus BC	3-4	6	MATH 1210 (QL) (4) + 2 elective credits
	5	8	MATH 1210 (QL) (4) + MATH 1220 (QL) (4)
Statistics	3-5	3	STAT 2000 (QI) (3)

Students may opt to take the Math Placement Test through the Department of Mathematics and Statistics 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 49-59 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 (QL) Calculus I (F,Sp,Su) (4 cr) **and**
MATH 1220 (QL) Calculus II (F,Sp,Su) (4 cr).....8
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. The chosen sequence must be *outside the student's major department*.
BIOL 1610 Biology I (F) (4 cr) **and**
BIOL 1620 (BLS) Biology II (Sp) (4 cr) 8
Or
CHEM 1210 Principles of Chemistry I (F,Sp) (4 cr) **and**
CHEM 1220 (BPS) Principles of Chemistry II (F,Sp,Su) (4 cr).....8
Or
GEO 1110 (BPS) The Dynamic Earth: Physical Geology (F,Sp) (4 cr) **and**
GEO 3200 (DSC) The Earth Through Time (Sp) (4 cr) 8
Or
PHYS 2110 The Physics of Living Systems I (4 cr) **and**
PHYS 2120 (BPS) The Physics of Living Systems II (4 cr).....8
Or
PHYS 2210 (QI) General Physics—Science and Engineering I (4 cr)
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II (4 cr).....8

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 2007 are given below.

Mathematics Major (44 credits)

A. Required Courses (29 credits)
MATH 1210 (QL) Calculus I (F,Sp,Su).....4
MATH 1220 (QL) Calculus II (F,Sp,Su).....4
MATH 2210 (QI) Multivariable Calculus (F,Sp,Su).....3
MATH 2270 (QI) Linear Algebra (F).....3
MATH 2280 (QI) Ordinary Differential Equations (Sp).....3
MATH 4200 (CI) Foundations of Analysis (F,Sp).....3
MATH 4310 (CI) Introduction to Algebraic Structures (F,Sp).....3
MATH 5210 Introduction to Analysis I (F).....3
MATH 5710 Introduction to Probability (F,Sp).....3

B. Core Courses (6 credits)
Select at least two courses (6 credits) from the following:
MATH 5110 Differential Geometry (F) 3
MATH 5220 Introduction to Analysis II (Sp) 3
MATH 5270 Complex Variables (Sp) 3
MATH 5310 Introduction to Modern Algebra (Sp) (3 cr) **or**
MATH 5340 Theory of Linear Algebra (Sp) (3 cr) 3
MATH 5510 Introduction to Topology (F) 3

C. Elective Courses (9 credits)
Select at least three courses (9 credits) in mathematics courses numbered above 5000, excluding MATH 5570 (Actuarial Math I) and 5580 (Actuarial Math II).

Note: MATH 2250 (Linear Algebra and Differential Equations) may substitute for both MATH 2270 (Linear Algebra) and MATH 2280 (Ordinary Differential Equations); however, MATH 2270 and 2280 are recommended. Several options in this major exist (e.g., Actuarial Science and Computational Mathematics). Contact the Mathematics and Statistics Department for details.

Suggested Four-year Course of Study for Mathematics Major

The suggested schedule shown below should be used in conjunction with the major requirement sheet.

Freshman Year (28-34 credits)
Fall Semester (14-17 credits)
MATH 1210 (QL) Calculus I 4
College of Science required course 4
University Studies courses 6-9

Spring Semester (14-17 credits)
MATH 1220 (QL) Calculus II 4
College of Science required course 4
University Studies courses 6-9

Sophomore Year (30-32 credits)
Fall Semester (15-16 credits)
MATH 2210 (QI) Multivariable Calculus 3
MATH 2250 (QI) Linear Algebra and Differential Equations (4 cr) **or**
MATH 2270 (QI) Linear Algebra (3 cr) ..... 3 or 4
University Studies courses 9

Spring Semester (15-16 credits)
MATH 2250 (QI) Linear Algebra and Differential Equations (4 cr) **or**
MATH 2280 (QI) Ordinary Differential Equations (3 cr) ..... 3 or 4
MATH 5710 Introduction to Probability 3
University Studies or elective courses 9

Junior Year (30 credits)
Fall Semester (15 credits)
MATH 4200 (CI) Foundations of Analysis 3
MATH 4310 (CI) Introduction to Algebraic Structures 3
Math core or elective course not requiring MATH 4200 3
University Studies courses 6

Spring Semester (15 credits)
Math core or elective courses 6
University Studies courses 9

Senior Year (24-30 credits)
Fall Semester (12-15 credits)
MATH 5210 Introduction to Analysis I 3
Math core or elective courses 3-6
University Studies Depth or elective courses 6

Spring Semester (12-15 credits)
Math core or elective courses 3-6
University Studies or elective courses 9

Mathematics Education Major (71 credits)

A. Mathematics and Statistics Courses (39 credits)
STAT 1040 (QL) Introduction to Statistics (F,Sp,Su) 3
MATH 1210 (QL) Calculus I (F,Sp,Su) 4
MATH 1220 (QL) Calculus II (F,Sp,Su) 4
MATH 2210 (QI) Multivariable Calculus (F,Sp,Su) 3
MATH 2250 (QI) Linear Algebra and Differential Equations (F,Sp,Su) .. 4
MATH 3110 Modern Geometry (Sp) 3
MATH 4200 (CI) Foundations of Analysis (F,Sp) 3
MATH 4310 (CI) Introduction to Algebraic Structures (F,Sp) 3
MATH 4400 History of Mathematics and Number Theory (Sp) 3
MATH 4620 Computer Aided Math for Secondary Math Teachers (F) .. 3
MATH 5500 Capstone Mathematics and Statistics for Teachers (F) 3
MATH 5710 Introduction to Probability (F,Sp) 3

B. Secondary Teacher Education Program (STEP) (31 credits)
Level 1
SCED 3100 Motivation and Classroom Management (F,Sp) 3
SCED 3210 (CI/DSS) Educational and Multicultural Foundations (F,Sp) 3
Teaching Methods in Minor course[1] 3
Clinical Experience course[2] 1

Level 2
SPED 4000 Education of Exceptional Individuals (may be taken anytime) (F,Sp,Su) 2
SCED 4200 (CI) Reading, Writing, and Technology (F,Sp) 3
SCED 4210 Cognition and Evaluation of Student Learning (F,Sp) 3
MATH 4300 School Laboratory for Mathematics Teachers Level II (F,Sp) 1
MATH 4500 Methods of Secondary School Mathematics Teaching (F,Sp) 3

Level 3
SCED 5500 Student Teaching Seminar (F,Sp) 2
SCED 5630 Student Teaching in Secondary Schools (F,Sp) 10

Note: Admission to the STEP requires a GPA of at least 3.00 in the equivalent of MATH 1210 (Calculus I), MATH 1220 (Calculus II), and MATH 2210 (Multivariable Calculus) 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.

Note: Beginning in 2006, all USU teacher education candidates will be required to take and pass the content exam approved by the Utah State Office of Education in their major content area prior to student teaching.

Note: MATH 2270 (Linear Algebra) and MATH 2280 (Ordinary Differential Equations) may substitute for MATH 2250 (Linear Algebra and Differential Equations).

Suggested Four-year Course of Study for Mathematics Education Major

The suggested schedule shown below should be used in conjunction with the major requirement sheet. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately.

Freshman Year (28-34 credits)
Fall Semester (14-17 credits)
STAT 1040 (QL) Introduction to Statistics 3
MATH 1210 (QL) Calculus I 4
College of Science required course 4
University Studies course(s) 3-6

Spring Semester (14-17 credits)
MATH 1220 (QL) Calculus II 4
College of Science required course 4
University Studies courses 6-9

Sophomore Year (28-31 credits)
Fall Semester (13-16 credits)
MATH 2210 (QI) Multivariable Calculus 3
MATH 2250 (QI) Linear Algebra and Differential Equations 4
University Studies and teaching minor courses 6-9

Spring Semester (15 credits)
MATH 3110 Modern Geometry 3
MATH 4200 (CI) Foundations of Analysis 3
MATH 4310 (CI) Introduction to Algebraic Structures 3
MATH 5710 Introduction to Probability 3
University Studies or teaching minor course 3

Junior Year (31 credits)
Fall Semester (15 credits)
MATH 4620 Computer Aided Math for Secondary Math Teachers 3
MATH 5500 Capstone Mathematics and Statistics for Teachers 3
University Studies and teaching minor courses 9

Spring Semester (16 credits)
SCED 3100 Motivation and Classroom Management 3
SCED 3210 (CI/DSS) Educational and Multicultural Foundations 3
MATH 4400 History of Mathematics and Number Theory 3
Teaching Methods in Minor course[1] 3
Clinical Experience course[2] 1
University Studies or teaching minor course 3

Senior Year (29 credits)
Fall Semester (17 credits)
SPED 4000 Education of Exceptional Individuals 2
SCED 4200 (CI) Reading, Writing, and Technology 3
SCED 4210 Cognition and Evaluation of Student Learning 3
MATH 4300 School Laboratory for Mathematics Teachers Level II 1
MATH 4500 Methods of Secondary School Mathmatics Teaching 3
University Studies or teaching minor courses 5

Spring Semester (12 credits)
SCED 5500 Student Teaching Seminar 2
SCED 5630 Student Teaching in Secondary Schools 10

[1]Teaching Methods in Minor courses are taught in various departments and have various prefixes and course numbers.
[2]Clinical Experience courses are taught in various departments and have various prefixes. These courses generally have a course number of 3300.

Composite Mathematics-Statistics Education Major (79-81 credits)

A. Mathematics and Statistics Courses (45-47 credits)

MATH 1210 (QL) Calculus I (F,Sp,Su) 4
MATH 1220 (QL) Calculus II (F,Sp,Su) 4
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su) (3 cr) **or**
STAT 2000 (QI) Statistical Methods (F,Sp) (3 cr) 3
MATH 2210 (QI) Multivariable Calculus (F,Sp,Su) 3
MATH 2250 (QI) Linear Algebra and Differential Equations (F,Sp,Su) 4
OR (MATH 2250; ***or*** MATH 2270 and 2280)
MATH 2270 (QI) Linear Algebra (F) (3 cr) **and**
MATH 2280 (QI) Ordinary Differential Equations (Sp) (3 cr) 6
STAT 5100 (QI/CI) Linear Regression and Time Series (F) 3
MATH 3110 Modern Geometry (Sp) 3
MATH 4200 (CI) Foundations of Analysis (F,Sp) 3
MATH 4310 (CI) Introduction to Algebraic Structures (F,Sp) 3
MATH 4400 History of Mathematics and Number Theory (Sp) 3
MATH 4620 Computer Aided Math for Secondary Math Teachers (F) 3
MATH 5500 Capstone Mathematics and Statistics for Teachers (F) 3
MATH 5710 Introduction to Probability (F,Sp) 3
STAT 5200 Design of Experiments (Sp) 3

B. Secondary Teacher Education Program (STEP) (34 credits)

Level 1
SCED 3100 Motivation and Classroom Management (F,Sp) 3
SCED 3210 (CI/DSS) Educational and Multicultural Foundations (F,Sp) 3
MATH 3300 School Laboratory for Mathematics Teachers Level I (F,Sp) 1
SPED 4000 Education of Exceptional Individuals (may be taken anytime) (F,Sp,Su) 2

Level 2
SCED 4200 (CI) Reading, Writing, and Technology (F,Sp) 3
SCED 4210 Cognition and Evaluation of Student Learning (F,Sp) 3
MATH 4300 School Laboratory for Mathematics Teachers Level II (F,Sp) 1
MATH 4500 Methods of Secondary School Mathematics Teaching (F,Sp) 3
STAT 4500 Methods of Teaching Statistics in Secondary and Middle School (F,Sp) 3

Level 3
SCED 5500 Student Teaching Seminar (F,Sp) 2
SCED 5630 Student Teaching in Secondary Schools (F,Sp) 10

Note: Admission to the STEP requires a GPA of at least 3.00 in the equivalent of MATH 1210 (Calculus I), MATH 1220 (Calculus II), and MATH 2210 (Multivariable Calculus); a cumulative GPA of at least 3.00 in STAT 2000 (Statistical Methods) or STAT 3000 (Statistics for Scientists); 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 normally completed during the last three semesters of the degree program, and consequently nearly all the mathematics and statistics classes in the Mathematics-Statistics Education Major must be completed before beginning the STEP.

Note: Beginning in 2006, all USU teacher education candidates will be required to take and pass the content exam approved by the Utah State Office of Education in their major content area prior to student teaching.

Suggested Four-year Course of Study for Composite Mathematics-Statistics Education Major

The suggested schedule shown below should be used in conjunction with the major requirement sheet. This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately.

Department of Mathematics and Statistics

Freshman Year (31-34 credits)
Fall Semester (14-17 credits)
MATH 1210 (QL) Calculus I 4
College of Science required course 4
University Studies course(s) 6-9

Spring Semester (17 credits)
STAT 2000 (QI) Statistical Methods (3 cr) **or**
STAT 3000 (QI) Statistics for Scientists (3 cr) 3
MATH 1220 (QL) Calculus II 4
College of Science required course 4
University Studies courses 6

Sophomore Year (31 credits)
Fall Semester (16 credits)
MATH 2210 (QI) Multivariable Calculus 3
MATH 2250 (QI) Linear Algebra and Differential Equations 4
STAT 5100 (CI/QI) Linear Regression and Time Series 3
University Studies courses 6

Spring Semester (15 credits)
MATH 3110 Modern Geometry 3
MATH 4200 (CI) Foundations of Analysis 3
MATH 4400 History of Mathematics and Number Theory 3
STAT 5200 Design of Experiments 3
University Studies or teaching minor course 3

Junior Year (30 credits)
Fall Semester (15 credits)
MATH 3300 School Laboratory
for Mathematics Teachers Level I 1
MATH 4310 (CI) Introduction to Algebraic Structures 3
MATH 4620 Computer Aided Math for Secondary Math Teachers 3
MATH 5500 Capstone Mathematics and Statistics for Teachers 3
MATH 5710 Introduction to Probability 3
SPED 4000 Education of Exceptional Individuals 2

Spring Semester (15 credits)
SCED 3100 Motivation and Classroom Management 3
SCED 3210 (CI/DSS) Educational and Multicultural Foundations 3
University Studies and teaching minor courses 9

Senior Year (28 credits)
Fall Semester (16 credits)
SCED 4200 (CI) Reading, Writing, and Technology 3
SCED 4210 Cognition and Evaluation of Student Learning 3
MATH 4300 (CI) School Laboratory
for Mathematics Teachers Level II 1
MATH 4500 Methods of Secondary School
Mathematics Teaching 3
STAT 4500 Methods of Teaching Statistics
in Secondary and Middle School 3
University Studies or teaching minor course 3

Spring Semester (12 credits)
SCED 5500 Student Teaching Seminar 2
SCED 5630 Student Teaching in Secondary Schools 10

Statistics Major (47 credits)

A. Required Courses (35 credits)
MATH 1210 (QL) Calculus I (F,Sp,Su) 4
MATH 1220 (QL) Calculus II (F,Sp,Su) 4
MATH 2210 (QI) Multivariable Calculus (F,Sp,Su) 3
MATH 2270 (QI) Linear Algebra (F) 3
MATH 4200 (CI) Foundations of Analysis (F,Sp) 3
MATH 5710 Introduction to Probability (F,Sp) 3
MATH 5720 Introduction to Mathematical Statistics (Sp) 3
CS 1400 Introduction to Computer Science—CS 1 (F,Sp,Su) 3
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su) (3 cr) **or**
STAT 2000 (QI) Statistical Methods (F,Sp) (3 cr) 3
STAT 5100 (QI/CI) Linear Regression and Time Series (F) 3
STAT 5200 Design of Experiments (Sp) 3

B. Elective Courses (12 credits)
Select four courses (12 credits) in statistics numbered above 5000. One of the three elective classes may be selected from:
MATH 5570 Actuarial Math I (F) 3
MATH 5610 Computational Linear Algebra and Solution of Systems of Equations (F) 3
MATH 5760 Stochastic Processes (F) 3

Note: MATH 2250 (Linear Algebra and Differential Equations) may substitute for MATH 2270 (Linear Algebra).

Suggested Four-year Course of Study for Statistics Major
The suggested schedule shown below should be used in conjunction with the major requirement sheet.

Freshman Year (28-34 credits)
Fall Semester (14-17 credits)
CS 1400 Introduction to Computer Science—CS 1 3
MATH 1210 (QL) Calculus I 4
College of Science required course 4
University Studies course(s) 3-6

Spring Semester (14-17 credits)
MATH 1220 (QL) Calculus II 4
STAT 2000 (QI) Statistical Methods (3 cr) **or**
STAT 3000 (QI) Statistics for Scientists (3 cr) 3
College of Science required course 4
University Studies course(s) 3-6

Sophomore Year (30 credits)
Fall Semester (15 credits)
MATH 2210 (QI) Multivariable Calculus 3
MATH 2270 (QI) Linear Algebra 3
University Studies courses 9

Spring Semester (15 credits)
MATH 4200 (CI) Foundations of Analysis 3
University Studies or elective courses 12

Junior Year (30 credits)
Fall Semester (15 credits)
MATH 5710 Introduction to Probability 3
STAT 5100 (CI/QI) Linear Regression and Time Series 3
Statistics elective course 3
University Studies courses 6

Spring Semester (15 credits)
MATH 5720 Introduction to Mathematical Statistics 3
Statistics elective course 3
University Studies courses 9

Senior Year (24-30 credits)
Fall Semester (12-15 credits)
Statistics elective course(s) 3-6
University Studies courses 9

Spring Semester (12-15 credits)
Statistics elective course(s) 3-6
University Studies courses 9

Emphasis Requirements

Computational Mathematics Emphasis (60 credits)

The Computational Mathematics Emphasis is available in the Mathematics Major.

A. Required Mathematics Courses (35 credits)

MATH 1210 (QL) Calculus I (F,Sp,Su) 4
MATH 1220 (QL) Calculus II (F,Sp,Su) 4
MATH 2210 (QI) Multivariable Calculus (F,Sp,Su) 3
MATH 2270 (QI) Linear Algebra (F) 3
MATH 2280 (QI) Ordinary Differential Equations (Sp) 3
MATH 3310 Discrete Mathematics (F,Sp,Su) 3
MATH 4200 (CI) Foundations of Analysis (F,Sp) 3
MATH 5210 Introduction to Analysis I (F) 3
MATH 5610 Computational Linear Algebra and Solution of Systems of Equations (F) 3
MATH 5620 Numerical Solution of Differential Equations (Sp) 3
MATH 5710 Introduction to Probability (F,Sp) 3

B. Required Computer Science Courses (13 credits)

CS 1400 Introduction to Computer Science—CS 1 (F,Sp,Su) 3
CS 1405 Introduction to Computer Science—CS 1 Lab (F,Sp,Su) 1
CS 1410 (QI) Introduction to Computer Science—CS 2 (F,Sp,Su) 3
CS 2420 (QI) Algorithms and Data Structures—CS 3 (F,Sp,Su) 3
CS 2450 (CI) Software Engineering (F,Sp) 3

C. Mathematics Elective Courses (6 credits)

Select two courses (6 credits) in mathematics numbered above 4620, excluding MATH 5570 (Actuarial Math I) and 5580 (Actuarial Math II).

D. Computer Science Elective Courses (6 credits)

Select at least two courses (6 credits) in computer science numbered above 4000.

Note: Mathematics majors are strongly urged to take MATH 2270 (Linear Algebra) and MATH 2280 (Ordinary Differential Equations) *instead of* MATH 2250 (Linear Algebra and Differential Equations).

Note: Students who complete the Computer Science coursework with a GPA of at least 2.5 automatically earn a minor in Computer Science.

Suggested Four-year Course of Study for Mathematics Major, Computational Mathematics Emphasis

The suggested schedule shown below should be used in conjunction with the major requirement sheet.

Freshman Year (35-41 credits)
Fall Semester (18-21 credits)

MATH 1210 (QL) Calculus I 4
CS 1400 Introduction to Computer Science—CS 1 3
CS 1405 Introduction to Computer Science—CS 1 Lab 1
College of Science required course 4
University Studies courses 6-9

Spring Semester (17-20 credits)

MATH 1220 (QL) Calculus II 4
CS 1410 (QI) Introduction to Computer Science—CS 2 3
College of Science required course 4
University Studies courses 6-9

Sophomore Year (36-38 credits)
Fall Semester (18-19 credits)

MATH 2210 (QI) Multivariable Calculus 3
MATH 2250 (QI) Linear Algebra and Differential Equations (4 cr) **or**
MATH 2270 (QI) Linear Algebra (3 cr) ..... 3 or 4
CS 2420 (QI) Algorithms and Data Structures—CS 3 3
University Studies courses 9

Spring Semester (18-19 credits)

MATH 2250 Linear Algebra and Differential Equations (4 cr) **or**
MATH 2280 (QI) Ordinary Differential Equations (3 cr) ..... 3 or 4
MATH 3310 Discrete Mathematics 3
CS 2450 (CI) Software Engineering 3
University Studies or elective courses 9

Junior Year (18-24 credits)
Fall Semester (9-12 credits)

MATH 4200 (CI) Foundations of Analysis 3
University Studies courses 6-9

Spring Semester (9-12 credits)

Math elective course(s) 3-6
Computer Science elective course(s) 3-6

Senior Year (33-39 credits)
Fall Semester (15-18 credits)

MATH 5210 Introduction to Analysis I 3
MATH 5610 Computational Linear Algebra and Solution of Systems of Equations 3
Math/Computer Science elective course(s) 3-6
University Studies Depth or elective courses 6

Spring Semester (18-21 credits)

MATH 5620 Numerical Solution of Differential Equations 3
MATH 5710 Introduction to Probability 3
Math/Computer Science elective course(s) 3-6
University Studies or elective courses 9

Actuarial Science Emphasis (59 credits)

The Actuarial Science Emphasis is available in *either* the Mathematics Major *or* the Statistics Major.

A. Mathematics and Statistics Courses (for Mathematics Majors) (44 credits)

MATH 1210 (QL) Calculus I (F,Sp,Su) 4
MATH 1220 (QL) Calculus II (F,Sp,Su) 4
MATH 2210 (QI) Multivariable Calculus (F,Sp,Su) 3
MATH 2270 (QI) Linear Algebra (F) 3
MATH 2280 (QI) Ordinary Differential Equations (Sp) 3
MATH 4200 (CI) Foundations of Analysis (F,Sp) 3
MATH 4310 (CI) Introduction to Algebraic Structures (F,Sp) 3
MATH 5210 Introduction to Analysis I (F) 3
MATH 5570 Actuarial Math I (F) 3
MATH 5580 (CI) Actuarial Math II (Sp) 3
MATH 5710 Introduction to Probability (F,Sp) 3
MATH 5720 Introduction to Mathematical Statistics (Sp) 3
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su) (3 cr) **or**
STAT 2000 (QI) Statistical Methods (F,Sp) (3 cr) 3
STAT 5100 (QI/CI) Linear Regression and Time Series (F) 3

B. Mathematics and Statistics Courses (for Statistics Majors) (44 credits)

Statistics Majors must complete all of the courses listed above in ***Section A***, *except for* the following two courses:

MATH 4310 (CI) Introduction to Algebraic Structures (F,Sp) 3
MATH 5210 Introduction to Analysis I (F) 3

In addition, students must complete the following:
STAT 5200 Design of Experiments (Sp).....3
Elective STAT course numbered above 5000 3

C. Required Accounting, Business Administration, Economics, and Management and Human Resources Courses (15 credits)
ACCT 2010 Survey of Accounting I (F,Sp,Su).....3
BA 3400 (QI) Corporate Finance (F,Sp,Su) 3
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp) 3
ECON 2010 (BSS) Introduction to Microeconomics (F,Sp).....3
MHR 2050 Legal and Ethical Environment of Business (F,Sp,Su).....3

Note: Mathematics majors are strongly urged to take MATH 2270 (Linear Algebra) and MATH 2280 (Ordinary Differential Equations) *instead* of MATH 2250 (Linear Algebra and Differential Equations).

Note: Admission to the Actuarial Science Emphasis requires explicit departmental approval.

Composite Major in Mathematics/Statistics (59 credits)

A. Required Courses (44 credits)
MATH 1210 (QL) Calculus I (F,Sp,Su) 4
MATH 1220 (QL) Calculus II (F,Sp,Su) 4
MATH 2210 (QI) Multivariable Calculus (F,Sp,Su) 3
MATH 2270 (QI) Linear Algebra (F) 3
MATH 2280 (QI) Ordinary Differential Equations (Sp) 3
MATH 4200 (CI) Foundations of Analysis (F,Sp).....3
MATH 4310 (CI) Introduction to Algebraic Structures (F,Sp).....3
MATH 5210 Introduction to Analysis I (F).....3
MATH 5710 Introduction to Probability (F,Sp) 3
MATH 5720 Introduction to Mathematical Statistics (Sp).....3
CS 1400 Introduction to Computer Science—CS 1 (F,Sp,Su) 3
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su) (3 cr) **or**
STAT 2000 (QI) Statistical Methods (F,Sp) (3 cr) 3
STAT 5100 (QI/CI) Linear Regression and Time Series (F).....3
STAT 5200 Design of Experiments (Sp).....3

B. Elective Mathematics Courses (6 credits)
Select at least two courses (6 credits) in mathematics numbered above 5000.

C. Elective Statistics Courses (9 credits)
Select at least three courses (9 credits) in statistics numbered above 5000. Either MATH 5760 (Stochastic Processes) or MATH 5570 (Actuarial Math I) may substitute for one of the statistics elective courses.

Note: Mathematics majors are strongly urged to take MATH 2270 and 2280 *instead* of MATH 2250, but MATH 2250 may substitute for MATH 2270 and 2280.

Minor Requirements

Mathematics Minor (23 credits)

A. Required Courses (17 credits)
MATH 1210 (QL) Calculus I (F,Sp,Su) 4
MATH 1220 (QL) Calculus II (F,Sp,Su) 4
MATH 2210 (QI) Multivariable Calculus (F,Sp,Su) 3
MATH 2270 (QI) Linear Algebra (F) 3
MATH 2280 (QI) Ordinary Differential Equations (Sp) 3

B. Elective Courses (6 credits)
Select at least two additional courses (6 credits) in mathematics numbered above 4000, ***excluding*** the following courses: MATH 4300, 4400, 4500, 4620, 5570, and 5580.

Note: Mathematics minors are strongly urged to take MATH 2270 and 2280 *instead* of MATH 2250, but MATH 2250 may substitute for MATH 2270 and 2280.

Statistics Minor (15 credits)

A. Required Courses (9 credits)
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su) (3 cr) **or**
STAT 2000 (QI) Statistical Methods (F,Sp) (3 cr) 3
STAT 5100 (QI/CI) Linear Regression and Time Series (F).....3
STAT 5200 Design of Experiments (Sp).....3

B. Elective Courses (6 credits)
Select two additional courses (6 credits) from statistics courses numbered above 5000, or from the following courses:
MATH 5710 Introduction to Probability (F,Sp) 3
MATH 5720 Introduction to Mathematical Statistics (Sp).....3
MATH 5760 Stochastic Processes (F) 3

Mathematics Education Minor (42 credits)

STAT 1040 (QL) Introduction to Statistics (F,Sp,Su).....3
MATH 1210 (QL) Calculus I (F,Sp,Su) 4
MATH 1220 (QL) Calculus II (F,Sp,Su) 4
MATH 2210 (QI) Multivariable Calculus (F,Sp,Su) 3
MATH 2250 (QI) Linear Algebra and Differential Equations (F,Sp,Su)..4
MATH 3110 Modern Geometry (Sp).....3
MATH 4200 (CI) Foundations of Analysis (F,Sp).....3
MATH 4310 (CI) Introduction to Algebraic Structures (F,Sp).....3
MATH 4400 History of Mathematics and Number Theory (Sp) 3
MATH 4500 Methods of Secondary School Mathematics Teaching (F,Sp).....3
MATH 4620 Computer Aided Math for Secondary Math Teachers (F)..3
MATH 5500 Capstone Mathematics and Statistics for Teachers (F).....3
MATH 5710 Introduction to Probability (F,Sp) 3

Completion of the Secondary Teacher Education Program (STEP) for the student's Secondary Education major is also required, as well as MATH 4500, and ***either*** MATH 3300 *or* 4300. 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 (36-40 credits)

A. Required Courses (28 credits)
BIOL 1610 Biology I (F).....4
BIOL 1620 (BLS) Biology II (Sp).....4
MATH 1210 (QL) Calculus I (F,Sp,Su) 4
MATH 1220 (QL) Calculus II (F,Sp,Su) 4
MATH 2270 (QI) Linear Algebra (F) 3
MATH 2280 (QI) Ordinary Differential Equations (Sp) 3
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su) 3
MATH/BIOL 4230 (QI) Applied Mathematics in Biology (Sp).....3

Note: MATH 2250 may substitute for *both* MATH 2270 and 2280.

B. Elective Courses (8-12 credits)
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 3220 (QI) Field Ecology (F).....2
BIOL 5020 (QI) Modeling Biological Systems (F) 3
BIOL 5380 Evolutionary Genetics (F) 4
BIOL 5600 Comparative Animal Physiology (F).....3
BIOL 5620 Medical Physiology (Sp) 3
FRWS 3810 Plant and Animal Populations (Sp) 3
PUBH 5330 (QI) Industrial Hygiene Chemical Hazard Control (F) 3
BMET 5500 Land-Atmosphere Interactions (Sp) 3

Mathematics and Statistics Electives
MATH 5410 Methods of Applied Mathematics (F).....3
MATH 5420 Partial Differential Equations (Sp) 3
MATH 5460 Introduction to the Theory and Application of Nonlinear Dynamical Systems (Sp) 3
MATH 5610 Computational Linear Algebra and Solution of Systems of Equations (F).....3
MATH 5620 Numerical Solution of Differential Equations (Sp) 3
MATH 5710 Introduction to Probability (F,Sp) 3
STAT 5100 (CI/QI) Linear Regression and Time Series (F).....3
STAT 5120 Categorical Data Analysis (F).....3
STAT 5200 Design of Experiments (Sp).....3
STAT 5600 (CI) Applied Multivariable Statistics (Sp) 3

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. Minimum GPA requirements for participation in departmental honors vary by department, but usually fall within the range of 3.30-3.50. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level. The campus-wide Honors Program, which is open to all qualified students regardless of major, offers a rich array of cultural and social activities, special classes, and the benefit of Honors early registration. Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@cc.usu.edu. Additional information can be found online at: **http://www.usu.edu/honors/**

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.

For detailed information about requirements for majors and minors within the Mathematics and Statistics Department, see the major requirement sheet, which is available from the department, or online at: **http://www.usu.edu/majorsheets/**

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 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) fill out the scholarship application form located at **http://www.math.usu.edu/undergrad/application.html**, 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.

Learning Objectives

All students having majors within the Department of Mathematics and Statistics are expected to achieve competency in: (1) pre-calculus algebra; (2) calculus of one and several variables; (3) ordinary differential equations; (4) linear algebra/matricies, eigenvalues/eigenvectors, determinant, rank; and (5) analysis (introduction to formal proofs/analysis theory).

Students enrolled in specific departmental majors should also have competence in additional areas pertaining to their major. These areas are listed in the following paragraphs.

Mathematics Major
(1) algebraic structures; (2) analysis/advanced calculus; (3) complex variables; (4) topology; (5) algebraic theory; and (6) partial differential equations.

Statistics Major
(1) theory of probability and statistics; (2) linear regression/time series; (3) experiment design; and (4) one or more of sampling, categorical analysis, multivariate analysis, quality control.

Mathematics Education Major (including Composite Mathematics-Statistics Education)
(1) algebraic structures; (2) probability; (3) history of mathematics; (4) methods for secondary school teaching of mathematics and/or statistics; and (5) in-service teaching experiences.

Other Majors and Emphases (e.g., Computational Mathematics Emphasis, Actuarial Science Emphasis, etc.)
Replace general competencies in traditional areas (i.e., algebra, topology, analysis) with specific topics related to the specialized emphasis. For example, students in the **Computational Mathematics Emphasis** need the ability to write computer code to solve linear,

nonlinear, stochastic, and (partial and ordinary) differential equations; and students in the **Actuarial Science Emphasis** need two semesters of actuarial mathematics.

Assessment

Assessment of General Education Courses (MATH 1050 and STAT 1040)

Beginning with Spring Semester 2004, the department has conducted an annual assessment of student performance in primary General Education courses (including MATH 1050 and STAT 1040). The performance of approximately 100 randomly selected students from each of MATH 1050 and STAT 1040 was evaluated by topic area on the common finals of these courses. Summary results will be available soon. The process was repeated for Spring Semester 2005. Together, these two years of data provide a baseline against which future groups of students will be compared. Weaknesses in topic learning will then be identified, and the Undergraduate Committee and course supervisors will provide feedback to instructors in an effort to bring overall student performance to target levels.

Assessment of Core Courses (MATH 1210, 1220, 2210, 2250, and STAT 1040, 2000, 3000)

Core content of these courses changes infrequently and is primarily addressed through the selection of textbooks at three-year to five-year intervals. Primary assessment of these courses is through semester evaluations and final examination scores and course grade profiles. Competency in these areas is essential for any student majoring in mathematics or statistics.

Assessment of Upper-division Major Courses

These courses are re-evaluated by subcommittees of the Undergraduate Committee in terms of: level and appropriateness of content relative to learning objectives, textbook selection, final examinations, course grades, and student evaluations. At two-year to five-year intervals, courses are redesigned if the subject matter develops beyond traditional norms, or if market demand indicates that an under-utilized course should be replaced by a course having greater demand (e.g., development of a new cryptography course).

Undergraduate Research Opportunities

Students interested in undergraduate research opportunities in the Department of Mathematics and Statistics at Utah State University should begin by contacting the assistant department head and undergraduate research liaison, Daniel C. Coster, (435) 797-2815, coster@math.usu.edu.

Several departmental faculty members have engaged in successful undergraduate research projects. These faculty members, along with their research areas, include: James Powell (mathematical modeling of pine beetle infestations), Ian Anderson (differential geometry applications to theoretical and applied physics), and Richard Cutler (analysis of epidemiological and environmental data). In general, undergraduate research offers students an excellent opportunity to explore mathematical and statistical theory and practice under the guidance of an experienced researcher, to focus their own course selection on particular career paths and research areas (including graduate school), to co-author professional publications, and to actively make presentations at conferences or local seminars.

Graduate Programs

Admission Requirements

See the general admission requirements for graduate programs at Utah State University on pages 101-102 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) in Mathematics

This program prepares students to work as mathematicians in government, business, and industry. This degree may also be a "stepping stone" for students who ultimately wish to pursue a doctorate in mathematics or a closely related subject.

Master of Science (MS) in Statistics

This program is primarily designed to prepare students for careers in business, industry, and federal, state, and local government. Students pursuing graduate degrees in other disciplines, such as biology, natural resources, engineering, business, economics, epidemiology, and the social sciences, may elect to earn an MS in statistics concurrent with their other degree programs. For most students, the MS in statistics will prove sufficient for career preparation. However, some graduates may ultimately pursue a doctorate in statistics, biostatistics, or a closely related discipline.

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.

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.

Doctor of Philosophy (PhD) in Mathematical Sciences

This is a terminal degree for mathematics and statistics researchers in academe, government, and industry, and 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 students the opportunity to receive advanced training in mathematics and/or statistics in the context of another field of inquiry, such as biology, ecology, business, economics, engineering, or education. Students in this specialization will usually take about two thirds of their coursework in the Department of Mathematics and Statistics, and the remaining third in the other discipline. The student's dissertation committee will choose two members from outside the Department of Mathematics and Statistics. The dissertation itself will generally entail the development of advanced mathematical or statistical methods to solve problems in the other subject 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 2005.

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 May and September 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 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 in the MS program in Industrial Mathematics 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 May or September. 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.

Department of Mathematics and Statistics

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.

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, and the remaining credits must be chosen from approved courses offered within the College of Education and Human Services. 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.

PhD in Mathematical Sciences

All four specializations require a course of study of 60 credits beyond a master's degree or 90 credits beyond a bachelor's degree. In almost all cases, a student who applies to the PhD program who does not already have a master's degree will first be directed to the MS programs in mathematics and statistics. Satisfactory performance in one of these programs can lead to admission to the PhD program in mathematical sciences.

The core requirements for the PhD degree in Mathematical Sciences that are common to all four specializations include the following:

1. Passing a standard written qualifying examination appropriate for the specialization.
2. Passing a comprehensive examination that is constructed specifically for the student by his or her supervisory committee. The form of the examination may be written or oral, or may include a combination of written and oral components. The length and content of the exam are determined by the student's supervisory committee.
3. Successfully complete a test of technical English writing skills. Usually the student's dissertation proposal will serve this purpose.
4. Complete a dissertation.
5. Successfully defend the dissertation in a final oral examination.

After completing items 1-3, a PhD student may be advanced to candidacy.

Requirements that are specific to the specialization of the PhD in Mathematical Sciences are listed below. In all cases, it is assumed that the student already has a master's degree in mathematics or statistics.

The **College Teaching Specialization** requires at least 60 credits in mathematics courses numbered 6000 or higher, excluding MATH 7990 and MATH 6990, of which *no more than 20* can be completed in MATH 7970 (Dissertation Research). At least 6 credits should be selected from classes and seminars at the 7000 level, and 6 credits of MATH 7910 (College Teaching Internship) are also required. Students in this specialization take a qualifying examination in Real Analysis. The student's dissertation in this specialization may take several forms, including a traditional, publishable contribution to some area of mathematics; a significant contribution in the area of mathematics education; or an exposition of important mathematical theories and their historic relationships in an area of the student's choosing.

The **Interdisciplinary Studies Specialization** requires at least 60 credits numbered 6000 or higher, excluding MATH 7990, STAT 7990, MATH 6990, and STAT 6990. *No more than 30* of the credits may be completed in MATH 7970 or STAT 7970 (Dissertation Research). At least 20 of the credits should be in mathematics and/or statistics, of which at least 6 should be in seminars and classes at the 7000 level. An additional 10 credits in the student's chosen interdisciplinary area are also required. Students in this specialization may take a qualifying examination in Real Analysis *or* in Probability and Mathematical Statistics, depending on whether the majority of their coursework is in mathematics *or* in statistics. The student's PhD supervisory committee should include two persons in the student's selected interdisciplinary area, and the comprehensive examination should have a significant interdisciplinary component. The dissertation for a student in this specialization should involve the development and application of mathematical or statistical methods to solve problems in the chosen interdisciplinary area, and should be publishable in journals in that area.

The **Pure and Applied Mathematics Specialization** requires at least 60 credits in mathematics numbered 6000 or higher, excluding MATH 6990 and 7990. At least 6 credits must be selected from seminars or classes numbered 7000 or higher, and *no more than 30* of the credits can be completed in MATH 7970 (Dissertation Research). The qualifying examination for this option is in Real Analysis. The dissertation should be a publishable, significant contribution to research in an area of mathematics.

The **Statistics Specialization** requires at least 60 credits in statistics at the 6000 and 7000 level, excluding STAT 6990 and 7990. With the permission of the student's supervisory committee, some of these credits may be in mathematics or in another discipline. At least 6 credits must be selected from seminars and classes numbered 7000 and higher, and a *maximum* of 30 credits may be completed in STAT 7970 (Dissertation Research). Students in this specialization take a qualifying examination in Probability and Mathematical Statistics. The dissertation constitutes a publishable, significant contribution to research in 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

Graduate students in the PhD program, the MMath program, and the Plan A and B options of the MS programs are eligible for teaching assistantships in the department. In most cases, a teaching assistant is responsible for teaching and grading a section of about 40 students in an introductory mathematics or statistics course during each semester. Stipends for teaching assistants are $13,000 for MS students, $14,000 for PhD students who have not been advanced to candidacy, and $16,000 for PhD students who have been advanced to candidacy. In rare situations, a graduate student may be offered a paper grading and tutoring assistantship that pays half of the teaching assistantship stipend. All graduate student stipends described here carry with them a waiver of all nonresident tuition. PhD students with stipends also receive a waiver of resident tuition. The department is also allocated a small number of resident tuition waivers for MS students each year. The department is able to support most PhD students and some MS students with summer teaching assignments that pay $3,000. Mathematics and Statistics faculty members who have research grants may choose to partially or fully support students that they are advising.

Department of Mathematics and Statistics

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, psychometrics
Lawrence O. Cannon, topology, mathematics education
Adele Cutler, statistical computing
D. Richard Cutler, environmental statistics, epidemiology
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 Emeritus
Ronald V. Canfield, multivariate and industrial statistics
Chris S. Coray, numerical analysis
Duane Loveland, geometric topology, continuum theory
Jerry Ridenhour, differential equations
Donald V. Sisson, statistical methods, experimental design

Associate Professors
Daniel C. Coster, experimental design, linear models
Christopher D. Corcoran, computational biostatistics
Mark E. Fels, differential geometry
Joseph V. Koebbe, numerical analysis, applied mathematics
Piotr Kokoszka, probability and time series analysis
Michael C. Minnotte, nonparametric density estimation, statistical visualization
Xiaofeng Ren, partial differential equations, applied mathematics
Juergen Symanzik, computational and graphical statistics
Kathryn Turner, numerical analysis, optimization, linear algebra
Dariusz M. Wilczynski, geometric and algebraic topology

Associate Professors Emeritus
Wayne R. Rich, mathematics education
E. Eugene Underwood, matrix theory, linear algebra
James D. Watson, numerical analysis

Assistant Professors
David E. Brown, discrete mathematics, graph theory
Peg Howland, numerical linear algebra
Brynja R. Kohler, mathematics education, mathematical biology
John R. Stevens, bioinformatics, applied statistics, meta-analysis
M. K. Stephen Yeung, dynamical systems, gene network structures

Principal Lecturers
David D. Bregenzer, mathematics, statistics
Eric Rowley, mathematics, mathematics education

Lecturers
Bryan Bornholdt, mathematics, mathematics education
Claudia Mora, mathematics, mathematics education

Course Descriptions

Mathematics (MATH), pages 663-666

Statistics (STAT), pages 723-724

Department of Mechanical and Aerospace Engineering

Department Head: Byard D. Wood
Location: Engineering 419
Phone: (435) 797-2867
FAX: (435) 797-2417
Undergraduate/Graduate E-mail: bogden@engineering.usu.edu
WWW: http://www.mae.usu.edu/

Undergraduate Advising:
Engineering Advising Center, Engineering 314A, (435) 797-2705, joan.smith@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, Computational Engineering, Manufacturing Engineering

Graduate specializations: Aerospace Engineering, Manufacturing Engineering, Mechanical Engineering

Graduate Areas of Interest: Advanced Additive Manufacturing; Aeronautics; Astrodynamics and Orbital Mechanics; Bioengineering; Cluster Supercomputers; Composite Materials; Computational and Experimental Fluid Mechanics; Heat and Mass Transfer; Micromachining; Soil/Structure Interfaces; Spacecraft and Optical Systems Control; Solar Energy Systems; Spacecraft Guidance, Navigation, and Control Systems; Welding and Materials Joining

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 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; lean manufacturing; 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 operations using statistical and calculus 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 **Computational Engineering** emphasis within the Mechanical Engineering BS degree prepares students to be proficient in the

theory and fundamentals of engineering, as well as in advanced simulation techniques and numerical methods. Computational engineering encompasses the design, development, and application of computational systems for the solution of physical problems in engineering and science. These computational systems include not only the algorithms and software required for the solution of mathematical equations describing physical processes, but also the means and methods of visualizing, analyzing, and interpreting computed results and other physical data. Computational engineering focuses on developing the student's readiness in solving problems of complex systems in engineering and technology by means of computational modeling, analysis, and simulations. Students graduating with this emphasis will also earn a minor in mathematics. Students who complete the computational engineering emphasis will be prepared to pursue careers in all fields of mechanical engineering, including design, simulation, and modeling, and will also be well-prepared to pursue graduate studies.

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, computational, 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 laboratory 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 ABET. The Aerospace Engineering emphasis, Computational 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 four curricula (mechanical, computational, 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 mentor, 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 122-123) and the Undergraduate Graduation Requirements (pages 60-63) sections of this catalog.

Pre-professional Program

The curriculum for the first two years is common for Aerospace, Computational, Mechanical, and Manufacturing students.

Required Coursework (126 credits)
Freshman Year (32 credits)
Fall Semester (15 credits)
MATH 1210 (QL)[2] Calculus I 4
CHEM 1210[2] Principles of Chemistry I 4
CHEM 1215[2] Chemical Principles Laboratory I 1
University Studies Breadth courses 6

Spring Semester (17 credits)
MATH 1220 (QL)[2] Calculus II 4
PHYS 2200[2] Elements of Mechanics 2
MAE 1200[2] Engineering Graphics 2
MAE 2650[2] Manufacturing Processes 3
University Studies Breadth courses 6

Sophomore Year (31 credits)
Fall Semester (16 credits)
MATH 2210 (QI)[2] Multivariable Calculus 3
ENGR 2010[2] Engineering Mechanics Statics 2
ETE 2210[2] Electrical Engineering for Nonmajors 4
ENGL 2010 (CL2)[2] Intermediate Writing: Research Writing in a Persuasive Mode 3
PHYS 2220 (BPS/QI)[2] General Physics—Science and Engineering II . 4

Spring Semester (15 credits)
MATH 2250 (QI)[2] Linear Algebra and Differential Equations 4
MAE 2300[2] Thermodynamics I 3
ENGR 2030[2] Engineering Mechanics Dynamics 3
ENGR 2140[2] Strength of Materials 2
MAE 2160[2] Material Science 3

Professional Program in Mechanical Engineering
Junior Year (31 credits)
Fall Semester (17 credits)
MAE 2200 Engineering Numerical Methods I 2
MAE 3040 Mechanics of Solids 3
MAE 3320 Advanced Dynamics 3
MAE 3400 Thermodynamics II 3
MAE 3420 Fluid Mechanics 3
MATH 4700 Engineering Mathematics and Statistics 3

Spring Semester (14 credits)
MAE 2450 Engineering Numerical Methods II 3
MAE 3340 Instrumentation and Measurements 3
MAE 3440 (QI) Heat and Mass Transfer 3
MAE 3800 Design I 2
MAE 4300 Machine Design 3

Senior Year (31-32 credits)

Fall Semester (16-17 credits)
MAE 4400 (CI) Fluids/Thermal Laboratory 2
MAE 4800 (CI) Design II 3
MAE 5300 Vibrations 3
Technical Elective course[1] 3
University Studies Depth Humanities and Creative Arts (DHA) course 2-3
University Studies Breadth course 3

Spring Semester (15 credits)
Technical Elective courses[1] 12
University Studies Depth Social Sciences (DSS) course 3

[1]Students must select 15 credits of technical elective courses from the list of approved MAE Technical Elective Courses shown below.
[2]These courses are required for admission to the Professional Engineering Program (PEP).

Note: Elective courses, once selected and undertaken by a student, become part of the required program for that student.

The selection of elective courses needs to be given careful consideration. The preparation for a career in the broad field of mechanical and aerospace engineering and the selection of classes by real interest is more important than the maximization of the undergraduate grade point average.

MAE Technical Elective Courses
MAE 5020 Finite Element Methods in Solid Mechanics I (F) 3
MAE 5060 Mechanics of Composite Materials I (Sp) 3
MAE 5310 Dynamic Systems and Controls (F) 3
MAE 5410 Design and Optimization of Thermal Systems (F) 3
MAE 5420 Compressible Fluid Flow (F) 3
MAE 5440 Computational Fluid Dynamics (Sp) 3
MAE 5500 Aerodynamics (F) 3
MAE 5510 Dynamics of Atmospheric Flight (Sp) 3
MAE 5520 Elements of Space Flight (F) 3
MAE 5530 Space System Design (Sp) 3
MAE 5540 Propulsion Systems (Sp) 3
MAE 5580 Aircraft Design (F) 3
MAE 5600 Manufacturing Process Planning and Statistical Quality Control (F) 3
MAE 5610 Hydraulics and Pneumatics (Sp) 3
MAE 5620 Manufacturing Automation (F) 3
MAE 5630 Machining Theory and Applications (Sp) 3
MAE 5640 Design for Manufacturability (F) 3
MAE 5650 Nontraditional and Additive Manufacturing Processes (Sp) 3
MAE 5660 Transport Phenomena in Manufacturing Processes (Sp) 3
MAE 5680 Manufacturing Planning and Simulation (Sp) 3
MAE 5900 Cooperative Practice (F,Sp,Su) 3
MAE 5930 ST: Kinematics (F) 1-3
ECE 3710 Microcomputer Hardware and Software (F,Sp) 4
ECE 5230 Spacecraft Systems Engineering (F) 3
ECE 5310 Control Systems (F) 3
ECE 5320 Mechatronics (Sp) 4
ENGR 5500 High Performance Computing for Engineers (F) 3
MHR 5350 Contemporary Manufacturing Management (F) 3

Students may choose *one* of their technical electives from the following courses:
MATH 5270 Complex Variables (Sp) 3
MATH 5410 Methods of Applied Mathematics (F) 3
MATH 5420 Partial Differential Equations (Sp) 3
MATH 5620 Numerical Solution of Differential Equations (Sp) 3
MATH 5640 Optimization (Sp) 3
STAT 5200 Design of Experiments (Sp) 3
Special Problems courses under MAE 5930 may be used as technical electives with prior approval.

Professional Program in Aerospace Engineering Emphasis

In addition to completing the pre-professional program, students who choose to graduate with the Aerospace Engineering emphasis must complete the following courses as their elective selection.

Junior Year (31 credits)

Fall Semester (17 credits)
MAE 2200 Engineering Numerical Methods I 2
MAE 3040 Mechanics of Solids 3
MAE 3320 Advanced Dynamics 3
MAE 3400 Thermodynamics II 3
MAE 3420 Fluid Mechanics 3
MATH 4700 Engineering Mathematics and Statistics 3

Spring Semester (14 credits)
MAE 2450 Engineering Numerical Methods II 3
MAE 3340 Instrumentation and Measurements 3
MAE 3440 (QI) Heat and Mass Transfer 3
MAE 3800 Design I 2
MAE 4300 Machine Design 3

Senior Year (31-32 credits)

Fall Semester (17 credits)
MAE 4400 (CI) Fluids/Thermal Laboratory 2
MAE 5300 Vibrations 3
Aerospace Technical Course[3] 3
Aerospace Technical Course[3] 3
Aerospace Technical Course[3] 3
University Studies Breadth course 3

Spring Semester (14-15 credits)
MAE 4800 (CI) Design II 3
Aerospace Technical courses[3] 6
University Studies Depth Humanities and Creative Arts (DHA) and Depth Social Sciences (DSS) courses 5-6

[3]During their senior year, Aerospace Engineering Emphasis students must take a minimum of 9 credits (3 classes) from Group 1 and a total of 15 credits (5 classes) from Group 1 *or* Group 1 and Group 2 combined. ***Group 1:*** **Fundamental Aerospace Classes**. *Aircraft:* MAE 5500, 5510, 5580; *Space:* MAE 5520, 5530, 5930 (Dynamics of Space Flight); *Propulsion:* MAE 5420, 5540. ***Group 2:*** **Aerospace Support Classes.** MAE 5020, 5060, 5310, 5440.

Professional Program in Manufacturing Engineering Emphasis

In addition to completing the pre-professional program, students who choose to graduate with the Manufacturing Engineering emphasis must complete the following courses as their elective selection.

Junior Year (31 credits)

Fall Semester (17 credits)
MAE 2200 Engineering Numerical Methods I 2
MAE 3040 Mechanics of Solids 3
MAE 3320 Advanced Dynamics 3
MAE 3400 Thermodynamics II 3
MAE 3420 Fluid Mechanics 3
MATH 4700 Engineering Mathematics and Statistics 3

Spring Semester (14 credits)
MAE 2450 Engineering Numerical Methods II 3
MAE 3340 Instrumentation and Measurements 3
MAE 3440 (QI) Heat and Mass Transfer 3
MAE 3800 Design I 2
MAE 4300 Machine Design 3

Senior Year (31-32 credits)
MAE 4400 (CI) Fluids/Thermal Laboratory (F) 2
MAE 4800 (CI) Design II (F,Sp) 3
MAE 5300 Vibrations (F) 3
Manufacturing Technical Elective courses 15
University Studies Breadth course 3
University Studies Depth Humanities and Creative Arts (DHA) and Depth Social Sciences (DSS) courses 5-6

Manufacturing Engineering Approved Technical Elective Courses
Students must choose five courses from the following list:
MAE 5020 Finite Element Methods in Solid Mechanics I (F) 3
MAE 5310 Dynamic Systems and Controls (F) (3 cr) **or**
MAE 5620 Manufacturing Automation (F) (3 cr) 3
MAE 5600 Manufacturing Process Planning and Statistical Quality Control (F) (3 cr) 3
MAE 5630 Machining Theory and Applications (Sp) 3
MAE 5640 Design for Manufacturability (F) 3
MAE 5650 Nontraditional and Additive Manufacturing Processes (Sp) 3
MAE 5660 Transport Phenomena in Manufacturing Processes (Sp) 3
MAE 5680 Manufacturing Planning and Simulation (Sp) 3
MHR 5350 Contemporary Manufacturing Management (F) 3
STAT 5200 Design of Experiments (Sp) 3

Computational Engineering Emphasis
In addition to completing the pre-professional program, students who choose to graduate with the Computational Engineering emphasis must complete the following courses as their elective selection.

Junior Year (31 credits)
Fall Semester (17 credits)
MAE 2200 Engineering Numerical Methods I 2
MAE 3040 Mechanics of Solids 3
MAE 3320 Advanced Dynamics 3
MAE 3400 Thermodynamics II 3
MAE 3420 Fluid Mechanics 3
MATH 4700 Engineering Mathematics and Statistics 3

Spring Semester (14 credits)
MAE 2450 Engineering Numerical Methods II 3
MAE 3340 Instrumentation and Measurements 3
MAE 3440 (QI) Heat and Mass Transfer 3
MAE 3800 Design I 2
MAE 4300 Machine Design 3

Senior Year (34-35 credits)
Fall Semester (17 credits)
MAE 4400 (CI) Fluids/Thermal Laboratory 2
MAE 5020 Finite Element Methods in Solid Mechanics I 3
MAE 5300 Vibrations 3
ENGR 5500 High Performance Computing for Engineers 3
University Studies Breadth course 3
University Studies Depth Social Sciences (DSS) course 3

Spring Semester (17-18 credits)
MAE 4800 (CI) Design II 3
MAE 5440 Computational Fluid Dynamics 3
MATH 5620[4] Numerical Solutions of Differential Equations 3
MAE Technical Elective course 3
University Studies Breadth course 3
University Studies Depth Humanities and Creative Arts (DHA) course 2-3

[4]MATH 5620 fulfills the requirement for a Math Minor.

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. In order to qualify for the concurrent program, students must have a 3.4 GPA for the 60 credits completed most recently. 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, pages 123-124.)

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level. The campus-wide Honors Program, which is open to all qualified students regardless of major, offers a rich array of cultural and social activities, special classes, and the benefit of Honors early registration. Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@cc.usu.edu. Additional information can be found online at: **http://www.usu.edu/honors/**

Department of Mechanical and Aerospace Engineering

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 Mechanical and Aerospace Engineering Department, or online at: **http://www.usu.edu/majorsheets/**

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 101-102, 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 and quantitative 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, mold flow analysis, and materials joining, as well as flexible manufacturing systems and computer-integrated manufacturing. Manufacturing engineers are prepared to pursue product and process design careers in virtually all manufacturing industries, including 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 gasses. 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 9 credits of graduate-level coursework in Mechanical Engineering fundamentals; 12 credits of 6000-level (or above) engineering coursework, exclusive of MAE 6930, 6950, 6970, and 6990; a minimum of 3 credits of 5000-level (or above) coursework in approved mathematics; and 10 credits selected from any one of five declared areas of emphasis. A minimum of 30 credits is required beyond the BS, including a 6-credit thesis (MAE 6970). The thesis must meet School of Graduate Studies requirements.

The **Plan B MS** Degree requires 9 credits of graduate-level coursework in Mechanical Engineering fundamentals; 12 credits of 6000-level (or above) engineering coursework, exclusive of MAE 6930, 6950, 6970, and 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 30 credits is required beyond the BS, which includes a 3-credit report (MAE 6950) written to thesis standards.

The **Plan C MS** Degree requires 9 credits of graduate-level coursework in Mechanical Engineering fundamentals; 18 credits of 6000-level (or above) engineering coursework, exclusive of MAE 6930, 6950, 6970, and 6990; a minimum of 3 credits of 5000-level (or above) coursework in approved mathematics; and either 15 credits selected from any one of five declared areas of emphasis, or 18 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. Students are not required to defend the report. However, the report must be approved by the major professor.

The **Master of Engineering Degree** requires 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. (Contact Bonnie Ogden at bogden@engineering.usu.edu for requirement details.) 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.

Department of Mechanical and Aerospace Engineering

The **PhD Degree** requires 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 coauthor, 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: Bonnie Ogden at **bogden@engineering.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, 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 $350 per month. Students interested in working part time as teaching or research assistants should apply to the department by March 1 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 and a minimum of 9 credits of approved coursework for a PhD degree each semester while receiving such support.

Mechanical and Aerospace Engineering Faculty

Professors
Christine E. Hailey, engineering education, thermal/fluid sciences
Alma P. Moser, engineering mechanics, piping systems
Warren F. Phillips, aerodynamics, flight mechanics
Robert E. Spall, thermal/fluids, CFD, computational
Byard D. Wood, solar energy for heating and cooling, heat and mass transfer

Adjunct Professor
Charles M. Swenson, space science and engineering

Trustee Professor Emeritus
J. Clair Batty, thermal science, cryogenics, space systems

Professors Emeritus
P. Thomas Blotter, structural dynamics
Ralph H. Haycock, mechanics, manufacturing
Russell M. Holdredge, heat transfer, fluid mechanics
Carl D. Spear, material science
Edward W. Vendell, Jr., cryogenics, heat transfer, thermal systems design

Associate Professors
Heng Ban, thermal/fluids, thermophysical properties, microfluidics, energy and environment
Steven L. Folkman, applied mechanics, structural dynamics, space structures, buried pipe systems
Thomas H. Fronk, mechanics of composites and materials
R. Rees Fullmer, manufacturing, controls, robotics, dynamics, spacecraft

Adjunct Associate Professor
Robert T. Pack, remote sensing, optoelectronics, lidar sensor systems

Assistant Professors
David K. Geller, spacecraft guidance and navigation
Thomas Hauser, computational fluid dynamics, thermal/fluids, numerical methods, high-performance computing
Leijun Li, manufacturing, materials joining
Barton L. Smith, thermal/fluids, experimental fluid mechanics
Brent E. Stucker, advanced manufacturing and materials
Stephen A. Whitmore, high-speed aerodynamics, astrodynamics
Wenbin Yu, advanced structures, solid mechanics, computational solid mechanics (FEM)

Adjunct Assistant Professors
John Devitry, solid modeling, computer graphics
Durga Janaki Ram Gabbita, advanced material processing, additive manufacturing
Scott M. Jensen, thermal management of space systems
Angela Minichiello, heat transfer, thermodynamics
Paul J. Mueller, thermal science, propulsion
Steven R. Wassom, spacecraft instrumentation design

Adjunct Research Assistant Professor
Randy J. Jost, electromagnetic fields, solid state, microwaves

Principal Lecturer
Carl G. Wood, design, manufacturing

Course Descriptions

Mechanical and Aerospace Engineering (MAE), pages 660-663

Department of Military Science

Department Head: Lt. Colonel S. Rand Curtis
Location: Military Science 104
Phone: (435) 797-7058
FAX: (435) 797-3330
E-mail: armyrotc@usu.edu
WWW: http://armyrotc.usu.edu

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 $300-500 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 $900-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 $450-500 per month tax-free subsistence allowance (up to 10 months per year), and attend a paid five-week leader development course 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.

Course Requirements for Military Science Programs

Basic Course Requirements (8 credits)

MS 1010 Introduction to Leadership 2
MS 1020 Leadership Skills 2
MS 2010 Leadership Development 2
MS 2020 Small Unit Leadership 2

Advanced Course Requirements (15 credits)

MS 3010 Organizational Leadership and Small Unit Tactics 3
MS 3020 Advanced Tactics and Operations 3
MS 4010 Command and Staff Functions 3
MS 4020 Officer Perspectives 3
MS 4610 Military History Seminar (3 cr) **or**
HIST 4810 American Military History (3 cr) 3

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 $2,700-4,500 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 stipend payments 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 $450-500 per month tax-free subsistence allowance (up to 10 months 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:

Department of Military Science

1. Complete all required Military Science instruction while attending college as a full-time student, and obtain a baccalaureate 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.

3. Be a U.S. citizen.

4. Successfully complete the advanced summer camp.

5. Be recommended by the 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:

Course Requirements for Military Science Minor (21 credits)

MS 3010 Organizational Leadership and Small Unit Tactics....3
MS 3020 Advanced Tactics and Operations....3
MS 4010 Command and Staff Functions....3
MS 4020 Officer Perspectives....3
HIST 4810 American Military History (3 cr) **or**
MS 4610 Military History Seminar (3 cr)....3
Electives (must be approved by department head)....6

Elective Course Offerings

MS 2400 Physical Readiness
(repeatable; take 1 credit per semester)....1
MS 2420 Ranger Preparation....2
MS 2430 Air Assault....2
MS 2440 Airborne Operations....2
MS 2510 ROTC Basic Camp....1-6
MS 3110 Staff Organization and Operations....1-3
MS 3210 Independent Study....1-3
MS 4110 Advanced Staff Operations....1-3
MS 4400 Advanced Physical Readiness....1
MS 4510 ROTC Advanced Camp....1-10
MS 4520 Cadet Troop Leadership Training....2
MS 4610 Military History Seminar....1-3

Additional Information

For more detailed information about course requirements for Military Science programs, as well as information about career opportunities, see the major requirement sheet, which is available from the Military Science Department, or online at:
http://www.usu.edu/majorsheets/

Military Science Faculty

Assistant Professors
Lt. Colonel S. Rand Curtis
Lt. Colonel Tanya Olson
Captain Jeff Bruce

Instructors
Sergeant First Class LaWrell D. Cook
Sergeant First Class Jason K. Myers

Course Descriptions

Military Science (MS), pages 668-669

Department of Music

Department Head: Bruce M. Saperston
Location: Fine Arts 107
Phone: (435) 797-3000
FAX: (435) 797-1862
E-mail: bsaperston@hass.usu.edu
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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

Undergradute Advisors:

Music Education/Choral:
R. Cory Evans, Fine Arts 204, (435) 797-3035, cevans@hass.usu.edu

Music Therapy:
Maureen Heams, Fine Arts 220B, (435) 797-3009, mheams@cc.usu.edu

Music Therapy Office, Fine Arts 219, (435) 797-3030

Guitar:
Michael K. Christiansen, Fine Arts 124, (435) 797-3011, mchristiansen@hass.usu.edu

High Brass/Director of Education:
Thomas Rohrer, Fine Arts 104, (435) 797-3004, rohrer@hass.usu.edu

Low Brass:
Todd L. Fallis, Fine Arts 120, (435) 797-3005, tfallis@hass.usu.edu

Percussion:
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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

Strings:
Sergio Bernal, Fine Arts 218B, (435) 797-0487, sergio.bernal@usu.edu

Violin:
William Fedkenheuer, Fine Arts 206, (435) 797-7130 willfed@cc.usu.edu

Rebecca J. McFaul, Fine Arts 104C, (435) 797-3597, rebecca@frystreetquartet.com

Viola:
Russell Fallstad, Fine Arts 208, (435) 797-3092, russell@frystreetquartet.com

Cello/String Bass:
Anne Francis, University Reserve 21, (435) 797-3086, anne@frystreetquartet.com

Clarinet/Oboe:
Nicholas E. Morrison, Fine Arts 103, (435) 797-3506, nicholas.morrison@usu.edu

Flute:
Leslie Timmons, Fine Arts 105, (435) 797-3699, leslie.timmons@usu.edu

Saxophone:
Jon Gudmundson, Fine Arts 212, (435) 797-3003, gudmundson@hass.usu.edu

Bassoon:
R. Dennis Hirst, Fine Arts 101, (435) 797-3257, dennis.hirst@usu.edu

Voice:
Cindy J. Dewey, Fine Arts 208B, (435) 797-3055, cdewey@hass.usu.edu

Opera:
Lynn Jemison-Keisker, Fine Arts Visual 129, (435) 797-3038, lkeisker@hass.usu.edu

Music (Undecided):
Bruce M. Saperston, Fine Arts 107, (435) 797-3000, bsaperston@hass.usu.edu

Degrees offered: Bachelor of Music (BM) in Music; Bachelor of Science (BS) in Music Therapy

Undergraduate emphases: *BM degree in Music*—Music Education (Band), Music Education (Orchestra), Music Education (Choral), Music Education (General); Piano Performance, String Performance, Vocal Performance, Wind/Brass/Percussion Performance, Guitar Performance; Piano Pedagogy

Undergraduate Programs

Objectives

The Department of Music provides instruction in music by: (1) offering service courses which contribute to the Liberal Arts 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-certified music therapists to serve in educational and therapeutic settings; and (4) to prepare music students for graduate study in their areas of specialization.

Department of Music

Requirements

Admission Requirements

Admission requirements for the Department of Music include those described for the University in this catalog (see pages 16-20). 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.

Music Core Curriculum Requirements (32-37 credits)

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 Music Theory I 3
MUSC 1130 Aural Skills I 1
MUSC 1170[1] Keyboard Harmony I ..... (1)

Spring Semester

MUSC 1120 Music Theory II 3
MUSC 1140 Aural Skills II 1
MUSC 1180[1] Keyboard Harmony II ..... (1)

Sophomore Year

Fall Semester

MUSC 2110 Music Theory III 3
MUSC 2130 Aural Skills III 1
MUSC 2170 Keyboard Harmony III 1
MUSC 2180 Computer Applications in Music 2

Spring Semester

MUSC 2140[2] Aural Skills IV ..... (1)
MUSC 3110 Music History I: Origins through Baroque 3
MUSC 3140 Musical Form and Analysis 3

Junior Year

Fall Semester

MUSC 2350 Conducting 2
MUSC 3120 Music History II: Classical and Romantic Periods 3

Spring Semester

MUSC 2120 (CI) Music Theory IV 3
MUSC 3180[3] Scoring and Arranging ..... (2)
MUSC 3190 (CI) Music History III: Music of the Twentieth Century 3

Students should note that MUSC 2180, 2350, and 3180 may be taken during different semesters, if necessary. Also, since MUSC 2140 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.

[1] MUSC 1170 and 1180 are *not required* for the Music Education (General) Emphasis, nor for the Guitar Performance Emphasis.
[2] MUSC 2140 is *not required* for the Composite Major in Music Education, nor for the Guitar Performance Emphasis or the Wind/Brass/Percussion Performance Emphasis.
[3] MUSC 3180 is *not required* for the Vocal Performance Emphasis.

Bachelor of Music Degree Composite Major in Music Education

Music majors must maintain a minimum GPA of 3.0 in Music courses. A grade of *C*- or better must be earned in all core and emphasis classes. A 2.75 cumulative GPA is required for graduation. Additional requirements, such as piano proficiency, concert attendance, etc., are stipulated in the Department of Music's *Student Handbook*.

Emphasis Area

Students must select one area of emphasis and complete the required coursework for that emphasis. The student's transcript will show the area of emphasis selected by the student from those listed below. Please note that all music majors are required to participate in major departmental ensemble organizations each semester. The student and an advisor will determine the organizations in which the student will participate.

Music Education (Band) (44-49 credits)

MUSC 1500 String Techniques I (F,Sp) 1
MUSC 1600 Voice Techniques (F,Sp) 1
MUSC 1800 Percussion Techniques (F) 1
MUSC 2600 Women's Choir (F,Sp) (1 cr) **or**
MUSC 4600 University Chorale (F,Sp) (1 cr) 1
MUSC 2700 Woodwind Techniques I: Flute, Clarinet (F) 1
MUSC 2710 Woodwind Techniques II: Saxophone, Oboe, Bassoon (Sp) 1
MUSC 2720 Marching Band (4 semesters) (2 cr, repeatable) (F) 8
MUSC 2800 Brass Techniques I: Trumpet, French Horn (F) 1
MUSC 2810 Brass Techniques II: Trombone, Tuba, Euphonium (Sp) 1
MUSC 3100 Motivation and Classroom Management Strategies in Secondary Classroom Music (Sp) 3
MUSC 3220 Choral Methods and Materials (F) 2
MUSC 3240 Instrumental Methods and Materials (Sp) 2
MUSC 3790 Symphonic Band (F,Sp) (1 cr, repeatable) **or**
MUSC 4700 Wind Orchestra (F,Sp) (1 cr, repeatable) 7
MUSC 3900 Jazz Improvisation (F,Sp) 2
MUSC 4240 Advanced Conducting (F) 2
MUSC 4920 Individual Recital (F,Sp,Su) 1-6

Small Ensembles (2 credits)
Select 2 credits from the following:

MUSC 2740 Recorder Techniques (Sp) 1
MUSC 3700 Woodwind Ensemble (F,Sp) 1-2
MUSC 3780 Flute Ensemble (F) 1
MUSC 3800 Trombone Ensemble (F,Sp) 1
MUSC 3850 Brass Ensemble (F,Sp) 1
MUSC 3870 Percussion Ensemble (F,Sp) 1

Individual Instruction (7 credits)
Students should complete 7 credits from the following on their major instrument.
MUSC 3710 Individual Flute Instr for Music Majors (F,Sp,Su) 1-2
MUSC 3720 Individual Oboe Instr for Music Majors (F,Sp,Su) 1-2
MUSC 3730 Individual Clarinet Instr for Music Majors (F,Sp,Su).....1-2
MUSC 3740 Individual Bassoon Instr for Music Majors (F,Sp,Su) 1-2
MUSC 3750 Individual Saxophone Instr for Music Majors (F,Sp,Su) .1-2
MUSC 3810 Individual Trumpet Instr for Music Majors (F,Sp) 1-2
MUSC 3820 Individual Trombone Instr for Music Majors (F,Sp) 1-2
MUSC 3830 Individual French Horn Instr for Music Majors (F,Sp).....1-2
MUSC 3840 Individual Tuba/Euphonium Instr for Music Majors (F,Sp).....1-2
MUSC 3860 Individual Percussion Instr for Music Majors (F,Sp,Su) .1-2

Music Education (Orchestra) (39-45 credits)
MUSC 1500 String Techniques I (F,Sp).....1
MUSC 1600 Voice Techniques (F,Sp) 1
MUSC 1800 Percussion Techniques (F) 1
MUSC 2140 Aural Skills IV (Sp) 1
MUSC 2600 Women's Choir (F,Sp) (1 cr) **or**
MUSC 4600 University Chorale (F,Sp) (1 cr) 1
MUSC 2700 Woodwind Techniques I: Flute, Clarinet (F).....1
MUSC 2800 Brass Techniques I: Trumpet, French Horn (F).....1
MUSC 3100 Motivation and Classroom Management Strategies in Secondary Classroom Music (Sp).....3
MUSC 3220 Choral Methods and Materials (F) 2
MUSC 3240 Instrumental Methods and Materials (Sp).....2
MUSC 3500 Symphony Orchestra (F,Sp) 7
MUSC 3510 Orchestra Literature (Sp) 2
MUSC 3520 String Pedagogy and Solo Literature (F,Sp) 2
MUSC 4240 Advanced Conducting (F) 2
MUSC 4500 String Ensemble (F,Sp).....4
MUSC 4920 Individual Recital (F,Sp,Su).....1-6

Individual String Instruction (8 credits)
Select 8 credits from the following:
MUSC 4510 Individual Violin Instr for Music Majors (F,Sp,Su).....1-2
MUSC 4520 Individual Viola Instr for Music Majors (F,Sp,Su) 1-2
MUSC 4530 Individual Cello Instr for Music Majors (F,Sp,Su).....1-2
MUSC 4540 Individual String Bass Instr for Music Majors (F,Sp,Su) 1-2

Music Education (Choral) (34-39 credits)
MUSC 1500 String Techniques I (F,Sp).....1
MUSC 1800 Percussion Techniques (F) 1
MUSC 2140 Aural Skills IV (Sp) 1
MUSC 2490 Individual Piano Instruction (Second Instrument) for Music Majors (F,Sp,Su) 3
MUSC 2600 Women's Choir (F,Sp) (1 cr, repeatable) **or**
MUSC 4600 University Chorale (F,Sp) (1 cr, repeatable) **or**
MUSC 4650 Chamber Singers (F,Sp) (1 cr, repeatable).....7
MUSC 2700 Woodwind Techniques I: Flute, Clarinet (F).....1
MUSC 2800 Brass Techniques I: Trumpet, French Horn (F) (1 cr) **or**
MUSC 2810 Brass Techniques II: Trombone, Tuba, Euphonium (Sp) (1 cr).....1
MUSC 3100 Motivation and Classroom Management Strategies in Secondary Classroom Music (Sp).....3
MUSC 3220 Choral Methods and Materials (F) 2
MUSC 3230 Choral Literature (Sp) 2
MUSC 3240 Instrumental Methods and Materials (Sp).....2
MUSC 3630 Vocal Pedagogy I (F) 2
MUSC 3670 Individual Vocal Instruction for Music Majors (F,Sp,Su)....7
MUSC 4920 Individual Recital (F,Sp,Su).....1-6

Music Education (General) (36 credits)
MUSC 1150 Beginning Group Piano (Sp) (1 cr) **or**
MUSC 1160 Intermediate Group Piano (Sp) (1 cr) **or**
MUSC 2490 Individual Piano Instruction (Second Instrument) for Music Majors (F,Sp,Su) (1 cr, repeatable).....2
MUSC 1500 String Techniques I (F,Sp).....1
MUSC 1600 Voice Techniques (F,Sp) 1
MUSC 1800 Percussion Techniques (F) 1
MUSC 2550 Guitar Styles (Blues/Bluegrass) (F) 2
MUSC 2560 Guitar Styles (Jazz/Classical) (Sp) 2
MUSC 2570 Fingerboard Theory I (F).....2
MUSC 2580 Fingerboard Theory II (Sp).....2
MUSC 2600 Women's Choir (F,Sp) (1 cr) **or**
MUSC 4600 University Chorale (F,Sp) (1 cr) 1
MUSC 2700 Woodwind Techniques I: Flute, Clarinet (F).....1
MUSC 3100 Motivation and Classroom Management Strategies in Secondary Classroom Music (Sp).....3
MUSC 3220 Choral Methods and Materials (F) 2
MUSC 3240 Instrumental Methods and Materials (Sp).....2
MUSC 3550 Individual Guitar Instruction for Music Majors (F,Sp,Su)...6
MUSC 3570 Guitar Pedagogy I (F) 2
MUSC 3580 Guitar Pedagogy II (Sp) 2
MUSC 3590 Electric Guitar Ensemble (F,Sp) (1 cr, repeatable) **or**
MUSC 4550 Acoustic Guitar Ensemble (F,Sp) (1 cr, repeatable).....4

Secondary Teacher Education Program (STEP) (26 credits)
Admission to the STEP curriculum requires action by the Office of the Associate Dean for Teacher Education, Graduation, and Educator Licensing, as well as the department where the major work is being offered. Students **are not** generally permitted to enroll in the following STEP courses unless they have been admitted to the STEP.

Level 1 Courses (7 credits)
SCED 3210 (CI/DSS) Educational and Multicultural Foundations (F,Sp).....3
SCED 3300 Clinical Experience I (F,Sp) (Arranged) 1
SPED 4000 Education of Exceptional Individuals (F,Sp,Su) (may be taken anytime).....2
INST 3500 Technology Tools for Secondary Teachers (F,Sp,Su).....1

Level 2 Courses (7 credits)
SCED 4200 (CI) Reading, Writing, and Technology (F,Sp) 3
SCED 4210 Cognition and Evaluation of Student Learning (F,Sp) 3
SCED 4300 Clinical Experience II (F,Sp) (Arranged).....1

Level 3 Courses (12 credits)
SCED 5500 Student Teaching Seminar (2 weeks) (F,Sp) 2
SCED 5630 Student Teaching in Secondary Schools (13 weeks, full-time) (F,Sp).....10

Dual Licensure (Recommended)
Students receiving licensure in secondary music education are encouraged to qualify for teaching music (vocal and/or instrumental) in the elementary schools. In addition to the graduation and licensure requirements for the BM Degree in Music Education, the following courses are required.

PSY 1100 Developmental Psychology: Infancy and Childhood (F,Sp) (3 cr) **or**
FCHD 1500 (BSS)[4] Human Development Across the Lifespan (F,Sp) (3 cr) 3
MUSC 3260[5] Elementary School Music (F,Sp,Su) 2
MUSC 3270[5] Teaching Strategies and Practicum in Elementary Music (Sp) 3

[4]Will fulfill the University Studies Breadth Social Sciences (BSS) requirement.
[5]Two credits are given for MUSC 3260. Two additional credits may be obtained by arranging for a two-hour-a-week practicum experience in the elementary schools. Scheduling arrangements for the practicum are made through the MUSC 3260 instructor. Orff Schulwerk course (taught summer semester *only*) may be substituted for both MUSC 3260 and 3270.

Sample Four-year Plan for Music Major, Music Education (Band) Emphasis

Minimum GPA for Admission: 2.75, USU; 2.75 Career
Minimum GPA for Graduation: 3.00, major courses; 2.00, USU; 2.75 Career
Minimum Grade Accepted: *C*- in major courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. In addition, students should refer to the Music Department's *Student Handbook*. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (34 credits)

Fall Semester (16 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MUSC 1110 Music Theory I 3
MUSC 1130 Aural Skills I 1
MUSC 1170 Keyboard Harmony I 1
MUSC 1800 Percussion Techniques 1
MUSC 2700 Woodwind Techniques I: Flute, Clarinet 1
MUSC 2720 Marching Band 2
Individual Music Instruction (3700-level) 1
University Studies Breadth course 3

Spring Semester (18 credits)
MUSC 1120 Music Theory II 3
MUSC 1140 Aural Skills II 1
MUSC 1180 Keyboard Harmony II 1
MUSC 1500 String Techniques I 1
MUSC 2710 Woodwind Techniques II: Saxophone, Oboe, Bassoon 1
MUSC Large Ensemble course 1
Individual Music Instruction (3700-level) 1
University Studies Breadth courses 9

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (35 credits)

Fall Semester (19 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
MUSC 2110 Music Theory III 3
MUSC 2130 Aural Skills III 1
MUSC 2180 Computer Applications in Music 2
MUSC 2720 Marching Band 2
MUSC 2800 Brass Techniques I: Trumpet, French Horn 1
MUSC 3100 Motivation and Classroom Management Strategies in Secondary Classroom Music 3
Individual Music Instruction (3700-level) 1
University Studies Breadth course 3

Spring Semester (16 credits)
MUSC 2350 Conducting 2
MUSC 2600 Women's Choir (1 cr) **or**
MUSC 4600 University Chorale (1 cr) 1
MUSC 2810 Brass Techniques II: Trombone, Tuba, Euphonium 1
MUSC 3110 Music History I: Origins through Baroque 3
MUSC 3140 Musical Form and Analysis 2
MUSC 3900 Jazz Improvisation 2
MUSC Large Ensemble course 1
Individual Music Instruction (3700-level) 1
University Studies Quantitative Literacy (QL) course 3

Junior Year (33 credits)

Fall Semester (17 credits)
MUSC 2720 Marching Band 2
MUSC 3120 Music History II: Classical and Romantic Periods 3
MUSC 4240 Advanced Conducting 2
SPED 4000 Education of Exceptional Individuals 2
MUSC Small Ensemble course 1
Individual Music Instruction (3700-level) 1
Depth Life and Physical Sciences (DSC) course 3
Quantitative Intensive (QI) course 3

Spring Semester (16 credits)
MUSC 1600 Voice Techniques 1
MUSC 2120 (CI) Music Theory IV 3
MUSC 3190 (CI) Music History III: Music of the Twentieth Century 3
MUSC 3240 Instrumental Methods and Materials 2
SCED 3210 (CI/DSS) Educational and Multicultural Foundations 3
SCED 3300 Clinical Experience I 1
MUSC Large Ensemble course 1
MUSC Small Ensemble course 1
Individual Music Instruction (3700-level) 1

Senior Year (27 credits)

Fall Semester (15 credits)
MUSC 2720 Marching Band 2
MUSC 3180 Scoring and Arranging 2
MUSC 3220 Choral Methods and Materials 2
MUSC 4920 Individual Recital 1
SCED 4200 (CI) Reading, Writing, and Technology 3
SCED 4210 Cognition and Evaluation of Student Learning 3
SCED 4300 Clinical Experience II 1
Individual Music Instruction (3700-level) 1

Spring Semester (12 credits)
SCED 5500 Student Teaching Seminar 2
SCED 5630 Student Teaching in Secondary Schools 10

Sample Four-year Plan for Music Major, Music Education (Orchestra) Emphasis

Minimum GPA for Admission: 2.75, USU; 2.75 Career
Minimum GPA for Graduation: 3.00, major courses; 2.00, USU; 2.75 Career
Minimum Grade Accepted: *C*- in major courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. In addition, students should refer to the Music Department's *Student Handbook*. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (32 credits)

Fall Semester (16 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MUSC 1110 Music Theory I 3

MUSC 1130 Aural Skills I 1
MUSC 1170 Keyboard Harmony I 1
MUSC 1800 Percussion Techniques 1
MUSC 2700 Woodwind Techniques I: Flute, Clarinet 1
MUSC 3500 Symphony Orchestra 1
MUSC 4500 String Ensemble 1
Individual Music Instruction (3700-level) 1
University Studies Breadth course 3

Spring Semester (16 credits)
MUSC 1120 Music Theory II 3
MUSC 1140 Aural Skills II 1
MUSC 1180 Keyboard Harmony II 1
MUSC 1500 String Techniques I 1
MUSC 1600 Voice Techniques 1
MUSC 3500 Symphony Orchestra 1
MUSC 4500 String Ensemble 1
Individual Music Instruction (3700-level) 1
University Studies Breadth course 3
University Studies Quantitative Literacy (QL) course 3

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (34 credits)
Fall Semester (16 credits)
MUSC 2110 Music Theory III 3
MUSC 2130 Aural Skills III 1
MUSC 2170 Keyboard Harmony III 1
MUSC 2350 Conducting 2
MUSC 3500 Symphony Orchestra 1
MUSC 4500 String Ensemble 1
Individual Music Instruction (3700-level) 1
University Studies Breadth courses 6

Spring Semester (18 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
MUSC 2140 Aural Skills IV 1
MUSC 3110 Music History I: Origins through Baroque 3
MUSC 3140 Musical Form and Analysis 3
MUSC 3500 Symphony Orchestra 1
MUSC 4240 Advanced Conducting 2
MUSC 4500 String Ensemble 1
Individual Music Instruction (3700-level) 1
University Studies Breadth course 3

Junior Year (29 credits)
Fall Semester (16 credits)
MUSC 2180 Computer Applications in Music 2
MUSC 2800 Brass Techniques I: Trumpet, French Horn 1
MUSC 3120 Music History II: Classical and Romantic Periods 3
MUSC 3220 Choral Methods and Materials 2
MUSC 3500 Symphony Orchestra 1
SCED 3210 (CI/DSS) Educational and Multicultural Foundations 3
SCED 3300 Clinical Experience I 1
SPED 4000 Education of Exceptional Individuals 2
Individual Music Instruction (4500-level) 1

Spring Semester (13 credits)
MUSC 2120 (CI) Music Theory IV 3
MUSC 3180 Scoring and Arranging 2
MUSC 3190 (CI) Music History III: Music of the Twentieth Century 3
MUSC 3240 Instrumental Methods and Materials 2
MUSC 3500 Symphony Orchestra 1
SCED 4300 Clinical Experience II 1
Individual Music Instruction (4500-level) 1

Senior Year (29 credits)
Fall Semester (17 credits)
MUSC 2720 Marching Band 2
MUSC 3520 String Pedagogy and Solo Literature 2
SCED 4200 (CI) Reading, Writing, and Technology 3
SCED 4210 Cognition and Evaluation of Student Learning 3
Individual Music Instruction (4500-level) 1
Depth Life and Physical Sciences (DSC) course 3
Quantitative Intensive (QI) course 3

Spring Semester (12 credits)
SCED 5500 Student Teaching Seminar 2
SCED 5630 Student Teaching in Secondary Schools 10

Sample Four-year Plan for Music Major, Music Education (Choral) Emphasis

Minimum GPA for Admission: 2.75, USU; 2.75 Career
Minimum GPA for Graduation: 3.00, major courses; 2.00, USU; 2.75 Career
Minimum Grade Accepted: *C-* in major courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. In addition, students should refer to the Music Department's *Student Handbook*. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (30 credits)
Fall Semester (15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MUSC 1110 Music Theory I 3
MUSC 1130 Aural Skills I 1
MUSC 1170 Keyboard Harmony I 1
MUSC 1800 Percussion Techniques 1
MUSC 2490 Individual Piano Instruction (Second Instrument) for Music Majors 1
MUSC 3670 Individual Vocal Instruction for Music Majors 1
Large Choral Music Ensemble (4600-level) 1
University Studies Breadth course 3

Spring Semester (15 credits)
MUSC 1120 Music Theory II 3
MUSC 1140 Aural Skills II 1
MUSC 1180 Keyboard Harmony II 1
MUSC 1500 String Techniques I 1
MUSC 2490 Individual Piano Instruction (Second Instrument) for Music Majors 1
MUSC 3670 Individual Vocal Instruction for Music Majors 1
Large Choral Music Ensemble (4600-level) 1
University Studies Breadth courses 6

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (34 credits)
Fall Semester (16 credits)
MUSC 2110 Music Theory III 3
MUSC 2130 Aural Skills III 1
MUSC 2180 Computer Applications in Music 2
MUSC 2490 Individual Piano Instruction (Second Instrument) for Music Majors 1
MUSC 2700 Woodwind Techniques I: Flute, Clarinet 1

MUSC 3100 Motivation and Classroom Management Strategies in Secondary Classroom Music 3
MUSC 3670 Individual Vocal Instruction for Music Majors 1
Large Choral Music Ensemble (4600-level) 1
University Studies Quantitative Literacy (QL) course 3

Spring Semester (18 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
MUSC 2140 Aural Skills IV 1
MUSC 2350 Conducting 2
MUSC 2490 Individual Piano Instruction (Second Instrument) for Music Majors 1
MUSC 3110 Music History I: Origins through Baroque 3
MUSC 3140 Musical Form and Analysis 3
MUSC 3670 Individual Vocal Instruction for Music Majors 1
Large Choral Music Ensemble (4600-level) 1
University Studies Breadth course 3

Junior Year (35 credits)

Fall Semester (17 credits)
MUSC 2800 Brass Techniques I: Trumpet, French Horn (1 cr) **or**
MUSC 2810 Brass Techniques II: Trombone, Tuba, Euphonium (1 cr) 1
MUSC 3120 Music History II: Classical and Romantic Periods 3
MUSC 3670 Individual Vocal Instruction for Music Majors 1
SPED 4000 Education of Exceptional Individuals 2
Large Choral Music Ensemble (4600-level) 1
University Studies Breadth course 3
Depth Life and Physical Sciences (DSC) course 3
Quantitative Intensive (QI) course 3

Spring Semester (18 credits)
MUSC 2120 (CI) Music Theory IV 3
MUSC 3180 Scoring and Arranging 2
MUSC 3190 (CI) Music History III: Music of the Twentieth Century 3
MUSC 3230 Choral Literature 2
MUSC 3240 Instrumental Methods and Materials 2
MUSC 3670 Individual Vocal Instruction for Music Majors 1
SCED 3210 (CI/DSS) Educational and Multicultural Foundations 3
SCED 3300 Clinical Experience I 1
Large Choral Music Ensemble (4600-level) 1

Senior Year (26 credits)

Fall Semester (14 credits)
MUSC 3220 Choral Methods and Materials 2
MUSC 3630 Vocal Pedagogy I 2
MUSC 3670 Individual Vocal Instruction for Music Majors 1
MUSC 4920 Individual Recital 1
SCED 4200 (CI) Reading, Writing, and Technology 3
SCED 4210 Cognition and Evaluation of Student Learning 3
SCED 4300 Clinical Experience II 1
Large Choral Music Ensemble (4600-level) 1

Spring Semester (12 credits)
SCED 5500 Student Teaching Seminar 2
SCED 5630 Student Teaching in Secondary Schools 10

Sample Four-year Plan for Music Major, Music Education (General) Emphasis

Minimum GPA for Admission: 2.75, USU; 2.75 Career
Minimum GPA for Graduation: 3.00, major courses; 2.00, USU; 2.75 Career
Minimum Grade Accepted: *C-* in major courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. In addition, students should refer to the Music Department's *Student Handbook*. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (30 credits)

Fall Semester (15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MUSC 1110 Music Theory I 3
MUSC 1130 Aural Skills I 1
MUSC 2570 Fingerboard Theory I 2
MUSC 2700 Woodwind Techniques I: Flute, Clarinet 1
MUSC 3550 Individual Guitar Instruction for Music Majors 1
MUSC 3590 Electric Guitar Ensemble (1 cr) **or**
MUSC 4550 Acoustic Guitar Ensemble (1 cr) 1
University Studies Breadth course 3

Spring Semester (15 credits)
MUSC 1120 Music Theory II 3
MUSC 1140 Aural Skills II 1
MUSC 1600 Voice Techniques 1
MUSC 2580 Fingerboard Theory II 2
MUSC 3550 Individual Guitar Instruction for Music Majors 1
MUSC 3590 Electric Guitar Ensemble (1 cr) **or**
MUSC 4550 Acoustic Guitar Ensemble (1 cr) 1
University Studies Breadth course 3
University Studies Quantitative Literacy (QL) course 3

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (32 credits)

Fall Semester (17 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
MUSC 1800 Percussion Techniques 1
MUSC 1150 Beginning Group Piano (1 cr) **or**
MUSC 1160 Intermediate Group Piano (1 cr) **or**
MUSC 2490 Individual Piano Instruction (Second Instrument) for Music Majors (1 cr) 1
MUSC 2110 Music Theory III 3
MUSC 2130 Aural Skills III 1
MUSC 3100 Motivation and Classroom Management Strategies in Secondary Classroom Music 3
MUSC 3550 Individual Guitar Instruction for Music Majors 1
MUSC 3590 Electric Guitar Ensemble (1 cr) **or**
MUSC 4550 Acoustic Guitar Ensemble (1 cr) 1
University Studies Breadth course 3

Spring Semester (15 credits)
MUSC 1150 Beginning Group Piano (1 cr) **or**
MUSC 1160 Intermediate Group Piano (1 cr) **or**
MUSC 2490 Individual Piano Instruction (Second Instrument) for Music Majors (1 cr) 1
MUSC 1500 String Techniques I 1
MUSC 2180 Computer Applications in Music 2
MUSC 2350 Conducting 2
MUSC 3110 Music History I: Origins through Baroque 3
MUSC 3140 Musical Form and Analysis 3
MUSC 3550 Individual Guitar Instruction for Music Majors 1
MUSC 3590 Electric Guitar Ensemble (1 cr) **or**
MUSC 4550 Acoustic Guitar Ensemble (1 cr) 1
MUSC 2600 Women's Choir (1 cr) **or**
MUSC 4600 University Chorale (1 cr) 1

Junior Year (33 credits)
Fall Semester (17 credits)
MUSC 3120 Music History II: Classical and Romantic Periods 3
MUSC 3220 Choral Methods and Materials 2
MUSC 3550 Individual Guitar Instruction for Music Majors 1
MUSC 3570 Guitar Pedagogy I 2
SCED 3300 Clinical Experience I 1
SPED 4000 Education of Exceptional Individuals 2
University Studies Breadth courses 6

Spring Semester (16 credits)
MUSC 2120 (CI) Music Theory IV 3
MUSC 2560 Guitar Styles (Jazz/Classical) 2
MUSC 3190 (CI) Music History III: Music of the Twentieth Century 3
MUSC 3240 Instrumental Methods and Materials 2
MUSC 3580 Guitar Pedagogy II 2
SCED 3210 (CI/DSS) Educational and Multicultural Foundations 3
SCED 4300 Clinical Experience II 1

Senior Year (28 credits)
Fall Semester (16 credits)
MUSC 2550 Guitar Styles (Blue/Bluegrass) 2
MUSC 3180 Scoring and Arranging 2
SCED 4200 (CI) Reading, Writing, and Technology 3
SCED 4210 Cognition and Evaluation of Student Learning 3
Depth Life and Physical Sciences (DSC) course 3
Quantitative Intensive (QI) course 3

Spring Semester (12 credits)
SCED 5500 Student Teaching Seminar 2
SCED 5630 Student Teaching in Secondary Schools 10

Bachelor of Music Degree (Performance Emphases) (2.75 cumulative GPA; 3.00 GPA in Music courses)

The Bachelor of Music Degree with one of the performance emphases requires completion of University Studies Requirements, Core Requirements, and Emphasis Area Requirements. A grade of *C-* or better must be earned in all core and emphasis classes.

Music Core Curriculum Requirements (35 credits)

All of the Music Core Curriculum courses (shown on page 416) are required, with the following exceptions:

MUSC 1170, 1180, and 2140 are *not required* for the Guitar Performance Emphasis.

MUSC 2140 is *not required* for the Wind/Brass/Percussion Performance Emphasis.

MUSC 3180 is *not required* for the Vocal Performance Emphasis.

Emphasis Area

Students must select one area of emphasis and complete the required coursework for that emphasis. The student's transcript will show the area of emphasis selected by the student from those listed below. Please note that all music majors are required to participate in major departmental ensemble organizations each semester. The student and an advisor will determine the organizations in which the student will participate.

Piano Performance (63-66 credits)

MUSC 1420 Pedagogy Practicum (F,Sp) 9
MUSC 1430 Piano Pedagogy I (F) 3
MUSC 1440 Piano Pedagogy II (Sp) 3
MUSC 2420 Piano Literature I (F) 3
MUSC 2430 Piano Literature II (Sp) 3
MUSC 2440 Piano Literature III (F) 3
MUSC 2450 Piano Literature IV (Sp) 3
MUSC 3400 Individual Piano Instruction for Music Majors (F,Sp,Su) 12
MUSC 3410 Ensemble and Accompanying (Piano) (F,Sp) 6
MUSC 3420 Keyboard Skills I (F) 3
MUSC 3430 Keyboard Skills II (Sp) 3
MUSC 4210 Advanced Music Form and Analysis (F) 3
MUSC 4410 Advanced Piano Pedagogy I (F) 3
MUSC 4420 Advanced Piano Pedagogy II (Sp) 3
MUSC 4920 Individual Recital (F,Sp,Su) 3-6

String Performance (49 credits)

MUSC 2490 Individual Piano Instruction (Second Instrument) for Music Majors (F,Sp,Su) 2
MUSC 3500 Symphony Orchestra (F,Sp) 8
MUSC 4210 Advanced Music Form and Analysis (F) 3
MUSC 4500 String Ensemble (F,Sp) 8
MUSC 4920 Individual Recital (Sophomore) (F,Sp,Su) 2
MUSC 4920 Individual Recital (Junior) (F,Sp,Su) 2
MUSC 4920 Individual Recital (Senior) (F,Sp,Su) 2
Music Electives 6

Individual String Instruction[6] (16 credits)
Students must complete credits from *one* of the following:
MUSC 4510 Individual Violin Instr for Music Majors (F,Sp,Su) 2
MUSC 4520 Individual Viola Instr for Music Majors (F,Sp,Su) 2
MUSC 4530 Individual Cello Instr for Music Majors (F,Sp,Su) 2
MUSC 4540 Individual String Bass Instr for Music Majors (F,Sp,Su) 2

Vocal Performance (56-62 credits)

MUSC 1610 Introduction to Musical Theatre (Sp) (2 cr) **or**
MUSC 1620 Introduction to Opera (F) (2 cr) 2
MUSC 2490 Individual Piano Instruction (Second Instrument) for Music Majors (F,Sp,Su) 0-6
MUSC 2660 Italian Diction for Singers (Sp) 2
MUSC 2670 German Diction for Singers (F) 2
MUSC 2680 French Diction for Singers (Sp) 2
MUSC 3600 Opera Theatre Production (F,Sp) 6
MUSC 3610 Vocal Repertory I (F) 2
MUSC 3620 (CI) Vocal Repertory II (Sp) 2
MUSC 3630 Vocal Pedagogy I (F) 2
MUSC 3640 Vocal Pedagogy II (Sp) 2
MUSC 3670 Individual Vocal Instruction for Music Majors (F,Sp,Su) 16
MUSC 4920 Individual Recital (F,Sp,Su) 4
Major Performance Group (MUSC 4600, 4650, 2610, **or** 2600) 8
Italian or German or French (2 semesters) 6

All students selecting the Vocal Performance Emphasis must complete performance level 5 in piano or MUSC 2490 until level requirement is met.

Wind/Brass/Percussion Performance (48-56 credits)

Individual Instruction[6] (12 credits)
Students must complete 12 credits from ***one*** of the following three groups of courses in their area (Individual Woodwind Instruction ***or*** Individual Brass Instruction ***or*** Individual Percussion Instruction).

Individual Woodwind Instruction
MUSC 3710 Individual Flute Instr for Music Majors (F,Sp,Su) 1-2
MUSC 3720 Individual Oboe Instr for Music Majors (F,Sp,Su) 1-2
MUSC 3730 Individual Clarinet Instr for Music Majors (F,Sp,Su) 1-2

MUSC 3740 Individual Bassoon Instr for Music Majors (F,Sp,Su) 1-2
MUSC 3750 Individual Saxophone Instr for Music Majors (F,Sp,Su) 1-2

Individual Brass Instruction
MUSC 3810 Individual Trumpet Instr for Music Majors (F,Sp) 1-2
MUSC 3820 Individual Trombone Instr for Music Majors (F,Sp) 1-2
MUSC 3830 Individual French Horn Instr for Music Majors (F,Sp).....1-2
MUSC 3840 Individual Tuba/Euphonium Instr for Music Majors (F,Sp).....1-2

Individual Percussion Instruction
MUSC 3860 Individual Percussion Instr for Music Majors (F,Sp,Su) .1-2

Large Ensembles[7] (8 credits)
Select 8 credits from the following:
MUSC 3500 Symphony Orchestra (repeatable) (F,Sp).....1
MUSC 3790 Symphonic Band (repeatable) (F,Sp).....1
MUSC 4700 Wind Orchestra (repeatable) (F,Sp).....1

Small Ensembles (4 credits)
Select 4 credits from the following five courses:
MUSC 3700 Woodwind Ensemble (F,Sp).....1-2
MUSC 3780 Flute Ensemble (F) 1
MUSC 3800 Trombone Ensemble (F,Sp) 1
MUSC 3850 Brass Ensemble (F,Sp) 1
MUSC 3870 Percussion Ensemble (F,Sp) 1

Additional Courses (24-32 credits)
MUSC 1800 Percussion Techniques (F) 1
MUSC 2700 Woodwind Techniques I: Flute, Clarinet (F) (1 cr) **or**
MUSC 2710 Woodwind Techniques II: Saxophone, Oboe, Bassoon (Sp) (1 cr) **or**
MUSC 2740 Recorder Techniques (Sp) (1 cr).....1
MUSC 2800 Brass Techniques I: Trumpet, French Horn (F) (1 cr) **or**
MUSC 2810 Brass Techniques II: Trombone, Tuba, Euphonium (Sp) (1 cr).....1
MUSC 3240 Instrumental Methods and Materials (Sp) (2 cr) **or**
MUSC 4930 Readings and Conference (Independent Study with major prof in instrumental pedagogy) (2 cr) (F,Sp,Su) 2
MUSC 3900 Jazz Improvisation (F,Sp) 2
MUSC 4920 Individual Recital (Junior) (F,Sp,Su) 1-2
MUSC 4920 Individual Recital (Senior) (F,Sp,Su).....3-6
Secondary Instrument Course[8] 2
Electives (at least 4 credits in Music)[9] 11-15

[6]A student in this program will study privately each semester of residency.
[7]A student in this program will participate in a large ensemble for each semester of residency.
[8]Choose 2 credits from: MUSC 2470, 2490, 2750, 2760, 2770, 2780, 2790, 2850, 2860, 2870, 2880, 2890.
[9]At least 3 credits must be from a course that is designated as Communications Intensive and at least 3 credits must be from a course that is designated as Quantitative Intensive, such as ECE 3260, Science of Sound.

Guitar Performance (54 credits)
MUSC 1150 Beginning Group Piano (Sp) (1 cr) **or**
MUSC 1160 Intermediate Group Piano (Sp) (1 cr) **or**
MUSC 2490 Individual Piano Instruction (Second Instrument) for Music Majors (F,Sp,Su) (1 cr, repeatable).....2
MUSC 2550 Guitar Styles (Blues/Bluegrass) (F) 2
MUSC 2560 Guitar Styles (Jazz/Classical) (Sp) 2
MUSC 2570 Fingerboard Theory I (F).....2
MUSC 2580 Fingerboard Theory II (Sp).....2
MUSC 3550 Individual Guitar Instruction for Music Majors (F,Sp,Su) 10
MUSC 3560 Guitar History and Literature (Sp).....3
MUSC 3570 Guitar Pedagogy I (F) 2
MUSC 3580 Guitar Pedagogy II (Sp).....2
MUSC 3590 Electric Guitar Ensemble (F,Sp) (1 cr, repeatable) **or**
MUSC 4550 Acoustic Guitar Ensemble (1 cr, repeatable) (F,Sp).....8
MUSC 3900 Jazz Improvisation (F,Sp) 2
MUSC 4920 Individual Recital (F,Sp,Su).....6
MUSC 4930 Readings and Conference (F,Sp,Su) 2
Music Electives.....3
University Electives 6

Sample Four-year Plan for Music Major, Piano Performance Emphasis

Minimum GPA for Admission: 2.75, USU; 2.75 Career
Minimum GPA for Graduation: 3.00, major courses; 2.00, USU; 2.75 Career
Minimum Grade Accepted: *C-* in major courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. In addition, students should refer to the Music Department's *Student Handbook*. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (31 credits)
Fall Semester (15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MUSC 1110 Music Theory I.....3
MUSC 1130 Aural Skills I 1
MUSC 1170 Keyboard Harmony I 1
MUSC 1430 Piano Pedagogy I 3
MUSC 2180 Computer Applications in Music.....2
MUSC 3400 Individual Piano Instruction for Music Majors 2

Spring Semester (16 credits)
MUSC 1120 Music Theory II.....3
MUSC 1140 Aural Skills II 1
MUSC 1180 Keyboard Harmony II 1
MUSC 1420 Pedagogy Practicum.....3
MUSC 1440 Piano Pedagogy II 3
MUSC 3400 Individual Piano Instruction for Music Majors 2
University Studies Quantitative Literacy (QL) course.....3

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (36 credits)
Fall Semester (17 credits)
MUSC 1420 Pedagogy Practicum.....3
MUSC 2110 Music Theory III.....3
MUSC 2130 Aural Skills III 1
MUSC 2420 Piano Literature I 3
MUSC 3400 Individual Piano Instruction for Music Majors 2
MUSC 3410 Ensemble and Accompanying 1
MUSC 4410 Advanced Piano Pedagogy I 1
University Studies Breadth course 3

Spring Semester (19 credits)
MUSC 1420 Pedagogy Practicum.....3
MUSC 2140 Aural Skills IV.....1
MUSC 2430 Piano Literature II 3
MUSC 3110 Music History I: Origins through Baroque 3
MUSC 3140 Musical Form and Analysis 3
MUSC 3400 Individual Piano Instruction for Music Majors 2
MUSC 4420 Advanced Piano Pedagogy II 1
University Studies Breadth course 3

Junior Year (36 credits)
Fall Semester (20 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
MUSC 2440 Piano Literature III 3
MUSC 3120 Music History II: Classical and Romantic Periods 3
MUSC 3400 Individual Piano Instruction for Music Majors 2
MUSC 3410 Ensemble and Accompanying 2
MUSC 4410 Advanced Piano Pedagogy I 1
University Studies Breadth courses 6

Spring Semester (16 credits)
MUSC 2120 (CI) Music Theory IV 3
MUSC 2450 Piano Literature IV 3
MUSC 3400 Individual Piano Instruction for Music Majors 2
MUSC 3410 Ensemble and Accompanying 1
MUSC 4420 Advanced Piano Pedagogy II 1
University Studies Breadth course 3
Depth Social Sciences (DSS) course 3

Senior Year (34-36 credits)
Fall Semester (16 credits)
MUSC 3180 Scoring and Arranging 2
MUSC 3400 Individual Piano Instruction for Music Majors 2
MUSC 3410 Ensemble and Accompanying 1
MUSC 3420 Keyboard Skills I 3
MUSC 4410 Advanced Piano Pedagogy I 1
MUSC 4920 Individual Recital 1
Quantitative Intensive (QI) course 3
Communications Intensive (CI) course 3

Spring Semester (18-20 credits)
MUSC 2350 Conducting 2
MUSC 3190 (CI) Music History III: Music of the Twentieth Century 3
MUSC 3400 Individual Piano Instruction for Music Majors 2
MUSC 3410 Ensemble and Accompanying 1
MUSC 3430 Keyboard Skills II 3
MUSC 4420 Advanced Piano Pedagogy II 1
MUSC 4210 Advanced Music Form and Analysis (3 cr) **or**
MUSC 4910 Music Composition (2 cr) ..... 2 or 3
MUSC 4920 Individual Recital 1-2
Depth Life and Physical Sciences (DSC) course 3

Sample Four-year Plan for Music Major, String Performance Emphasis

Minimum GPA for Admission: 2.75, USU; 2.75 Career
Minimum GPA for Graduation: 3.00, major courses; 2.00, USU; 2.75 Career
Minimum Grade Accepted: *C-* in major courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. In addition, students should refer to the Music Department's *Student Handbook*. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (31 credits)
Fall Semester (16 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MUSC 1110 Music Theory I 3
MUSC 1130 Aural Skills I 1
MUSC 1170 Keyboard Harmony I 1
MUSC 1800 Percussion Techniques 1
MUSC 2490 Individual Piano Instruction (Second Instrument) for Music Majors 1
MUSC 3500 Symphony Orchestra 1
MUSC 4500 String Ensemble 1
Individual Music Instruction course (4500-level) 1
University Studies Breadth course 3

Spring Semester (15 credits)
MUSC 1120 Music Theory II 3
MUSC 1140 Aural Skills II 1
MUSC 1180 Keyboard Harmony II 1
MUSC 2490 Individual Piano Instruction (Second Instrument) for Music Majors 1
MUSC 3500 Symphony Orchestra 1
MUSC 4500 String Ensemble 1
Individual Music Instruction course (4500-level) 1
University Studies Breadth course 3
University Studies Quantitative Literacy (QL) course 3

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (30 credits)
Fall Semester (15 credits)
MUSC 1500 String Techniques I 1
MUSC 2110 Music Theory III 3
MUSC 2130 Aural Skills III 1
MUSC 2170 Keyboard Harmony III 1
MUSC 3500 Symphony Orchestra 1
MUSC 4500 String Ensemble 1
Individual Music Instruction course (4500-level) 1
University Studies Breadth courses 6

Spring Semester (15 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
MUSC 2140 Aural Skills IV 1
MUSC 3110 Music History I: Origins through Baroque 3
MUSC 3140 Musical Form and Analysis 3
MUSC 3500 Symphony Orchestra 1
MUSC 4500 String Ensemble 1
MUSC 4920 Individual Recital 2
Individual Music Instruction course (4500-level) 1

Junior Year (31 credits)
Fall Semester (17 credits)
MUSC 2180 Computer Applications in Music 2
MUSC 3120 Music History II: Classical and Romantic Periods 3
MUSC 3500 Symphony Orchestra 1
MUSC 4500 String Ensemble 1
Individual Music Instruction course (4500-level) 1
University Studies Breadth course 3
Depth Social Sciences (DSS) course 3
Quantitative Intensive (QI) course 3

Spring Semester (14 credits)
MUSC 2120 (CI) Music Theory IV 3
MUSC 3180 Scoring and Arranging 2
MUSC 3500 Symphony Orchestra 1
MUSC 4500 String Ensemble 1
MUSC 4920 Individual Recital 2
MUSC 4600 University Chorale 1
Individual Music Instruction course (4500-level) 1
Depth Life and Physical Sciences (DSC) course 3

Department of Music

Senior Year (32 credits)
Fall Semester (15 credits)
MUSC 3500 Symphony Orchestra 1
MUSC 3510 Orchestra Literature 2
MUSC 4210 Advanced Music Form and Analysis 3
MUSC 4500 String Ensemble 1
Individual Music Instruction course (4500-level) 1
MUSC elective course(s) 4
Communications Intensive (CI) course 3

Spring Semester (17 credits)
MUSC 3190 (CI) Music History III: Music of the Twentieth Century 3
MUSC 3500 Symphony Orchestra 1
MUSC 3520 String Pedagogy and Solo Literature 2
MUSC 4500 String Ensemble 1
MUSC 4920 Individual Recital 2
Individual Music Instruction course (4500-level) 1
MUSC elective course(s) 2
Elective course(s) 5

Sample Four-year Plan for Music Major, Vocal Performance Emphasis

Minimum GPA for Admission: 2.75, USU; 2.75 Career
Minimum GPA for Graduation: 3.00, major courses; 2.00, USU; 2.75 Career
Minimum Grade Accepted: *C-* in major courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. In addition, students should refer to the Music Department's *Student Handbook*. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (31 credits)
Fall Semester (14 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MUSC 1110 Music Theory I 3
MUSC 1130 Aural Skills I 1
MUSC 1170 Keyboard Harmony I 1
MUSC 1620 Introduction to Opera 2
MUSC 2490 Individual Piano Instruction (Second Instrument) for Music Majors 1
MUSC 3670 Individual Vocal Instruction for Music Majors 2
MUSC Major Ensemble 1

Spring Semester (17 credits)
MUSC 1120 Music Theory II 3
MUSC 1140 Aural Skills II 1
MUSC 1180 Keyboard Harmony II 1
MUSC 2490 Individual Piano Instruction (Second Instrument) for Music Majors 1
MUSC 2660 Italian Diction for Singers 2
MUSC 3670 Individual Vocal Instruction for Music Majors 2
MUSC Major Ensemble 1
University Studies Breadth courses 6

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (32 credits)
Fall Semester (16 credits)
MUSC 2110 Music Theory III 3
MUSC 2130 Aural Skills III 1
MUSC 2170 Keyboard Harmony III 1
MUSC 2180 Computer Applications in Music 2
MUSC 2670 German Diction for Singers 2
MUSC 3600 Opera Theatre Production 1
MUSC 3670 Individual Vocal Instruction for Music Majors 2
MUSC Major Ensemble 1
University Studies Quantitative Literacy (QL) course 3

Spring Semester (16 credits)
MUSC 2140 Aural Skills IV 1
MUSC 2680 French Diction for Singers 2
MUSC 3110 Music History I: Origins through Baroque 3
MUSC 3140 Musical Form and Analysis 3
MUSC 3600 Opera Theatre Production 1
MUSC 3670 Individual Vocal Instruction for Music Majors 2
MUSC Major Ensemble 1
University Studies Breadth course 3

Junior Year (33 credits)
Fall Semester (18 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
MUSC 2350 Conducting 2
MUSC 3120 Music History II: Classical and Romantic Periods 3
MUSC 3600 Opera Theatre Production 1
MUSC 3610 Vocal Repertory I (2 cr) **or**
MUSC 3630 Vocal Pedagogy I (2 cr) 2
MUSC 3670 Individual Vocal Instruction for Music Majors 2
MUSC Major Ensemble 1
Foreign Language course(s) (French, German, or Italian) 4

Spring Semester (15 credits)
MUSC 2120 (CI) Music Theory IV 3
MUSC 3600 Opera Theatre Production 1
MUSC 3620 (CI) Vocal Repertory II (2 cr) **or**
MUSC 3640 Vocal Pedagogy II (2 cr) 2
MUSC 3670 Individual Vocal Instruction for Music Majors 2
MUSC Major Ensemble 1
University Studies Breadth courses 6

Senior Year (32 credits)
Fall Semester (15 credits)
MUSC 3600 Opera Theatre Production 1
MUSC 3610 Vocal Repertory I (2 cr) **or**
MUSC 3630 Vocal Pedagogy I (2 cr) 2
MUSC 3670 Individual Vocal Instruction for Music Majors 2
MUSC 4920 Individual Recital 2
MUSC Major Ensemble 1
Foreign Language course(s) (French, German, or Italian) 4
Depth Social Sciences (DSS) course 3

Spring Semester (17 credits)
MUSC 3190 (CI) Music History III: Music of the Twentieth Century 3
MUSC 3600 Opera Theatre Production 1
MUSC 3620 (CI) Vocal Repertory II (2 cr) **or**
MUSC 3640 Vocal Pedagogy II (2 cr) 2
MUSC 3670 Individual Vocal Instruction for Music Majors 2
MUSC 4920 Individual Recital 2
MUSC Major Ensemble 1
Quantitative Intensive (QI) course 3
Depth Life and Physical Sciences (DSC) course 3

Sample Four-year Plan for Music Major, Wind/Brass/Percussion Performance Emphasis

Minimum GPA for Admission: 2.75, USU; 2.75 Career
Minimum GPA for Graduation: 3.00, major courses; 2.00, USU; 2.75 Career
Minimum Grade Accepted: *C*- in major courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. In addition, students should refer to the Music Department's *Student Handbook*. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (30 credits)

Fall Semester (15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MUSC 1110 Music Theory I 3
MUSC 1130 Aural Skills I 1
MUSC 1170 Keyboard Harmony I 1
MUSC 3500 Symphony Orchestra (1 cr) **or**
MUSC 3790 Symphonic Band (1 cr) **or**
MUSC 4700 Wind Orchestra (1 cr) 1
Individual Music Instruction course (3700-level or 3800-level) 1
University Studies Breadth course 3
Elective course(s) 2

Spring Semester (15 credits)
MUSC 1120 Music Theory II 3
MUSC 1140 Aural Skills II 1
MUSC 1180 Keyboard Harmony II 1
MUSC 3500 Symphony Orchestra (1 cr) **or**
MUSC 3790 Symphonic Band (1 cr) **or**
MUSC 4700 Wind Orchestra (1 cr) 1
Individual Music Instruction course (3700-level or 3800-level) 1
University Studies Quantitative Literacy (QL) course 3
University Studies Breadth course 3
Elective course(s) 2

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (31 credits)

Fall Semester (15 credits)
MUSC 2110 Music Theory III 3
MUSC 2130 Aural Skills III 1
MUSC 2700 Woodwind Techniques I: Flute, Clarinet (1 cr) **or**
MUSC 2740 Recorder Techniques (1 cr) 1
MUSC 3500 Symphony Orchestra (1 cr) **or**
MUSC 3790 Symphonic Band (1 cr) **or**
MUSC 4700 Wind Orchestra (1 cr) 1
Individual Music Instruction course (3700-level or 3800-level) 1
Individual Music Instruction course (Second Instrument) 1
University Studies Breadth courses 6
Elective course 1

Spring Semester (16 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
MUSC 2140 Aural Skills IV 1
MUSC 3110 Music History I: Origins through Baroque 3
MUSC 3140 Musical Form and Analysis 3
MUSC 3500 Symphony Orchestra (1 cr) **or**
MUSC 3790 Symphonic Band (1 cr) **or**
MUSC 4700 Wind Orchestra (1 cr) 1
Individual Music Instruction course (3700-level or 3800-level) 1
Individual Music Instruction course (Second Instrument) 1
University Studies Breadth course 3

Junior Year (30 credits)

Fall Semester (15 credits)
MUSC 2180 Computer Applications in Music 2
MUSC 2350 Conducting 2
MUSC 3120 Music History II: Classical and Romantic Periods 3
MUSC 3500 Symphony Orchestra (1 cr) **or**
MUSC 3790 Symphonic Band (1 cr) **or**
MUSC 4700 Wind Orchestra (1 cr) 1
Small Ensemble Music course 1
Individual Music Instruction course (3700-level or 3800-level) 2
Depth Social Sciences (DSS) course 3
Elective course 1

Spring Semester (15 credits)
MUSC 2120 (CI) Music Theory IV 3
MUSC 3180 Scoring and Arranging 2
MUSC 3500 Symphony Orchestra (1 cr) **or**
MUSC 3790 Symphonic Band (1 cr) **or**
MUSC 4700 Wind Orchestra (1 cr) 1
MUSC 4920 Individual Recital 2
Small Ensemble Music course 1
Individual Music Instruction course (3700-level or 3800-level) 2
Quantitative Intensive (QI) course 3
Elective course 1

Senior Year (30 credits)

Fall Semester (15 credits)
MUSC 3500 Symphony Orchestra (1 cr) **or**
MUSC 3790 Symphonic Band (1 cr) **or**
MUSC 4700 Wind Orchestra (1 cr) 1
MUSC 3900 Jazz Improvisation 2
MUSC 4920 Individual Recital 3
Individual Music Instruction course (3700-level or 3800-level) 2
Small Ensemble music course 1
Depth Life and Physical Sciences (DSC) course 3
Music elective course(s) 3

Spring Semester (15 credits)
MUSC 3190 (CI) Music History III: Music of the Twentieth Century 3
MUSC 3500 Symphony Orchestra (1 cr) **or**
MUSC 3790 Symphonic Band (1 cr) **or**
MUSC 4700 Wind Orchestra (1 cr) 1
MUSC 3240 Instrumental Methods and Materials (2 cr) **or**
MUSC 4930 Readings and Conference (2 cr) 2
MUSC 4920 Individual Recital 3
Small Ensemble music course 1
Individual Music Instruction course (3700-level or 3800-level) 2
Communications Intensive (CI) course 3

Sample Four-year Plan for Music Major, Guitar Performance Emphasis

Minimum GPA for Admission: 2.75, USU; 2.75 Career
Minimum GPA for Graduation: 3.00, major courses; 2.00, USU; 2.75 Career
Minimum Grade Accepted: *C*- in major courses

Department of Music

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. In addition, students should refer to the Music Department's *Student Handbook*. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (30 credits)

Fall Semester (15 credits)

ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MUSC 1110 Music Theory I 3
MUSC 1130 Aural Skills I 1
MUSC 1150 Beginning Group Piano (1 cr) **or**
MUSC 1160 Intermediate Group Piano (1 cr) **or**
MUSC 2490 Individual Piano Instruction (Second Instrument) for Music Majors (1 cr) 1
MUSC 2570 Fingerboard Theory I 2
MUSC 3550 Individual Guitar Instruction for Music Majors 1
MUSC 3590 Electric Guitar Ensemble (1 cr) **or**
MUSC 4550 Acoustic Guitar Ensemble (1 cr) 1
University Studies Breadth course 3

Spring Semester (15 credits)

MUSC 1120 Music Theory II 3
MUSC 1140 Aural Skills II 1
MUSC 1150 Beginning Group Piano (1 cr) **or**
MUSC 1160 Intermediate Group Piano (1 cr) **or**
MUSC 2490 Individual Piano Instruction (Second Instrument) for Music Majors (1 cr) 1
MUSC 2580 Fingerboard Theory II 2
MUSC 3550 Individual Guitar Instruction for Music Majors 1
MUSC 3590 Electric Guitar Ensemble (1 cr) **or**
MUSC 4550 Acoustic Guitar Ensemble (1 cr) 1
University Studies Breadth courses 6

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (30 credits)

Fall Semester (14 credits)

MUSC 2110 Music Theory III 3
MUSC 2130 Aural Skills III 1
MUSC 2550 Guitar Styles (Blues/Bluegrass) 2
MUSC 3550 Individual Guitar Instruction for Music Majors 1
MUSC 3590 Electric Guitar Ensemble (1 cr) **or**
MUSC 4550 Acoustic Guitar Ensemble (1 cr) 1
University Studies Breadth course 3
University Studies Quantitative Literacy (QL) course 3

Spring Semester (16 credits)

ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
MUSC 2560 Guitar Styles (Jazz/Classical) 2
MUSC 3110 Music History I: Origins through Baroque 3
MUSC 3140 Musical Form and Analysis 3
MUSC 3550 Individual Guitar Instruction for Music Majors 1
MUSC 3590 Electric Guitar Ensemble (1 cr) **or**
MUSC 4550 Acoustic Guitar Ensemble (1 cr) 1
University Studies Breadth course 3

Junior Year (30 credits)

Fall Semester (15 credits)

MUSC 2180 Computer Applications in Music 2
MUSC 2350 Conducting 2
MUSC 3120 Music History II: Classical and Romantic Periods 3
MUSC 3550 Individual Guitar Instruction for Music Majors 1
MUSC 3570 Guitar Pedagogy I 2
MUSC 3590 Electric Guitar Ensemble (1 cr) **or**
MUSC 4550 Acoustic Guitar Ensemble (1 cr) 1
Depth Social Sciences (DSS) course 3
Elective course 1

Spring Semester (15 credits)

MUSC 2120 (CI) Music Theory IV 3
MUSC 3180 Scoring and Arranging 2
MUSC 3550 Individual Guitar Instruction for Music Majors 1
MUSC 3560 Guitar History and Literature 3
MUSC 3590 Electric Guitar Ensemble (1 cr) **or**
MUSC 4550 Acoustic Guitar Ensemble (1 cr) 1
MUSC 3580 Guitar Pedagogy II 2
Quantitative Intensive (QI) course 3

Senior Year (30 credits)

Fall Semester (15 credits)

MUSC 3550 Individual Guitar Instruction for Music Majors 2
MUSC 3590 Electric Guitar Ensemble (1 cr) **or**
MUSC 4550 Acoustic Guitar Ensemble (1 cr) 1
MUSC 3900 Jazz Improvisation 2
MUSC 4920 Individual Recital 3
MUSC elective course(s) 3
Depth Life and Physical Sciences (DSC) course 3
Elective course 1

Spring Semester (15 credits)

MUSC 3190 (CI) Music History III: Music of the Twentieth Century 3
MUSC 3550 Individual Guitar Instruction for Music Majors 2
MUSC 3590 Electric Guitar Ensemble (1 cr) **or**
MUSC 4550 Acoustic Guitar Ensemble (1 cr) 1
MUSC 4920 Individual Recital 3
MUSC 4930 Reading and Conference 2
Communications Intensive (CI) course 3
Elective course 1

Bachelor of Music Degree (Piano Pedagogy Emphasis) (2.75 cumulative GPA; 3.00 GPA in Music courses)

The Bachelor of Music Degree with an emphasis in Piano Pedagogy requires completion of University Studies Requirements, Core Requirements, Pedagogy Emphasis, and Electives. **Music majors must maintain a minimum GPA of 3.00 in Music courses.** A grade of *C-* or better must be earned in all core and emphasis classes. A 2.75 cumulative GPA is required for graduation. Additional requirements, such as piano proficiency, concert attendance, etc., are stipulated in the Department of Music's *Student Handbook*.

Music Core Curriculum Requirements (35 credits)

Students in the Piano Pedagogy emphasis must complete the 35-credit music core curriculum as listed on page 416.

Pedagogy Emphasis Requirements (59-60 credits)

MUSC 1420 Pedagogy Practicum (F,Sp) 9
MUSC 1430 Piano Pedagogy I (F) 3
MUSC 1440 Piano Pedagogy II (Sp) 3
MUSC 2420 Piano Literature I (F) 3
MUSC 2430 Piano Literature II (Sp) 3
MUSC 2440 Piano Literature III (F) 3
MUSC 2450 Piano Literature IV (Sp) 3
MUSC 3400 Individual Piano Instruction for Music Majors (F,Sp,Su) 12

MUSC 3410 Ensemble and Accompanying (Piano) (F,Sp) 4
MUSC 3420 Keyboard Skills I (F) 3
MUSC 3430 Keyboard Skills II (Sp) 3
MUSC 4410 Advanced Piano Pedagogy I (F) 2
MUSC 4420 Advanced Piano Pedagogy II (Sp) 2
MUSC 4210 Advanced Music Form and Analysis (F) (3 cr) **or**
MUSC 4900 Baroque Counterpoint (F) (2 cr) ....2 or 3
MUSC 4920 Individual Recital (F,Sp,Su) 2
Electives 2

Sample Four-year Plan for Music Major, Piano Pedagogy Emphasis

Minimum GPA for Admission: 2.75, USU; 2.75, Career
Minimum GPA for Graduation: 3.00, major courses; 2.00, USU; 2.75, Career
Minimum Grade Accepted: *C-* in major courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. In addition, students should refer to the Music Department's *Student Handbook*. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (31 credits)

Fall Semester (15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MUSC 1110 Music Theory I 3
MUSC 1130 Aural Skills I 1
MUSC 1170 Keyboard Harmony I 1
MUSC 1430 Piano Pedagogy I 3
MUSC 2180 Computer Applications in Music 2
MUSC 3400 Individual Piano Instruction for Music Majors 2

Spring Semester (16 credits)
MUSC 1120 Music Theory II 3
MUSC 1140 Aural Skills II 1
MUSC 1180 Keyboard Harmony II 1
MUSC 1420 Pedagogy Practicum 3
MUSC 1440 Piano Pedagogy II 3
MUSC 3400 Individual Piano Instruction for Music Majors 2
University Studies Quantitative Literacy (QL) course 3

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (36 credits)

Fall Semester (17 credits)
MUSC 1420 Pedagogy Practicum 3
MUSC 2110 Music Theory III 3
MUSC 2130 Aural Skills III 1
MUSC 2420 Piano Literature I 3
MUSC 3400 Individual Piano Instruction for Music Majors 2
MUSC 3410 Ensemble and Accompanying 1
MUSC 4410 Advanced Piano Pedagogy I 1
University Studies Breadth course 3

Spring Semester (19 credits)
MUSC 1420 Pedagogy Practicum 3
MUSC 2140 Aural Skills IV 1
MUSC 2430 Piano Literature II 3
MUSC 3110 Music History I: Origins through Baroque 3
MUSC 3140 Musical Form and Analysis 3
MUSC 3400 Individual Piano Instruction for Music Majors 2
MUSC 4420 Advanced Piano Pedagogy II 1
University Studies Breadth course 3

Junior Year (35 credits)

Fall Semester (19 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
MUSC 2440 Piano Literature III 3
MUSC 3120 Music History II: Classical and Romantic Periods 3
MUSC 3400 Individual Piano Instruction for Music Majors 2
MUSC 3410 Ensemble and Accompanying 1
MUSC 4410 Advanced Piano Pedagogy I 1
University Studies Breadth courses 6

Spring Semester (16 credits)
MUSC 2120 (CI) Music Theory IV 3
MUSC 2450 Piano Literature IV 3
MUSC 3400 Individual Piano Instruction for Music Majors 2
MUSC 3410 Ensemble and Accompanying 1
MUSC 4420 Advanced Piano Pedagogy II 1
University Studies Breadth course 3
Depth Social Sciences (DSS) course 3

Senior Year (33-35 credits)

Fall Semester (16-18 credits)
MUSC 3180 Scoring and Arranging 2
MUSC 3400 Individual Piano Instruction for Music Majors 2
MUSC 3410 Ensemble and Accompanying 1
MUSC 3420 Keyboard Skills I 3
MUSC 4410 Advanced Piano Pedagogy I 1
MUSC 4920 Individual Recital 1
MUSC 1460 (CI) Organ Literature I (3 cr) **or**
MUSC 4900 Baroque Counterpoint (2 cr) ....2 or 3
Quantitative Intensive (QI) course 3
Communications Intensive (CI) course (not needed if taking MUSC 1460) .... (3)

Spring Semester (17 credits)
MUSC 2350 Conducting 2
MUSC 3190 (CI) Music History III: Music of the Twentieth Century 3
MUSC 3400 Individual Piano Instruction for Music Majors 2
MUSC 3430 Keyboard Skills II 3
MUSC 4420 Advanced Piano Pedagogy II 1
MUSC 4910 Music Composition 2
MUSC 4920 Individual Recital 1
Depth Life and Physical Sciences (DSC) course 3

Bachelor of Music Degree (Individualized Program) (2.75 cumulative GPA; 3.00 GPA in Music courses)

The Individualized Bachelor of Music Degree is intended for persons whose musical goals are not met by USU's other bachelor of music programs in music education, performance/pedagogy, or music therapy. The individualized program is also appropriate for those who wish to combine music with another discipline, such as business, electrical engineering, computer science, etc. A grade of *C-* or better must be earned in all classes applied toward the degree.

All individualized curricula must meet criteria established by the National Association of Schools of Music. Students in the individualized program are expected to complete at least the minimum jury performance level required for their major instrument or voice, and to complete a senior recital appropriate to their emphasis. All proposed

individualized curricula must be approved by an appropriate advisor, the Individualized Bachelor of Music Degree Committee, and the Head of the Department of Music.

University Studies Requirements

Music Core Curriculum (35 credits) (see page 416)

Music Performance (16 credits)

Individual Instruction (8 credits)
Individual Instruction should be taken in either the major instrument or voice.

Large and Small Ensembles (8 credits)
As part of the 8 required credits, a minimum of 4 credits must be taken in a large ensemble.

Emphasis Area (37 credits)
The curriculum for the emphasis area must be developed in consultation with an appropriate advisor and approved by the Individualized Bachelor of Music Degree Program Committee and by the Head of the Department of Music. It must form a coherent plan leading to the fulfillment of specific objectives. Student transcripts will show Individualized Program, ***not*** the emphasis area approved by the committee.

If the plan involves relating music to other fields, it must meet appropriate criteria as outlined in the *Handbook of the National Association of Schools of Music* for the degree of Bachelor of Music in Combinations with an Outside Field. Such a plan must also be developed and approved in consultation with an advisor in the other field, in addition to the appropriate advisor in the Department of Music.

Music Therapy Requirements

Students must complete an application process through the Music Department in order to be accepted for the Music Therapy major. **Music Therapy majors must maintain a minimum GPA of 3.00 in Music Therapy courses.** A grade of *C*- or better must be earned in all required classes. A 2.75 total GPA is required for graduation. Additional requirements, such as piano proficiency, concert attendance, etc., are stipulated in the Department of Music's *Student Handbook* and *Music Therapy Addendum to the Handbook*.

Core Course Requirements (34-35 credits)
MUSC 1110 Music Theory I (F) 3
MUSC 1120 Music Theory II (Sp) 3
MUSC 1130 Aural Skills I (F) 1
MUSC 1140 Aural Skills II (Sp) 1
MUSC 1170 Keyboard Harmony I (F) 1
MUSC 1180 Keyboard Harmony II (Sp) 1
MUSC 2110 Music Theory III (F) 3
MUSC 2120 (CI) Music Theory IV (Sp) 3
MUSC 2130 Aural Skills III (F) 1
MUSC 2140 Aural Skills IV (Sp) (1 cr) **or**
MUSC 3900 Jazz Improvisation (F,Sp) (2 cr) ..... 1 or 2
MUSC 2180 Computer Applications in Music (F,Sp) 2
MUSC 2350 Conducting (F) 2
MUSC 3110 Music History I: Origins Through Baroque (Sp) 3
MUSC 3120 Music History II: Classical and Romantic Periods (F) 3
MUSC 3140 Musical Form and Analysis (Sp) 3
MUSC 3190 (CI) Music History III: Music of the Twentieth Century (Sp) 3

Additional Music Coursework (2 credits)
MUSC 3260 Elementary School Music (F,Sp,Su) 2

Ensemble Performance (2 credits)
Select 2 credits from the following:
MUSC 1320 Music Therapy Ensemble (F,Sp) 1
MUSC 3500 Symphony Orchestra (F,Sp) 1
MUSC 3700 Woodwind Ensemble (F,Sp) 1-2
MUSC 3780 Flute Ensemble (F) 1
MUSC 3790 Symphonic Band (F,Sp) 1
MUSC 3800 Trombone Ensemble (F,Sp) 1
MUSC 3850 Brass Ensemble (F,Sp) 1
MUSC 3870 Percussion Ensemble (F,Sp) 1
MUSC 4500 String Ensemble (F,Sp) 1
MUSC 4600 University Chorale (F,Sp) 1
MUSC 4650 Chamber Singers (F,Sp) 1

Individual Instruction (Major Instrument) (4 credits)
Guitar Requirements (with advisor approval) (1-4 credits)
Select 1-4 credits from the following:
MUSC 1550 Beginning Group Guitar (F,Sp) 1
MUSC 1560 Intermediate Group Guitar (F,Sp) 1
MUSC 2550 Guitar Styles (Blues/Bluegrass) (F) 2
MUSC 2560 Guitar Styles (Jazz/Classical) (Sp) 2
MUSC 2590 Individual Guitar Instruction (Second Instrument) for Music Majors (F,Sp,Su) 1
MUSC 3550 Individual Guitar Instruction for Music Majors (F,Sp,Su) 1-2

Piano Requirements (with advisor approval) (1-4 credits)
Select 1-4 credits from the following:
MUSC 2490 Individual Piano Instruction (Second Instrument) for Music Majors (repeatable) (F,Sp,Su) 1
MUSC 3400 Individual Piano Instruction for Music Majors (repeatable) (F,Sp,Su) 1

Vocal Requirements (with advisor approval) (2 credits)
Select 2 credits from the following:
MUSC 2640 Individual Vocal Instruction (Second Instrument) for Music Majors (repeatable) (F,Sp,Su) 1
MUSC 3670 Individual Vocal Instruction for Music Majors (repeatable) (F,Sp,Su) 1-2

Music Therapy Core Courses (30-32 credits)
MUSC 1310 Introduction to Music Therapy (F) 2
MUSC 2310 Introduction to Observational and Behavioral Methods in Music Therapy (F) 2
MUSC 2320 Music Therapy Methods and Materials (Sp) 2
MUSC 3310 Music Therapy and the Exceptional Child (F) 3
MUSC 3320 Psychology of Music I (Sp) 2
MUSC 3330 Music Therapy Practicum (F,Sp) 9-11
MUSC 4310 Music Therapy with Adult Populations (F) 3
MUSC 4320 (CI) Psychology of Music II (Sp) 2
MUSC 4330 Clinical and Professional Issues in Music Therapy (Sp) 3
MUSC 4340 Internship in Music Therapy (taken only after all academic coursework has been completed) (F,Sp,Su) 2

Behavioral Health/Natural Sciences (20 credits)
PSY 1010 (BSS) General Psychology (F,Sp,Su) 3
PSY 3210 (DSS) Abnormal Psychology (F,Sp) 3
BIOL 2320 Human Anatomy (Sp,Su) 4
SPED 4000 Education of Exceptional Individuals (F,Sp,Su) 2
Electives (must be approved by student's advisor) 8

Sample Four-year Plan for Music Therapy Major

Minimum GPA for Admission: 2.75, USU; 2.75 Career
Minimum GPA for Graduation: 3.00, major courses; 2.00, USU; 2.75 Career
Minimum Grade Accepted: *C-* in major courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. In addition, students should refer to the Music Department's *Student Handbook* and *Music Therapy Addendum to the Handbook*. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (34 credits)
Fall Semester (18 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MUSC 1110 Music Theory I 3
MUSC 1130 Aural Skills I 1
MUSC 1170 Keyboard Harmony I 1
MUSC 1310 Introduction to Music Therapy 2
MUSC 2490 Individual Piano Instruction (Second Instrument) for Music Majors (1 cr) **or**
MUSC 2590 Individual Guitar Instruction (Second Instrument) for Music Majors (1 cr) 1
PSY 1010 (BSS) General Psychology 3
MUSC Ensemble course 1
University Studies Breadth course 3

Spring Semester (16 credits)
MUSC 1120 Music Theory II 3
MUSC 1140 Aural Skills II 1
MUSC 1180 Keyboard Harmony II 1
MUSC 2490 Individual Piano Instruction (Second Instrument) for Music Majors (1 cr) **or**
MUSC 2590 Individual Guitar Instruction (Second Instrument) for Music Majors (1 cr) 1
MUSC 2640 Individual Vocal Instruction (Second Instrument) for Music Majors 1
SPED 4000 Education of Exceptional Individuals 2
STAT 1040 (QL) Introduction to Statistics 3
MUSC Ensemble course 1
University Studies Breadth course 3

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (31 credits)
Fall Semester (15 credits)
MUSC 2110 Music Theory III 3
MUSC 2130 Aural Skills III 1
MUSC 2170 Keyboard Harmony III 1
MUSC 2310 Introduction to Observational and Behavioral Methods in Music Therapy 2
MUSC 2490 Individual Piano Instruction (Second Instrument) for Music Majors (1 cr) **or**
MUSC 2590 Individual Guitar Instruction (Second Instrument) for Music Majors (1 cr) 1
MUSC 2640 Individual Vocal Instruction (Second Instrument) for Music Majors 1
MUSC 3260 Elementary School Music 2
MUSC Ensemble course 1
University Studies Breadth course 3

Spring Semester (16 credits)
MUSC 2140 Aural Skills IV 1
MUSC 2180 Computer Applications in Music 2
MUSC 2320 Music Therapy Methods and Materials 2
MUSC 2490 Individual Piano Instruction (Second Instrument) for Music Majors (1 cr) **or**
MUSC 2590 Individual Guitar Instruction (Second Instrument) for Music Majors (1 cr) 1
MUSC 3110 Music History I: Origins through Baroque 3
MUSC 3140 Musical Form and Analysis 3
MUSC 3330 Music Therapy Practicum 1
University Studies Breadth course 3

Junior Year (33 credits)
Fall Semester (17 credits)
MUSC 2350 Conducting 2
MUSC 2490 Individual Piano Instruction (Second Instrument) for Music Majors (1 cr) **or**
MUSC 2590 Individual Guitar Instruction (Second Instrument) for Music Majors (1 cr) 1
MUSC 3120 Music History II: Classical and Romantic Periods 3
MUSC 3310 Music Therapy and the Exceptional Child 3
MUSC 3330 Music Therapy Practicum 2
Behavioral elective course 3
Depth Life and Physical Sciences (DSC) course 3

Spring Semester (16 credits)
MUSC 2120 (CI) Music Theory IV 3
MUSC 2490 Individual Piano Instruction (Second Instrument) for Music Majors (1 cr) **or**
MUSC 2590 Individual Guitar Instruction (Second Instrument) for Music Majors (1 cr) 1
MUSC 3180 Scoring and Arranging 2
MUSC 3320 Psychology of Music I 2
MUSC 3330 Music Therapy Practicum 2
Behavioral elective courses 6

Senior Year (30 credits)
Fall Semester (17 credits)
BIOL 2320 Human Anatomy 4
MUSC 2490 Individual Piano Instruction (Second Instrument) for Music Majors (1 cr) **or**
MUSC 2590 Individual Guitar Instruction (Second Instrument) for Music Majors (1 cr) 1
MUSC 3330 Music Therapy Practicum 3
MUSC 4310 Music Therapy with Adult Populations 3
PSY 3210 (DSS) Abnormal Psychology 3
Quantitative Intensive (QI) course 3

Spring Semester (13 credits)
MUSC 3190 (CI) Music History III: Music of the Twentieth Century 3
MUSC 3330 Music Therapy Practicum 3
MUSC 4320 (CI) Psychology of Music II 2
MUSC 4330 Clinical and Professional Issues in Music Therapy 3
MUSC 4340 Internship in Music Therapy 2

Music Minors

Admission to Music Minor Programs

To be admitted as music minors, students must complete the Music Minor Admission Form and return it to the Department of Music Student Services Office, Fine Arts 102. Students are required to meet the requirements which are in effect at the time the Admission Form is completed.

Department of Music

Basic Music Minor (24 credits)

Advisor: Dr. Dean Madsen, 797-3031, University Reserve 202

MUSC 1110[10] Music Theory I (*music minor section*) (F) 3
MUSC 1130[10] Aural Skills I (*music minor section*) (F) 1
MUSC 1480 Individual Piano Instruction for Nonmusic Majors (F,Sp,Su) 1
MUSC 2350 Conducting (F) 2
Large or Small Ensemble 4
Individual Instruction (*nonmajor courses, primary instrument/voice*) 4

In addition, complete the following three courses, which may also count toward University Studies requirements.
MUSC 1010 (BCA) Introduction to Music (F,Sp,Su) 3
MUSC 3010 (DHA)[11] Masterpieces of Music (F,Sp) 3
MUSC 3020 (DHA)[11] History of Jazz (Sp) 3

Music Composition Minor (21 credits) (Approval pending)

This minor is available to Music and Music Therapy majors only.

Advisor: Dr. Dean Madsen, 797-3031, University Reserve 202

MUSC 2180 Computer Applications in Music (F,Sp) 2
MUSC 3020 History of Jazz (Sp) 3
MUSC 3910 Individual Composition Instruction (F,Sp) 2
MUSC 4210 Advanced Music Form and Analysis (F) 3
MUSC 4900 Baroque Counterpoint (F) 2
MUSC 4910 Music Compositon (repeatable; take for 2 semesters) (Sp) 4
MUSC 4920 Individual Recital (F,Sp,Su) 2
PHIL 3810 Aesthetics (Sp) 3

Elementary School Music Teaching Minor (19 credits)

This minor is for Early Childhood Education or Elementary Education majors only.

Advisor: Professor Leslie Timmons, 797-3699, Fine Arts 105

MUSC 1110[10] Music Theory I (*music minor section*) (F) 3
MUSC 1130[10] Aural Skills I (*music minor section*) (F) 1
MUSC 1170 Keyboard Harmony I (*music minor section*) (F) 1
MUSC 1600 Voice Techniques (F,Sp) (1 cr) **or**
MUSC 1630 Individual Vocal Instruction for Nonmusic Majors (F,Sp,Su) (1 cr) 1
MUSC 3260[12] Elementary School Music (F,Sp,Su) 2
MUSC 3270[13] Teaching Strategies and Practicum in Elementary Music (Sp) 3
Choral Performance Ensemble 2
Large or Small Performance Ensembles 2

In addition, complete the following course, which may also count toward University Studies requirements.
MUSC 1010 (BCA) Introduction to Music (F,Sp,Su) 3

Elective Courses
Complete at least **one** of the three courses listed below.
MUSC 1480 Individual Piano Instruction for Nonmusic Majors (F,Sp,Su) 1
MUSC 1550 Beginning Group Guitar (F,Sp) 1
MUSC 1560 Intermediate Group Guitar (F,Sp) 1

[10] Offered during spring semester *only*. These courses must be taken concurrently.
[11] It is recommended that students complete MUSC 1010 prior to enrolling in MUSC 3010 and 3020.
[12] Students must have completed a minimum of 55 credits prior to enrolling in MUSC 3260. It is recommended that students complete MUSC 1010, 1110, 1130, and 1170 prior to enrolling in MUSC 3260.
[13] Offered spring semester *only*. Level I Orff Schulwerk (taught summer semester only) may also fulfill this requirement. MUSC 1110 and 3260 are prerequisites for MUSC 3270. It is recommended that students complete MUSC 1600 or 1630 prior to enrolling in MUSC 3270.

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.

Assessment

Information about the ongoing assessment of the Music Department can be found at: **http://www.usu.edu/music/assessment/index.html**

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. Minimum GPA requirements for participation in departmental honors vary by department, but usually fall within

the range of 3.30-3.50. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level. The campus-wide Honors Program, which is open to all qualified students regardless of major, offers a rich array of cultural and social activities, special classes, and the benefit of Honors early registration. Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@cc.usu.edu. Additional information can be found online at: **http://www.usu.edu/honors/**

Additional Information and Updates

Degree requirements are listed on the Music Major Requirement Sheet and the Music Therapy Major Requirement Sheet, which can be obtained from the department, or online at:
http://www.usu.edu/majorsheets/

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
Todd L. Fallis, instrumental music education, student advising, low brass
Dennis D. Griffin, percussion, electronic music, composition
F. Dean Madsen, music theory, twentieth century music, composition
Nicholas E. Morrison, clarinet, associate director of bands

Professors Emeritus
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
Lynn Jemison-Keisker, opera, voice
Thomas Rohrer, director of bands
Bruce M. Saperston, music therapy
Leslie Timmons, elementary music education, flute

Associate Professor Emeritus
Mildred Johnson, music history and literature, musicianship program, viola

Assistant Professors
Sergio Bernal, orchestra conductor, string program
R. Cory Evans, choral music
Jon Gudmundson, jazz, saxophone
R. Dennis Hirst, piano, Youth Conservatory
Eric Smigel, music history, world music

Assistant Professor Emeritus
Betty Beecher, piano

Lecturers (Fry Street Quartet)
Russell Fallstad, viola
William Fedkenheuer, violin
Anne Francis, cello
Rebecca McFaul, violin

Course Descriptions

Music (MUSC), pages 669-676

Certificate Program in National Environmental Policy Act (NEPA)

Director: Joanna Endter-Wada,
Department of Environment and Society
Location: Natural Resources 355B
Phone: (435) 797-0922
FAX: (435) 797-3526
E-mail: joanna.endter-wada@usu.edu
WWW: http://www.cnr.usu.edu/policy/

Program Administrator: Judith A. Kurtzman, Natural Resources 322, (435) 797-0922

Graduate Program Description

The Department of Environment and Society 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 Department of Environment and Society 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 6350 Socio-economic Imact Analysis for NEPA Specialists 1
NEPA 6360 Overview of the Endangered Species Act 1

Certificate Program in National Environmental Policy Act (NEPA)

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 677

Natural Resources and Environmental Education Graduate Certificate

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:
Foundation Courses
ENVS 5110 Environmental Education (Sp) 3
ENVS 6600 Advanced Natural Resource Interpretation (F) 3

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

ENVS 6800 Environment and Society Departmental Seminar (F or Sp).....1

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 help place natural resources and environmental education in a broader context of human-environment relationships.

ECON 5560 Natural Resource and Environmental Economics 3
ENVS 5300 Natural Resources Law and Policy.....2
ENVS 5320 Water Law and Policy in the United States.....3
ENVS 5640 Conflict Management in Natural Resources 3
ENVS 6000 Theoretical Foundations in Human Dimensions of Ecosystem Science and Management 3
ENVS 6110 Fisheries and Wildlife Policy and Administration 3
HIST 6460 Seminar in Environmental History 3
PHIL 5510 Ethics and the Environment 3
POLS 5180 Natural Resource Policy 3
POLS 5200 Global Environment 3
SOC 6620 Environment, Technology, and Social Change 3
SOC 6630 Natural Resources and Social Development.....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.

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.

ADVS 5030 Sustainable Agricultural Production Systems with Animals.....3
ENVS 5000 Collaborative Problem-Solving for Environment and Natural Resources.....3
PLSC 5550/6550 Weed Biology and Control 4
SOIL 5350/6350 Wildland Soils.....3
WATS 5150/6150 Fluvial Geomorphology 3
WATS 5330/6330 Large River Management.....3
WATS 5640/7640 Riparian Ecology and Management 3
WATS 5660 Watershed and Stream Restoration 2
WATS 6530 Water Quality and Pollution.....3
WATS 6650 Principles in Fishery Management 3
WILD 5000 Predator Ecology and Management.....3
WILD 5070/6070 Range Wildlife Relations 3
WILD 5300/7300 Wildlife Damage Management Principles 3
WILD 7000 Theory and Applications of Rangeland Ecosystem Management 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 Career and Technical 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
POLS 5180 Natural Resource Policy 3
POLS 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
Mark W. Brunson, Environment and Society
Clifford B. Craig, Environment and Society
Melody Graulich, English
Michael R. Kuhns, Wildland Resources
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
Steven W. Burr, Environment and Society
Christopher A. Call, Wildland Resources
Christopher A. Conte, History
Nancy O. Mesner, Watershed Sciences
Rebecca M. Monhardt, Elementary Education
Jan E. Roush, English
Robert H. Schmidt, Environment and Society

Assistant Professors
Christopher Cokinos, English
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, Wildland Resources
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

Certificate Program in Natural Resource and Environmental Policy

Coordinator: David B. Goetze
Location: Main 328D
Phone: (435) 797-1316
E-mail: dgoetze@hass.usu.edu

Lead Department: Political Science
Staff Assistant: Shelly K. Schiess
Location: Main 320
Phone: (435) 797-1306
FAX: (435) 797-3751

Graduate Program Description

The Natural Resource and Environmental Policy Graduate Certificate is an interdisciplinary program designed for students seeking graduate degrees in fields related to environmental and natural resource policy analysis. The program introduces students to complementary scientific and social scientific perspectives on environmental and natural resource policy, linking the scientific dimensions of policy to its social context and to the operation of political and economic institutions. Courses that satisfy program requirements are currently offered by the departments of Agricultural Systems Technology and Education; Business Administration; Economics; Environment and Society; Wildland Resources; History; Landscape Architecture and Environmental Planning; Political Science; and Sociology, Social Work and Anthropology. The program helps to prepare students for careers in public or private sector policy analysis, environmental planning, environmental program assessment, natural resource policy administration, environmental and natural resource consulting, and environmental and natural resource policy advocacy.

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 master's degree program or a doctoral degree program at Utah State University, provided their degree program requirements include development of a written research paper or project 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.

Prerequisites

Prior to admission into the Natural Resource and Environmental Policy Graduate Certificate Program, a student must complete at least one upper-division or graduate course in ecology, biological systems, earth processes, or ecosystem management. In addition, each student must also complete at least one upper-division or graduate course in economics, political science, history, or sociology. With the approval of the program coordinator, appropriate professional experience can serve as a substitute for either one of these prerequisites.

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 (14 credits)

Courses taken to satisfy requirements in a student's major or minor area of study can also be used to satisfy Natural Resource and Environmental Policy Graduate Certificate requirements.

Required Courses (5-6 credits)
NR 6430 Natural Resource and Environmental Policy Cornerstone Seminar (3 cr) **or**
POLS 5180 Natural Resource Policy (3 cr).....3
And
ENVS 5300 Natural Resources Law and Policy (2 cr) **or**
ENVS 5320 Water Law and Policy in the United States (3 cr).....2 or 3

Elective Courses (8-9 credits)
Because of ongoing changes in the curricular offerings of the participating departments, the list of Natural Resource and Environmental Policy Graduate Certificate elective courses is updated annually. Students entering the program should immediately obtain a current list of electives from the program coordinator or staff assistant. Students may petition the program coordinator to use as electives courses not included on the current list; however, to gain approval as an elective, a course must have significant environmental or natural resource policy content.

Approved elective courses include the following:
ASTE 6260 Environmental Impacts of Agricultural Systems.....3
ECON 6500 Introduction to Natural Resource Economics.....3
ECON 6510 Introduction to Environmental Economics.....3
ENVS 5640/6640 Conflict Management in Natural Resources.....3
ENVS 6000/7000 Theoretical Foundations in Human Dimensions of Ecosystem Science and Management.....3
ENVS 6130 Policy Aspects of Wildland Recreation.....3
ENVS 6530 Natural Resources Administration.....2
HIST 6460 Seminar in Environmental History.....3
POLS 5200 Global Environment.....3
SOC 6620 Environment, Technology, and Social Change.....3
SOC 6630 Natural Resources and Social Development.....3
SOC 7620 Sociology of Environmental Hazards and Risks.....3
WATS 6330 Large River Management.....3

Master of Natural Resources (MNR)

Degree Coordinator: Nancy O. Mesner

Location: Natural Resources 108

Phone: (435) 797-7541

FAX: (435) 797-2443

E-mail: nancym@ext.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 twenty-first century natural resources management and decision making. It is a nonthesis, management-oriented program.

Admission Requirements

All MNR students are admitted through the degree coordinator following the School of Graduate Studies standard procedures and policies (see pages 101-102).

The MNR degree assumes the entering student will have some prior knowledge of the fundamentals of natural resources science and management, including chemistry, physics, biology, algebra, statistics, and economics. Students without undergraduate degrees in natural resources or similar majors may be required to make up deficiencies in undergraduate preparation prior to beginning MNR degree coursework.

Course Requirements

Because this is a professional degree, the College of Natural Resources recognizes that individuals wishing to seek this degree may have time constraints or constraints on their ability to relocate. Therefore, the MNR is offered in several formats.

Short-Course Format

The short-course format provides students with an MNR degree focusing on Ecosystem Management. It is designed to give students an understanding of how human dimensions, ecology, and economics function and interact, and help students apply this understanding to ecosystem and landscape management. In addition, students will become familiar with the requirements of the National Environmental Policy Act (NEPA), as well as with strategies for writing effective environmental documents.

This degree program is designed with the working professional in mind. All required courses are offered in short-course format. The length of courses varies from two days to two weeks. Elective courses are also offered in short-course format or as web-based courses. For descriptions of the individual short courses, see the NEPA course listings in the *Course Descriptions* section of this catalog (page 677).

Residential Format

The residential MNR is offered as a set of classes that can be completed during one calendar year on the USU campus. The course offerings are broad-based and interdisciplinary, and are designed to provide students with advanced training in quantitative and analytical tools, policy and economics, the human dimensions of natural resources, and biological and physical sciences. A capstone experience during the summer is tailored to individual student needs.

Distance Education Format

A distance education option is currently being created. For updates on the program as they become available, visit the CNR website at **http://www.cnr.usu.edu**

Cooperative Nursing Program

Coordinator: Jonny Kelly
Location: Lundberg Building 201
Phone: (435) 797-1515
FAX: (435) 797-3649
E-mail: jkelly@cc.usu.edu
WWW: http://colleges.weber.edu/chp/programs/nursing.asp

Advisor:
Doug Watson, (801) 626-6128 *or* (800) 350-7042 (Utah only),
healthprofessions@weber.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 in Northern Utah.

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 graduation ceremonies held on the Weber State University campus.

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.

Departmental Admission Requirements for Associate Degree Program

Admission into the Cooperative Nursing Program is selective. To ensure quality clinical placement, a limited number of students are accepted into the program each year. Applications are accepted once a year and are available online or in-person after October 1. Students must complete the application process by February 1.

Applications are reviewed by the Nursing Program admissions and advancement committee. A point system is used to facilitate candidate selection. Applications received by January 15 will earn extra points. Support courses will be evaluated, but points will not be awarded for courses already in-progress during the semester in which an application is received. Students will be notified of acceptance into the program by April 15.

Utah State University Pre-Nursing Major

Initially, many students are admitted into Utah State University to take their general education and supporting science courses, in order to become competitive applicants for the Weber State RN program on the Logan campus. Students must attain a minimum GPA of 3.0 in order to be accepted into the USU pre-nursing major.

USU Pre-Nursing Advisor: Liz Heffernan, (435) 797 2577,
heffernanliz@biology.usu.edu

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.

Graduation Requirements

Associate of Science Degree in Nursing (Weber State University) (3.0 overall GPA minimum)

Students must complete all prerequisite courses listed *before* beginning fall nursing classes. A grade of *C* or better must be achieved in each of these courses in order for the student to remain in the Nursing Program.

First Year
Summer Semester (or prior college credit)
BIOL 2320 Human Anatomy 4
BIOL 2420 Human Physiology 4
CHEM 1110 (BPS) General Chemistry I (Prereq: MATH 1050) 4
Quantitative Literacy (QL) course 3
Breadth Humanities (BHU) elective course 3

Mathematics Requirement. For information about the mathematics requirement, students should refer to their admission packet.

Fall Semester
BIOL 1110 Elementary Microbiology (4 cr) **or**
BIOL 1100 Introduction to Microbiology (Home Study only) (3 cr) . 3 or 4
NFS 1020 (BLS) Science and Application of Human Nutrition 3
NURS 1030 Foundations of Nursing Practice 3
NURS 1031 Foundations of Nursing Practice Clinical 3
NURS 1050 Treatment Modalities 3

Spring Semester
PSY 1010 (BSS) General Psychology 3
HS 2230 Introductory Pathophysiology 3
NURS 1040 Women's Health and the Childbearing Family 2
NURS 1041 Women's Health and the Childbearing Family Clinical 1
NURS 1045 Nursing Care of Adults and Children 3
NURS 1046 Nursing Care of Adults and Children Clinical 2

Cooperative Nursing Program

Second Year
Summer Semester
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
Breadth Social Sciences (BSS)/Diversity elective course (SOC 1010) 3
Breadth Creative Arts (BCA) elective course 3
Computer and Information Literacy (CIL) competency exam

Fall Semester
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode.....3
NURS 2050 Treatment Modalities.....2
NURS 2070 Nursing Care of Adults and Children II.....3
NURS 2071 Nursing Care of Adults and Children II Clinical 4
Breadth American Institutions (BAI) elective course 3

Spring Semester
NURS 2060 Psychiatric/Mental Health Nursing 2
NURS 2061 Psychiatric/Mental Health Nursing Clinical.....1
NURS 2080 Patient Care Management 2
NURS 2081 Patient Care Management Clinical.....3
Breadth Humanities (BHU) elective course.....3

Associate of Applied Science Degree in Nursing (Weber State University) (3.0 overall GPA minimum)

Students must complete all prerequisite courses listed *before* beginning fall nursing classes. A grade of *C* or better must be achieved in each of these courses in order for the student to remain in the Nursing Program.

First Year
Summer Semester (or prior college credit)
BIOL 2320 Human Anatomy 4
BIOL 2420 Human Physiology.....4
CHEM 1110 (BPS) General Chemistry I (Prereq: MATH 1050) 4
Quantitative Literacy (QL) course.....3

Mathematics Requirement. For information about the mathematics requirement, students should refer to their admission packet.

Fall Semester
BIOL 1110 Elementary Microbiology (4 cr) **or**
BIOL 1100 Introduction to Microbiology (Home Study only) (3 cr) .3 or 4
NFS 1020 (BLS) Science and Application of Human Nutrition 3
NURS 1030 Foundations of Nursing Practice 3
NURS 1031 Foundations of Nursing Practice Clinical 3
NURS 1050 Treatment Modalities.....3

Spring Semester
PSY 1010 (BSS) General Psychology 3
HS 2230 Introductory Pathophysiology 3
NURS 1040 Women's Health and the Childbearing Family 2
NURS 1041 Women's Health and the Childbearing Family Clinical.....1
NURS 1045 Nursing Care of Adults and Children.....3
NURS 1046 Nursing Care of Adults and Children Clinical 2

Second Year
Summer Semester
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
Breadth Humanities (BHU) elective course.....3

Fall Semester
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode.....3
NURS 2050 Treatment Modalities.....2
NURS 2070 Nursing Care of Adults and Children II.....3
NURS 2071 Nursing Care of Adults and Children II Clinical 4

Spring Semester
NURS 2060 Psychiatric/Mental Health Nursing 2
NURS 2061 Psychiatric/Mental Health Nursing Clinical.....1
NURS 2080 Patient Care Management 2
NURS 2081 Patient Care Management Clinical.....3

Additional Information

For detailed information about course requirements for the Associate of Science and Associate of Applied Science degrees in Nursing, see the major requirement sheet, available from the Nursing Program, or online at: **http://www.usu.edu/majorsheets/**

Nursing Program Faculty

Assistant Professors
Charlotte Harris
Jonny Kelly
Mary Orians
Marsha Ray
Jodi Reese
Linda Richards

Course Descriptions

Nursing (NURS), page 682
Health Sciences (HS), page 646

Department of 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://nfs.usu.edu/

Undergraduate Advisor:
Marlene Israelsen, Nutrition and Food Sciences 222,
(435) 797-2131

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, Food Technology Management, Nutrition Science, Biotechnology, 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.

Program Emphases and Career Opportunities

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.

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 an Operations Management Minor in the Department of Business Administration. Graduates are sought by private food industry and public institutions in management positions.

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.

Dietetics

This emphasis is a Bachelor of Science program that prepares students to become registered dietitians with professional skills in clinical nutrition, community/public health nutrition, and food service management. Students should complete prerequisites and apply by March 15 of their sophomore year. Within this program, USU offers two options: the **Coordinated Program in Dietetics (CPD)** and the **Didactic Program in Dietetics (DPD)**, which 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. Each of these programs is described below:

1. **Coordinated Program in Dietetics (CPD).** In addition to coursework, students complete 1,000 internship hours during their junior and senior years. Students should complete prerequisites and apply by mid-March of their sophomore year. Ten to twelve students are accepted annually, and seniors must relocate to Salt Lake City during fall semester. Graduates are eligible to take the national registration exam upon completion of the BS degree.

2. **Didactic Program in Dietetics (DPD).** After completing prerequisites, students should apply by mid-March of their sophomore year. Upon completion of coursework required for the BS degree, students apply for internships (located throughout the U.S., including the Utah-based USU Extension Dietetic Internship Program). Graduates are eligible to take the national registration exam upon completion of their internship.

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

Bachelor of Science 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 16-20. 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:

Department of Nutrition and Food Sciences

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 every required course offered through the department (i.e., courses having an NFS prefix).

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 (or 5030), and 5560 with a minimum cumulative GPA of 2.5 for these courses.

Major and Emphasis Requirements

Specific requirements for each emphasis are listed below. Requirements change periodically, and sequence of courses is important.

Food Science Emphasis

Courses followed by an asterisk (*) are suggested for fulfilling University Studies Requirements.

Freshman Year
Fall Semester
NFS 1000 World of Food and Nutrition 1
CHEM 1210 Principles of Chemistry I 4
CHEM 1215 Chemical Principles Laboratory I 1
NFS 1020 (BLS) Science and Application of Human Nutrition 3
MATH 1050 (QL) College Algebra 4
MATH 1060 Trigonometry 2

Spring Semester
NFS 1250 Sanitation and Safety 3
CHEM 1220 (BPS) Principles of Chemistry II 4
CHEM 1225 Chemical Principles Laboratory II 1
ECON 1500 (BAI)* Introduction to Economic Institutions, History, and Principles 3
MATH 1210 (QL) Calculus I 4

Sophomore Year
Fall Semester
NFS 3110 Food, Technology, and Health 3
BIOL 1610 Biology I 4
CHEM 2300 Principles of Organic Chemistry 3
CHEM 2315 Organic Chemistry Laboratory I 1
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
USU 1320 (BHU)* Civilization: Humanities 3

Spring Semester
NFS 3070 Science of Food Preparation 4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
CHEM 3700 Introductory Biochemistry 3
CHEM 3710 Introductory Biochemistry Laboratory 1
STAT 3000 (QI) Statistics for Scientists 3

Junior Year
Fall Semester
NFS 5020 Meat Technology and Processing 4
NFS 5560 Food Chemistry 4
BIOL 3300 General Microbiology 4
PHYS 2110 The Physics of Living Systems I 4

Spring Semester
NFS 3100 (QI) Sensory Evaluation of Food 3
NFS 5110 (CI) Food Microbiology 4
NFS 5500 (QI) Food Analysis 4
PLSC 4600 (QI) Cereal Science (may be taken senior year) 3

Summer Semester
NFS 5250 Occupational Experiences in Nutrition and Food Sciences . 2

Senior Year
Fall Semester
NFS 4440 (QI) Fundamentals of Food Engineering 4
NFS 5030 Dairy Technology and Processing 4
NFS 5920 (CI) Food Product Development 3
SPCH 3330 (DSS)* Intercultural Communication 3

Spring Semester
NFS 4990 Nutrition and Food Sciences Seminar 1
NFS 5510 Food Laws and Regulations (may be taken junior year) 2
PHIL 4310 (DHA)* Philosophy of Science 3
STAT 5200 Design of Experiments (3 cr) **or**
STAT 5300 (QI) Statistical Process Control (3 cr) 3
USU 1330 (BCA)* Civilization: Creative Arts 3
USU 1340 (BSS)* Social Systems and Issues 3

Food Technology Management Emphasis

Courses followed by an asterisk (*) are suggested for fulfilling University Studies Requirements.

Freshman Year
Fall Semester
CHEM 1110 (BPS) General Chemistry I 4
NFS 1000 World of Food and Nutrition 1
NFS 1020 (BLS) Science and Application of Human Nutrition 3
NFS 1240 Culinary Basics 3
MATH 1050 (QL) College Algebra 4

Spring Semester
CHEM 1115 General Chemistry Laboratory 1
CHEM 1120 (BPS) General Chemistry II 4
USU 1320 (BHU)* Civilization: Humanities 3
NFS 1250 Sanitation and Safety 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3

Sophomore Year
Fall Semester
MATH 1100 (QL) Calculus Techniques 3
MHR 3110 (DSS) Managing Organizations and People 3
NFS 3110 Food, Technology, and Health 3
BIOL 1110 Elementary Microbiology 4
USU 1330 (BCA)* Civilization: Creative Arts 3

Spring Semester
NFS 3070 Science of Food Preparation 4
BA 3500 Fundamentals of Marketing 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
STAT 3000 (QI) Statistics for Scientists 3

PHYS 1100 (BPS) Great Ideas in Physics (3 cr) **or**
PHYS 1200 (BPS) Introduction to Physics by Hands-on Exploration (4 cr) ..... 3 or 4

Junior Year
Fall Semester
NFS 5020 Meat Technology and Processing 4
NFS 5560 Food Chemistry 4
BA 3700 Operations Management 3
PSY 1010 (BSS)* General Psychology 3

Spring Semester
NFS 3100 (QI) Sensory Evaluation of Food 3
NFS 5110 (CI) Food Microbiology 4
NFS 5500 (QI) Food Analysis 4
ECON 1500 (BAI)* Introduction to Economic Institutions, History, and Principles 3

Summer Semester
NFS 5250 Occupational Experiences in Nutrition and Food Sciences . 2

Senior Year
Fall Semester
NFS 5030 Dairy Technology and Processing 4
NFS 5920 (CI) Food Product Development 3
BA 4720 Production Planning and Control 3
BA 5730 Process Analysis and Improvement 3

Spring Semester
NFS 4990 Nutrition and Food Sciences Seminar 1
NFS 5510 Food Laws and Regulations (may be taken junior year) 2
BA 4790 Supply Chain Management 3
PHIL 4310 (DHA)* Philosophy of Science 3
SPCH 2110 (CI) Interpersonal Communication 3
ACCT 2010 Survey of Accounting I 3

Nutrition Science Emphasis

Courses followed by an asterisk (*) are suggested for fulfilling University Studies Requirements.

Freshman Year
Fall Semester
NFS 1000 World of Food and Nutrition 1
CHEM 1210 Principles of Chemistry I 4
CHEM 1215 Chemical Principles Laboratory I 1
BIOL 1610 Biology I 4
MATH 1050 (QL) College Algebra 4

Spring Semester
NFS 1020 (BLS) Science and Application of Human Nutrition 3
CHEM 1220 (BPS) Principles of Chemistry II 4
CHEM 1225 Chemical Principles Laboratory II 1
BIOL 1620 (BLS) Biology II 4
MATH 1060 Trigonometry 2

Sophomore Year
Fall Semester
NFS 3110 Food, Technology, and Health 3
CHEM 2300 Principles of Organic Chemistry (3 cr) **or**
CHEM 2310 Organic Chemistry I (4 cr) ..... 3 or 4
CHEM 2315 Organic Chemistry Laboratory I 1
USU 1330 (BCA)* Civilization: Creative Arts 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
BIOL 2420 Human Physiology 4

Spring Semester
NFS 2020 Nutrition Throughout the Life Cycle 3
MATH 1210 (QL) Calculus I 4
CHEM 3700 Introductory Biochemistry 3
CHEM 3710 Introductory Biochemistry Laboratory 1
USU 1320 (BHU)* Civilization: Humanities 3
ECON 1500 (BAI)* Introduction to Economic Institutions, History, and Principles 3

Junior Year
Fall Semester
NFS 4020 Advanced Nutrition 3
NFS 4550 Nutrition Assessment/Clinical Nutrition I 4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
STAT 3000 (QI) Statistics for Scientists 3
Univ. Studies Depth Humanities and Creative Arts (DHA) Course 3

Spring Semester
NFS 3070 Science of Food Preparation 4
NFS 5210 Advanced Public Health Nutrition 2
USU 1340 (BSS)* Social Systems and Issues 3
Univ. Studies Communications Intensive (CI) Course 3

Summer Semester
NFS 5250 Occupational Experiences in Nutrition and Food Sciences . 2

Senior Year
Fall Semester
NFS 5370 Molecular Methods in Nutrition Science 2
Univ. Studies Depth Social Sciences (DSS) Course 3
Univ. Studies Communications Intensive (CI) Course 3

Spring Semester
NFS 4990 Nutrition and Food Sciences Seminar 1
NFS 5220 Endocrine Aspects of Nutrition 2
NFS 5300 Advanced Micronutrient Nutrition 3

Electives
Students in the Nutrition Science Emphasis must select 20 credits from the following courses to meet their career objectives.

NFS 1250 Sanitation and Safety (Sp) 3
NFS 3020 Nutrition and Physical Performance (F) 2
NFS 3600 Medical Technology for Health Care Professionals (F,Sp,Su) 1
NFS 4480 Community Nutrition (F) 3
NFS 5200 Nutritional Epidemiology (F) 2
NFS 5500 (QI) Food Analysis (Sp) 4
MATH 1220 (QL) Calculus II (F,Sp,Su) 4
PUBH 4030 Communicable Disease Control (F) 3
PHYS 2110 The Physics of Living Systems I 4
PHYS 2120 (BPS) The Physics of Living Systems II 4
BIOL 2320 Human Anatomy (Sp,Su) 4
BIOL 3060 (QI) Principles of Genetics (F,Sp,Su) 4
BIOL 3300 General Microbiology (F,Sp) 4
BIOL 5210 Cell Biology (F) 3
BIOL 5230 Developmental Biology (Sp) 3
BIOL 5620 Medical Physiology (Sp) 3
CHEM 2320 Organic Chemistry II (Sp) 4

Department of Nutrition and Food Sciences

Nutrition Science Emphasis Program Requirements for Pre-Medical School Option

Note: The Pre-Medical School Option will meed the pre-medical school requirements. Student transcripts and diplomas will show a Nutrition and Food Sciences major with a Nutrition Science emphasis.

Courses followed by an asterisk (*) are suggested for fulfilling University Studies Requirements.

Freshman Year

Fall Semester

NFS 1000 World of Food and Nutrition 1
CHEM 1210 Principles of Chemistry I 4
CHEM 1215 Chemical Principles Laboratory I 1
MATH 1050 (QL) College Algebra 4
BIOL 1610 Biology I 4

Spring Semester

NFS 1020 (BLS) Science and Application of Human Nutrition 3
CHEM 1220 (BPS) Principles of Chemistry II 4
CHEM 1225 Chemical Principles Laboratory II 1
MATH 1060 Trigonometry 2
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
BIOL 1620 (BLS) Biology II 4

Sophomore Year

Fall Semester

NFS 3110 Food, Technology, and Health 3
CHEM 2310 Organic Chemistry I 4
CHEM 2315 Organic Chemistry Laboratory I 1
BIOL 2420 Human Physiology 4
MATH 1210 (QL) Calculus I 4

Spring Semester

NFS 2020 Nutrition Throughout the Life Cycle 3
CHEM 2320 Organic Chemistry II 4
CHEM 2325 Organic Chemistry Laboratory II 1
CHEM 3700 Introductory Biochemistry 3
CHEM 3710 Introductory Biochemistry Laboratory 1
STAT 3000 (QI) Statistics for Scientists 3

Junior Year

Fall Semester

NFS 4020 Advanced Nutrition 3
NFS 4550 Nutrition Assessment/Clinical Nutrition I 4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
PHYS 2110 The Physics of Living Systems I 4

Spring Semester

NFS 3070 Science of Food Preparation 4
PHYS 2120 (BPS) The Physics of Living Systems II 4
BIOL 3060 (QI) Principles of Genetics 4
HIST 3110 (DHA/CI)* Ancient Near East 3

Summer Semester

NFS 5250 Occupational Experiences in Nutrition and Food Sciences 2

Senior Year

Fall Semester

SCED 3210 (DSS/CI)* Educational and Multicultural Foundations 3
USU 1330 (BCA)* Civilization: Creative Arts 3
USU 1340 (BSS)* Social Systems and Issues 3
NFS 5200 Nutritional Epidemiology 2
NFS 5370 Molecular Methods in Nutrition Science 2

Spring Semester

NFS 5220 Endocrine Aspects of Nutrition 2
NFS 4990 Nutrition and Food Sciences Seminar 1
NFS 5210 Advanced Public Health Nutrition 2
NFS 5300 Advanced Micronutrient Nutrition 3
ECON 1500 (BAI)* Introduction to Economic Institutions, History, and Principles 3
USU 1320 (BHU)* Civilization: Humanities 3

Biotechnology Emphasis

Students selecting the Biotechnology Emphasis must choose either **Depth Training in Food Science** or **Depth Training in Nutrition Science**. Courses followed by an asterisk (*) are suggested for fulfilling University Studies Requirements.

Depth Training in Food Science

Freshman Year

Fall Semester

NFS 1000 World of Food and Nutrition 1
NFS 1020 (BLS) Science and Application of Human Nutrition 3
CHEM 1210 Principles of Chemistry I 4
CHEM 1215 Chemical Principles Laboratory I 1
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MATH 1050 (QL) College Algebra 4

Spring Semester

NFS 2040 Introduction to Biotechnology 1
CHEM 1220 (BPS) Principles of Chemistry II 4
CHEM 1225 Chemical Principles Laboratory II 1
MATH 1100 (QL) Calculus Techniques 3
USU 1320 (BHU)* Civilization: Humanities 3
ECON 1500 (BAI)* Introduction to Economic Institutions, History, and Principles 3

Sophomore Year

Fall Semester

NFS 3110 Food, Technology, and Health 3
BIOL 1610 Biology I 4
CHEM 2300 Principles of Organic Chemistry 3
CHEM 2315 Organic Chemistry Laboratory I 1
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3

Spring Semester

BIOL 3060 (QI) Principles of Genetics 4
BIOL 3300 General Microbiology 4
CHEM 3700 Introductory Biochemistry 3
CHEM 3710 Introductory Biochemistry Laboratory 1
STAT 3000 (QI) Statistics for Scientists 3

Junior Year

Fall Semester

NFS 5260 Methods in Biotechnology: Molecular Cloning 3
NFS 5560 Food Chemistry 4
SPCH 3330 (DSS) Intercultural Communication 3
PHYS 2110 The Physics of Living Systems I 4

Spring Semester

NFS 3100 (QI) Sensory Evaluation of Food 3
NFS 5110 (CI) Food Microbiology 4
NFS 5500 (QI) Food Analysis 4
NFS 5510 Food Laws and Regulations 2
PLSC 4600 (QI) Cereal Science 3

Summer Semester
NFS 5250 Occupational Experiences in Nutrition and Food Sciences 1

Senior Year
Fall Semester
NFS 5020 Meat Technology and Processing (4 cr) **or**
NFS 5030 Dairy Technology and Processing (4 cr).....4
NFS 5370 Molecular Methods in Nutrition Science.....2
NFS 5920 (CI) Food Product Development 3
USU 1340 (BSS)* Social Systems and Issues.....3
Univ. Studies Depth Humanities and Creative Arts (DHA) Course.....3

Spring Semester
ADVS 3200 Ethical Issues in Genetic Engineering and Biotechnology.....3
NFS 4990 Nutrition and Food Sciences Seminar.....1
NFS 5160 Methods in Biotechnology: Cell Culture 3
NFS 5240 Methods in Biotechnology: Protein Purification Techniques 3
STAT 5200 Design of Experiments 3
USU 1330 (BCA)* Civilization: Creative Arts 3

Depth Training in Nutrition Science

Freshman Year
Fall Semester
NFS 1000 World of Food and Nutrition 1
CHEM 1210 Principles of Chemistry I 4
CHEM 1215 Chemical Principles Laboratory I 1
BIOL 1610 Biology I 4
MATH 1050 (QL) College Algebra.....4

Spring Semester
NFS 1020 (BLS) Science and Application of Human Nutrition 3
CHEM 1220 (BPS) Principles of Chemistry II 4
CHEM 1225 Chemical Principles Laboratory II 1
BIOL 1620 (BLS) Biology II.....4
MATH 1060 Trigonometry 2

Sophomore Year
Fall Semester
BIOL 2420 Human Physiology.....4
BIOL 3060 (QI) Principles of Genetics.....4
CHEM 2300 Principles of Organic Chemistry 3
CHEM 2315 Organic Chemistry Laboratory I.....1
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MATH 1100 (QL) Calculus Techniques 3

Spring Semester
NFS 2020 Nutrition Throughout the Life Cycle.....3
NFS 2040 Introduction to Biotechnology.....1
CHEM 3700 Introductory Biochemistry 3
CHEM 3710 Introductory Biochemistry Laboratory 1
USU 1320 (BHU)* Civilization: Humanities 3
ECON 1500 (BAI)* Introduction to Economic Institutions, History, and Principles.....3

Junior Year
Fall Semester
STAT 3000 (QI) Statistics for Scientists 3
BIOL 5620 Medical Physiology 3
NFS 4020 Advanced Nutrition 3
PHYS 2110 The Physics of Living Systems I 4
USU 1330 (BCA)* Civilization: Creative Arts 3

Spring Semester
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode.....3
USU 1340 (BSS)* Social Systems and Issues.....3
Univ. Studies Depth Humanities and Creative Arts (DHA) Course.....3
Univ. Studies Depth Social Sciences (DSS) Course 3

Senior Year
Fall Semester
NFS 5200 Nutritional Epidemiology 2
NFS 5260 Methods in Biotechnology: Molecular Cloning 3
NFS 5370 Molecular Methods in Nutrition Science.....2
BIOL 3300 General Microbiology 4
BIOL 5210 Cell Biology 3

Spring Semester
ADVS 3200 Ethical Issues in Genetic Engineering and Biotechnology.....3
BIOL 5150 Immunology 3
NFS 4990 Nutrition and Food Sciences Seminar.....1
NFS 5160 Methods in Biotechnology: Cell Culture 3
NFS 5220 Endocrine Aspects of Nutrition 2
NFS 5240 Methods in Biotechnology: Protein Purification Techniques 3

Dietetics Emphasis

Students selecting the Dietetics Emphasis must choose either the **Coordinated Program in Dietetics (CPD)** or the **Didactic Program in Dietetics (DPD)**.

Coordinated Program in Dietetics (CPD)

Freshman Year
Fall Semester
NFS 1020 (BLS) Science and Application of Human Nutrition 3
NFS 1240 Culinary Basics 3
CHEM 1210 Principles of Chemistry I 4
MATH 1050 (QL) College Algebra.....4
PSY 1010 (BSS) General Psychology (3 cr) **or**
SOC 1010 (BSS) Introductory Sociology (3 cr).....3

Spring Semester
CHEM 1220 (BPS) Principles of Chemistry II 4
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles.....3
USU 1330 (BCA) Civilization: Creative Arts.....3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
NFS 2020 Nutrition Throughout the Life Cycle.....3

Sophomore Year
Fall Semester
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode.....3
CHEM 2300 Principles of Organic Chemistry 3
NFS 3020 Nutrition and Physical Performance.....2
STAT 2000 (QI) Statistical Methods (required) (3 cr) **or**
STAT 3000 (QI) Statistics for Scientists (preferred) (3 cr).....3
BIOL 2420 Human Physiology.....4
USU 1320 (BHU) Civilization: Humanities 3

Spring Semester
CHEM 3700 Introductory Biochemistry 3
CHEM 3710 Introductory Biochemistry Laboratory 1
NFS 1250 Sanitation and Safety 3
NFS 3070 Science of Food Preparation.....4
NFS 3600 Medical Terminology for Health Care Professionals.....1

MHR 3110 (DSS) Managing Organizations and People (3 cr) **or**
FCHD 3350 (DSS) Family Finance (3 cr) 3
Univ. Studies Depth Humanities and Creative Arts (DHA) Course 3

Junior Year
Fall Semester
NFS 4020 Advanced Nutrition 3
NFS 4050 (CI) Education and Counseling Methods in Dietetics I 2
NFS 4480 Community Nutrition 3
NFS 4550 Nutrition Assessment/Clinical Nutrition I 4
NFS 4570 Clinical Nutrition Experience I 1
NFS 4710 Quantity Food Preparation 2
NFS 4730 Quantity Food Preparation Lab 2

Spring Semester
NFS 4060 (CI) Education and Counseling Methods in Dietetics II 2
NFS 4560 (CI) Clinical Nutrition II 4
NFS 4580 Clinical Nutrition Experience II 2
NFS 4720 (QI) Food Service Organization and Management 2
NFS 4740 Food Service Organization and Management Lab 2

Senior Year
Fall Semester
NFS 4660 (CI) Medical Dietetics 12
NFS 4780 (CI) Maternal and Child Nutrition 4

Spring Semester
NFS 4420 (QI) Nutrition Research Methodology 2
NFS 4750 Management of Dietetics 3
NFS 4990 Nutrition and Food Sciences Seminar 1
NFS 5210 Advanced Public Health Nutrition 2
NFS 5300 Advanced Micronutrient Nutrition 3
NFS 5750 Advanced Dietetics Practicum 3

Didactic Program in Dietetics (DPD)

Freshman Year
Fall Semester
NFS 1020 (BLS) Science and Application of Human Nutrition 3
NFS 1240 Culinary Basics 3
CHEM 1210 Principles of Chemistry I 4
MATH 1050 (QL) College Algebra 4
PSY 1010 (BSS) General Psychology (3 cr) **or**
SOC 1010 (BSS) Introductory Sociology (3 cr) 3

Spring Semester
CHEM 1220 (BPS) Principles of Chemistry II 4
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
NFS 2020 Nutrition Throughout the Life Cycle 3
USU 1330 (BCA) Civilization: Creative Arts 3

Sophomore Year
Fall Semester
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
CHEM 2300 Principles of Organic Chemistry 3
NFS 3020 Nutrition and Physical Performance 2
STAT 2000 (QI) Statistical Methods (required) (3 cr) **or**
STAT 3000 (QI) Statistics for Scientists (preferred) (3 cr) 3
BIOL 2420 Human Physiology 4
USU 1320 (BHU) Civilization: Humanities 3

Spring Semester
CHEM 3700 Introductory Biochemistry 3
CHEM 3710 Introductory Biochemistry Laboratory 1
NFS 1250 Sanitation and Safety 3
NFS 3070 Science of Food Preparation 4
NFS 3600 Medical Terminology for Health Care Professionals 1
MHR 3110 (DSS) Managing Organizations and People (3 cr) **or**
FCHD 3350 (DSS) Family Finance (3 cr) 3
Univ. Studies Depth Humanities and Creative Arts (DHA) Course 3

Junior Year
Fall Semester
NFS 4020 Advanced Nutrition 3
NFS 4050 (CI) Education and Counseling Methods in Dietetics I 2
NFS 4480 Community Nutrition 3
NFS 4550 Nutrition Assessment/Clinical Nutrition I 4
NFS 4710 Quantity Food Preparation 2
NFS 4900 SP: Clinical Nutrition Practicum I 1

Spring Semester
NFS 4060 (CI) Education and Counseling Methods in Dietetics II 2
NFS 4560 (CI) Clinical Nutrition II 4
NFS 4720 (QI) Food Service Organization and Management 2
NFS 4900 SP: Clinical Nutrition Practicum II 1
SPCH 1020 (CI) Public Speaking (3 cr) **or**
SPCH 2110 (CI) Interpersonal Communication (3 cr) **or**
SPCH 3330 (DSS) Intercultural Communication (3 cr) 3

Senior Year
Fall Semester
NFS 4780 (CI) Maternal and Child Nutrition 3
NFS 5200 Nutritional Epidemiology 2
NFS 5750 Advanced Dietetics Practicum 3
ACCT 2010 Survey of Accounting I 3
BA 3500 Fundamentals of Marketing 3

Spring Semester
NFS 4420 (QI) Nutrition Research Methodology 2
NFS 4750 Management of Dietetics 3
NFS 4990 Nutrition and Food Sciences Seminar 1
NFS 5210 Advanced Public Health Nutrition 2
NFS 5300 Advanced Micronutrient Nutrition 3

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.

Assessment of Instruction

Information about assessment within each of the departmental programs can be found at:
http://www.nfs.usu.edu/academics/assessment/assessment.html

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty

in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. Minimum GPA requirements for participation in departmental honors vary by department, but usually fall within the range of 3.30-3.50. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level. The campus-wide Honors Program, which is open to all qualified students regardless of major, offers a rich array of cultural and social activities, special classes, and the benefit of Honors early registration. Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@cc.usu.edu. Additional information can be found online at: **http://www.usu.edu/honors/**

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 Nutrition and Food Sciences Department, or online at: **http://www.usu.edu/majorsheets/**

Graduate Programs

MS and PhD Programs

Admission Requirements

Candidates for graduate study in the Department of Nutrition and Food Sciences need a background in chemistry, biochemistry, physics, mathematics, statistics, bacteriology and physiology. Prior coursework in food science or nutrition is desirable. Students may be accepted into the NFS graduate program with deficiencies in these areas; however, their supervisory committee will require that competence equivalent to a BS degree in Nutrition and Food Sciences be obtained as part of the *Program of Study*.

Students must meet some departmental requirements, in addition to requirements of the School of Graduate Studies, as shown at: **http://www.usu.edu/gradsch/admission/**

Departmental requirements include the following:

1. Students must attain Graduate Record Examination (GRE) scores at the 40th percentile minimum on the Verbal, Quantitative, and Analytical Writing tests.

2. Before acceptance into a PhD program, a student must have obtained an MS degree or have a manuscript reporting original research accepted for publication in a refereed journal.

3. Before acceptance into the Department of Nutrition and Food Sciences, potential MS and PhD graduate students must be accepted by a faculty member who is willing to add them to his or her research team.

Registration Requirements

Once admitted, students are required to maintain enrollment as follows:

1. Enrollment in at least 3 credits per semester in order to use University facilities and receive direction (including thesis or dissertation direction) from their major professor.

2. Enrollment in at least 9 credits per semester if receiving an assistantship or fellowship from Utah State University.

3. Enrollment in no more than 6 credits per semester if employed full time by Utah State University.

Selecting a Major Professor

Initially, students are accepted into the department when at least one faculty member has expressed a willingness to add the student to his or her research team. By doing so, the faculty member guarantees at the time of acceptance that the student may work in his or her research program. However, offers of financial aid must be discussed directly with the faculty member. Students may choose as their major professor any faculty member who can and is willing to accommodate them.

Establishing a Supervisory Committee

A supervisory committee must be selected by the student in conjunction with his or her major professor during the student's first semester as an NFS graduate student. The major professor serves as the chair of the supervisory committee. A minimum of three members (at least two from the department) including the major professor are required for the MS program, and at least five (three or more from the department and one or more from outside the department) for a PhD program must be suggested.

The *Supervisory Committee Assignment Form* needs to be submitted to the department head by the 8th week of the first semester for MS students and the 15th week of the first semester for PhD students. The department head must approve the student's committee and may add members. It is the student's responsibility to meet with the 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. (**Note:** The *Supervisory Committee Assignment Form* may be found on the School of Graduate Studies website, **http://www.usu.edu/gradsch/forms/**, or may be obtained at the Nutrition and Food Sciences departmental office.)

Defining a Program of Study

Students should register for their first semester based on advise from their major professor. Students should then prepare a *Program of Study* in conjunction with their major professor. The *Program of Study* should ensure fulfillment of the minimum requirements for all NFS graduate students (shown below) and also include other courses providing the background necessary to conduct their research.

Students need to schedule a meeting with their supervisory committee to discuss the proposed *Program of Study* by the end of the first semester for MS students and by the end of the second semester for PhD students. A copy of the proposed *Program of Study* should be given to each committee member several days prior to the committee meeting.

The purpose of the committee meeting is to secure the supervisory committee's approval of the *Program of Study*. The committee will determine any deficiencies in core BS competencies or academic background. Students in the NFS graduate program should have already taken undergraduate general chemistry, organic chemistry, biochemistry, algebra, and statistics. Although these courses may be taken as part of the graduate program, they will not be counted as graduate credit in the *Program of Study*.

The supervisory committee is responsible for ensuring NFS graduate students have (or obtain during their program of study) the expected core competencies of NFS bachelor's degree graduates. This can be

based upon transcripts of courses from prior studies, passing courses listed in the program of study (with a minimum grade of *B*), or by administering a written or oral examination.

The committee will also determine that the courses included in the *Program of Study* meet the minimum requirements for obtaining an MS or PhD in Nutrition and Food Sciences (as shown below). All members of the committee, as well as the department head, must sign the *Program of Study Form* before it is sent to the School of Graduate Studies. Registration for all subsequent semesters should be based on the approved *Program of Study*. Changes to the *Program of Study* require a letter written by the major professor to the School of Graduate Studies (with copies to all members of the committee and the department head) justifying the change.

The student may register for courses not listed on the *Program of Study* with approval of his or her major professor (especially if the student is receiving a research assistantship). However, the student will be responsible for paying any additional in-state and out-of-state tuition and fees required for these additional classes. Tuition waivers (and tuition remission for PhD students) are based upon the approved Program of Study.

Minimum Course Requirements for MS/PhD Students in Nutrition and Food Sciences

BS Core Competency Classes by Graduate Specialization

Food Science. The following courses are required for students specializing in a food science related area: NFS 3110 (Food Technology and Health), NFS 5020 (Meat Technology and Processing) or NFS 5030 (Dairy Technology and Processing), NFS 5110 (Food Microbiology), NFS 5500 (Food Analysis), NFS 5560 (Food Chemistry), and STAT 3000 (Statistics for Scientists).

Nutrition. The following courses are required for students specializing in a nutrition related area: NFS 4020 (Advanced Nutrition) and STAT 3000 (Statistics for Scientists).

Program of Study for MS and PhD Degrees

The following courses are required. For further information, see pages 106-108 of the *School of Graduate Studies* section of this catalog.

1. **NFS Graduate courses.** NFS graduate courses (other than BS core competency courses): 5 credits for MS, 10 credits for PhD.

2. **Biochemistry and Statistics.** Biochemistry (CHEM 5700, 5710): 3 credits for MS, 6 credits for PhD; Statistics (STAT 5100, 5120, 5200, 5600): 3 credits for MS, 6 credits for PhD.

3. **NFS Graduate Seminar (NFS 7800).** Students must enroll in NFS 7800 during each fall and spring semester: 2 credits for MS, 6 credits for PhD

4. **Teaching.** INST 7920: 1 credit required for PhD; NFS 6910 (Teaching Experience) or NFS 5250 (Occupational Experience): 2 credits required for PhD. (Credits in this area are *not* required for MS.)

5. **Other Graduate Courses.** BS core competency courses taken at the 6000 level, or other USU courses approved for graduate studies, may be included. For MS, 5-11 credits are required; for PhD, 15-25 credits are required.

6. **Research.** For MS, 6-12 credits of NFS 6970 are required. For PhD, 34-45 credits of NFS 7970 are required. If students desire to do research beyond the *Program of Study* requirements, they should register for Continuing Graduate Advisement.

Total Credits Required

For the MS degree, 30 total credits are required. For the PhD degree, 90 total credits are required (including the 30 credits taken for the MS).

Research Proposal

In consultation with the major professor, the student must choose a research area suitable for the MS thesis or PhD dissertation, and then prepare a research proposal. Research proposals should be written and approved by the end of the second semester for students completing the MS degree and by the end of the third semester for PhD students.

The content and duration of the proposed research should be appropriate for the degree. It is expected that MS research and coursework (including writing and defense of the thesis) should be completed within 2 years (24 months). The length of research being proposed for the PhD dissertation is dependent on the discovery by the student of a substantial level of new information that can be added to their field of specialization.

The proposal should include the following:

1. Title
2. Description of the problem, based on the most current literature
3. Statement of the purpose of the intended research
4. Research Plan
5. List of references cited, presented in a form acceptable for publication in a scientific journal in the student's field

The student prepares the research proposal under the guidance of the major professor. Once the research proposal is completed, it is the student's responsibility to schedule a meeting with his or her supervisory committee, and to provide each committee member with a copy of the research proposal at least two weeks prior to the meeting.

During the committee meeting, the student is expected to provide an oral presentation of the proposed research, and discuss any regulated aspects of the research, such as hazardous materials, experimental animals, or human subjects. After all members of the supervisory committee have approved the research proposal, a copy of the proposal will be sent to the graduate school.

Departmental Seminar

The NFS graduate seminar (NFS 7800) is held in the Nutrition and Food Sciences Building, room 202 from 3:30 to 5:00 p.m. each Wednesday during fall and spring semesters. All NFS MS and PhD students are expected to register for and attend this seminar during each semester for which they are enrolled as full-time graduate students.

This seminar will include presentations by NFS faculty members, faculty members from other USU departments, invited speakers, and graduate students. In addition to the presentations, NFS 7800 will also include assignments on topics such as critical thinking, scientific writing, poster preparation, and grant proposal writing. The theme of the seminar will be chosen by the NFS faculty member who is assigned as the course instructor.

During the semester in which they defend their thesis or dissertation, all MS and PhD students are required to give a presentation (a 30 to 45 minute seminar) on the results of their research. This presentation

will be given to the NFS faculty members and students as part of the NFS 7800 seminar series. The student must invite all members of the supervisory committee to attend this seminar presentation. At the beginning of the semester in which they plan to defend their thesis or dissertation, students need to schedule a date for their presentation with the NFS 7800 instructor.

Comprehensive Examination (PhD students only)

Before a student can become a candidate for the PhD degree, he or she must take a comprehensive examination, as required by the School of Graduate Studies. After completion of the courses listed in the *Program of Study*, the student should schedule a meeting of their committee for the comprehensive examination. This is usually an oral examination (although committee members have the option of providing a written exam), and the student should bring the *Application for Candidacy for Doctoral Degree Form* to the examination.

Typically students will be asked questions related to their area of specialization and their field of research. However, the comprehensive exam can also be used to test students' overall knowledge of food science or nutrition, and committee members can ask any questions that will test the student's knowledge and ability to synthesize nutrition and food science information, as well as answer questions. The form should be completed at this time. On the *Application for Candidacy for Doctoral Degree Form*, the committee members will list the field in which they examined the student, and then sign the form accordingly.

Thesis or Dissertation Final Examination

Students write the thesis or dissertation under the guidance of their major professor. To schedule a tentative date for the final examination (or defense) of the thesis or dissertation, students should also contact their supervisory committee members. Students need to plan well in advance, so that there will be sufficient time allowed for the student to complete their writing and for the committee members to read the thesis or dissertation. When the thesis or dissertation is ready to be defended, and at least four weeks prior to the tentative defense (or final) examination date and time, the student submits a copy to each committee member.

After the committee members have read the thesis or dissertation and have determined that it is indeed ready to be defended, the student prepares the *Appointment for Examination Form*. Each of the supervisory committee members is required to sign this form, indicating that they have read and tentatively approve the content and format of the thesis or dissertation, and that they can be in attendance at the defense.

The *Appointment for Examination Form* needs to be submitted to the School of Graduate Studies a minimum of 10 working days prior to the defense. The School of Graduate Studies will appoint one of the supervisory committee members (other than the major professor) to chair the defense examination.

Completing the Thesis or Dissertation

After a successful defense of the thesis or dissertation, the student is required to make any changes to the thesis or dissertation that are required as a consequence of the final examination. At this time, the student can schedule with the School of Graduate Studies a date by which he or she expects to have the thesis or dissertation available for review. If the thesis or dissertation is not submitted to the School of Graduate Studies prior to this date, it will be reviewed at the next available date.

When the thesis or dissertation has been revised to the satisfaction of the committee member(s) assigned the responsibility of ensuring such changes are completed to the satisfaction of the supervisory committee (usually the major professor), the front page of the thesis or dissertation can be signed. The student then completes the *Thesis/ Dissertation Format and Style Form* and obtains the major professor's signature (in the NFS Department the major professor also acts as the departmental format/style reviewer) and submits the thesis or dissertation to the School of Graduate Studies.

Following review by the School of Graduate Studies, the thesis or dissertation is collected by the NFS Department and returned to the major professor, along with a list of corrections. The major professor then has the responsibility of ensuring that the thesis or dissertation is revised (if necessary), and of signing a release indicating that the thesis or dissertation is ready for binding. The student may then make the needed copies of the thesis or dissertation and submit them for binding. It is also the student's responsibility to ensure that all other forms and fees related to the thesis or dissertation and to the completion of his or degree are finalized.

Other 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 5850/6850;

and PUBH 4030. 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, 6210, 6500, 6510, 6610; NFS 6270, 6670, 6680, 6690 (the preceding four courses are offered biennially); 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, 6210, 6510, 6610; NFS 6270, 6670, 6680, 6690, BIOL 5150 (the preceding five courses are offered biennially); ADVS 6400; ASTE 6260; 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. 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 in-depth training in financial management, human resource management, marketing, and dietetics-specific management.

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; (2) admission requirements of the NFS Department; and (3) admission requirements of the MDA program, including a letter of application and an approved *Program of Study*. For further details, see:
http://www.nfs.usu.edu/dietetics/programs/mda/mda.html

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 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: BA 3400, 6350, 6440, 6520; INST 6490; MHR 6350, 6370, 6410, 6500, 6510, 6550, 6630, 6760.

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.nfs.usu.edu/**

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
Nedra K. Christensen, nutrition, dietetics
Daren P. Cornforth, food science, meat and muscle chemistry
Conly L. Hansen, food science, food engineering
Donald J. McMahon, food science, dairy chemistry and technology
Ronald G. Munger, nutrition, epidemiology, and public health
Ilka Nemere, nutrition, molecular nutrition
Bart C. Weimer, food science, microbial physiology

Clinical Professors
Janet B. Anderson, dietetics, food science management, food safety
Noreen B. Schvaneveldt, dietetics, clinical nutrition

Adjunct Professors
Gary M. Chan, pediatrics
Timothy A. Gilbertson, biology
Craig J. Oberg, microbiology

Professors Emeritus
Deloy G. Hendricks
Georgia C. Lauritzen
Von T. Mendenhall
Gary H. Richardson
Ann W. Sorenson
Bonita W. Wyse

Associate Professor
Marie K. Walsh, food science, dairy chemistry

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 Clinical Associate Professor
Heidi Reese LeBlanc, dietetics

Adjunct Research Associate Professor
Laurie J. Moyer-Mileur, pediatric nutrition

Associate Professor Emeritus
Charlotte P. Brennand

Assistant Professors
Korry Hintze, nutrition, nutrient-gene interaction, iron metabolism, selenium metabolism
Silvana Martini, characterization of lipids, sensory evaluation of foods, product development
Brian A. Nummer, biosecurity, food service, food safety, food process development
Robert E. Ward, bioactive nutrients, food and lipid analysis
Heidi J. Wengreen, nutrition, clinical dietetics, epidemiology
Siew Sun Wong, nutrition, nutrition education program, epidemiology

Research Assistant Professors
Dong Chen, molecular structure and biochemistry
Carl S. Hansen, agricultural education, waste management
Catherine McDonald, pediatric nutrition, clinical dietetics

Clinical Assistant Professor
Tamara S. Vitale, dietetics, community nutrition

Adjunct Clinical Assistant Professor
Ann M. Mildenhall, dietetics, director of dietetic internship program

Assistant Professor Emeritus
Frances G. Taylor

Adjunct Assistant Professor
Theodore Liou, nutrition, internal medicine, pulmonology

Adjunct Clinical Assistant Professors
W. Daniel Jackson, pediatrics
Julianne Steiner, dietetics, diabetes

Clinical Instructors
Marlene Israelsen, dietetics, nutrition
Janette Smith, dietetics, nutrition
Megan Bunch Smith, dietetics

Adjunct Instructors
Sarah Gunnell, dietetics
Emily W. Hoffman, dietetics, nutrition, food safety
Kim McMahon, dietetics/food service management
Cynthia Mitchell, dietetics management
Jennie Oler, Assistant Director of Dietetic Internship Program; dietetics
Pauline Williams, dietetics

Lecturers
Karin Allen, food science
Randall T. Bagley, dairy processing
Virginia C. Bragg, nutrition
Erik T. Burlile, culinary arts/food service management, chef
Grace B. Harvell, culinary arts
Dick R. Whittier, meat processing

Adjunct Clinical Lecturer
Rebecca S. Cole, dietetics/food service management

Course Descriptions

Nutrition and Food Sciences (NFS), pages 677-681

Office Systems Support AAS Degree

Program Director/Advisor: Dennis Garner
Location: Uintah Basin Regional Campus (Roosevelt)
Phone: (435) 722-1713
FAX: (435) 722-4889
E-mail: dennisg@ext.usu.edu
WWW: http://www.usu.edu/cob/oss

Objectives

This 2+2 program, offered *only* through Continuing Education, leads to an Associate of Applied Science (AAS) degree in Office Systems Support (OSS). This degree is offered through the Center for Independent and Distance Learning (CIDL) at Continuing Education Centers located in Logan, Brigham City, Tooele, and the Uintah Basin. The OSS curriculum reflects the IS 2002 Model Curriculum for undergraduate programs developed by information systems professionals and educators. This degree is designed to prepare students for office positions using the latest office skills and the applications of computer technology for transmitting business information. Although the degree is a two-year program, students who take articulated classes, concurrent enrollment classes, or challenge tests can complete the degree in less than two years.

Admission Requirements

1. New freshmen admitted to USU in good standing qualify for admission to this major.
2. Transfer students from other institutions and from other USU majors need a 2.20 total GPA for admission to this major in good standing.

Degree Requirements

The OSS degree program is a blend of Office Systems Support courses and courses from other departments. Students begin by taking English, communications, mathematics, and microcomputer courses that provide knowledge and skills useful in everyday office work. In addition, they select a number of courses from those approved for University Studies. Classes in English; Sociology; Psychology; Family, Consumer, and Human Development; and Business Administration are recommended. Next, students learn advanced word processing and business correspondence skills needed in today's offices. Students also learn about computers, accounting, and economics. After completing the prerequisite knowledge and skill courses, students are placed in internship positions for on the-job training.

In completing the minimum 65 credits required in the program, students will complete courses related to their major, such as accounting and information systems. They will also select courses of their own choice. The requirements for this program, including University Studies requirements, are summarized below. Students are urged to visit with their advisor on a regular basis about progress toward the completion of the program.

Career Opportunities

Recent graduates have been employed in various occupations, including Medicare specialist, senior administrative assistant, computer analyst, and as administrative assistants in legal, marketing, and accounting offices.

Academic Advisement

All students should contact their academic advisor for assistance with course selection, program planning, and meeting graduation requirements. If they do not know who their advisor is, students should contact the Continuing Education center through which they are completing their degree.

Graduation Requirements (65 credits)

All courses completed as part of this program may also be applied toward the requirements for a bachelor's degree. Some classes may have prerequisites. For further information, review this catalog.

University Studies Requirements (18-19 credits)

Communications Literacy (6 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode.....3

Quantitative Literacy (3-4 credits)
MATH 1050 (QL) College Algebra (4 cr) **or**
MATH 1100 (QL) Calculus Techniques (3 cr).....3 or 4

Computer and Information Literacy (CIL)
No specific course is required, but students must pass competency exams in computer and information literacy. See the *General Education Requirements* section (page 49) for more information. OSS 1400 is designed to prepare students for these competency exams.

Breadth Requirements (9 credits)
Two of the following three classes *must* have a USU prefix.
Breadth Humanities (BHU) course (USU 1320 recommended).....3
Breadth Life Sciences (BLS) course (USU 1350 recommended) 3
Breadth Physical Sciences (BPS) course (USU 1360 recommended) .3

Elective Requirements (4-5 credits)

Major Area Requirements (33 credits) (2.5 GPA)

ACCT 2010 Survey of Accounting I.....3
BIS 2100 Principles of Management Information Systems 3
BIS 2200 (CI) Business Communication.....3
BUS 2250 Introductory Internship (pre-approval required) 3
OSS 1400 Microcomputer Applications (3 cr) **or**
OSS 1410 Special Topics: Basic Computer Concepts 3
OSS 1420 Word Processing Applications 3
OSS 1550 (CI) Business Correspondence.....3
OSS 2300 Data Communications and Networking 3
OSS 2400 Web Design Applications 3
OSS 2520 Integrating Office Technology 3
OSS 2600 Office Procedures 3

Office Systems Support AAS Degree

Related Area Requirements (9 credits)

Students must also take 9 or more credits from the following recommended courses. Students must choose from *at least two* areas.

Accounting
ACCT 1550 Accounting Software for Small Business Applications.....3
ACCT 2020 Survey of Accounting II.....3
BUS 3010 Intermediate Accounting I 3

Business Information Systems
BUS 3330 Essentials of Database Systems 3

Office Systems Support
OSS 1410 Special Topics.....1-3
OSS 2450 Spreadsheets and Databases 3
OSS 2500 Visual Basic Applications 3

General Business
ACCT 1050 Accounting Essentials 3
BA 1350 Introduction to Business.....3
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles.....3
ECON 2010 (BSS) Introduction to Microeconomics 3
MHR 2050 Legal and Ethical Environment of Business.....3
BUS 3110 (DSS) Management Fundamentals 3
BUS 3710 Interpersonal and Team Skills.....3
PSY 1010 (BSS) General Psychology 3

English (ENGL Electives)

Other Courses Approved by Advisor

Course Descriptions

Office Systems Support (OSS), pages 682-683

Department of Physics

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Degrees offered: Bachelor of Science (BS), Bachelor of Arts (BA), Master of Science (MS), and Doctor of Philosophy (PhD) in Physics; BS in Physics Teaching; BS in Composite Teaching—Physical Science (Physics)

Undergraduate emphases: *BS*—Professional Emphasis or Applied Emphasis

Graduate specializations: Electromagnetic Theory, Industrial Physics (MS only), Space Science, Surface Physics, Theoretical Physics, Upper Atmospheric Physics (MS only)

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 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 Microgravity Research Team (MRT) 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 PHYS 2110 and 2120, or PHYS 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, 1215, 1220, and 1225.

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 (QL) Calculus I, (F,Sp,Su) 4
MATH 1220 (QL) Calclulus II (F,Sp,Su) 4

Choose *one* of the following pairs of courses:
BIOL 1610 Biology I (F) (4 cr) **and**
BIOL 1620 (BLS) Biology II (Sp) (4 cr) 8
Or
CHEM 1210 Principles of Chemistry I (F,Sp) (4 cr) **and**
CHEM 1220 (BPS) Principles of Chemistry II (F,Sp,Su) (4 cr) 8
Or
GEO 1110 (BPS) The Dynamic Earth: Physical Geology (F,Sp) (4 cr) **and**
GEO 3200 (DSC) The Earth Through Time (Sp) (4 cr) 8

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 (42 credits):

A. College of Science Requirements (16 credits)

B. Required Physics Courses (23 credits)

PHYS 2210 (QI) General Physics—Science and Engineering I (4 cr) **and**
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II (4 cr) 8
Or
PHYS 2110 The Physics of Living Systems I (4 cr) **and**
PHYS 2120 (BPS) The Physics of Living Systems II (4 cr) 8
(PHYS 2210 and 2220 are preferred.)

PHYS 2500 Introduction to Computer Methods in Physics 2
PHYS 2710 Introductory Modern Physics 3
PHYS 3550 Intermediate Classical Mechanics 3
PHYS 3600 Intermediate Electromagnetism (3 cr) **or**
ECE 3870 Electromagnetics I (F,Sp) (3 cr) 3
PHYS 3870 (CI) Intermediate Laboratory I 2
PHYS 4900 (CI) Research in Physics 2

C. Required Mathematics Course (3 credits)

MATH 2210 (QI) Multivariable Calculus (F,Sp,Su) 3

The specific requirements beyond this core for the various bachelor's degrees are:

1. Bachelor of Science Degree in Physics (15 credits)
MATH 2250 (QI) Linear Algebra and Differential Equations (F,Sp,Su) 4
PHYS 3710 Intermediate Modern Physics 3
PHYS 3700 Thermal Physics (3 cr) **or**
PHYS 4650 Optics I (3 cr) 3
Courses in Physics at the 3500 level and above (*not* to include PHYS courses designed as University Studies depth courses) 5

2. Bachelor of Arts Degree in Physics (32 credits)
MATH 2250 (QI) Linear Algebra and Differential Equations (F,Sp,Su) 4
PHIL 4310 (DHA) Philosophy of Science (Sp) 3
PHIL 4320 (DHA) History of Scientific Thought (Sp) 3
Courses in Physics at the 3500 level and above (*not* to include PHYS courses designed as University Studies depth courses) 6
Two years training (or equivalent) in a foreign language 16

3. Bachelor of Science Degree in Physics with a Professional Emphasis (29 credits)
MATH 2250 (QI) Linear Algebra and Differential Equations (F,Sp,Su) 4
PHYS 3700 Thermal Physics 3
PHYS 3710 Intermediate Modern Physics 3
PHYS 3750 Foundations of Wave Phenomena 3
PHYS 3880 (CI) Intermediate Laboratory II 2
PHYS 4600 Advanced Electromagnetism 3
PHYS 4650 Optics I 3
PHYS 4700 Quantum Mechanics I 3
PHYS 4710 Quantum Mechanics II 3
PHYS 4900 (CI) Research in Physics 2

4. Bachelor of Science Degree in Physics with an Applied Emphasis (24 credits)
MATH 2250 (QI) Linear Algebra and Differential Equations (F,Sp,Su) 4
PHYS 3700 Thermal Physics 3
PHYS 3880 (CI) Intermediate Laboratory II 2
PHYS 4650 Optics I 3
Courses in other technical departments at the 3000 level or above (*not* to include courses designated as University Studies depth courses). Selected courses must have a coherent theme and must be approved by the Physics Department 12

5. Mathematics and Physics Dual Major Option
By fulfilling *all degree requirements* for *any two separate majors*, it is possible for a student to receive a diploma having two majors listed. Because most physics majors are required to complete a minimum of 14 credits in mathematics courses, many students elect to complete the requirements for a BS degree in mathematics, as well as the requirements for their physics degree.

Suggested Four-year Course of Study for Bachelor of Science Degree in Physics

The suggested schedule shown below should be used in conjunction with the major requirement sheet. Students should consult with their advisor to develop an individualized plan of study which is applicable to their interests and degree track.

Prior to enrolling in MATH 1220 (Calculus II), students must have completed MATH 1210 (Calculus I) with a grade of *C-* or better, ***or*** must have received an AP score of *at least 4* on the Calculus AB exam **or** *at least 3* on the Calculus BC exam.

Freshman Year (30 credits)

Fall Semester (15 credits)
PHYS 2210 (QI) General Physics—Science and Engineering I 4
MATH 1220 (QL) Calculus II 4
College of Science sequence requirement 4
University Studies Breadth course 3

Spring Semester (15 credits)
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II 4
MATH 2210 (QI) Multivariable Calculus 3
College of Science sequence requirement 4
University Studies Breadth course 3
Elective course 1

Sophomore Year (30 credits)

Fall Semester (15 credits)
PHYS 2500 Introduction to Computer Methods in Physics 2
PHYS 2710 Introductory Modern Physics 3
MATH 2250 (QI) Linear Algebra and Differential Equations 4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
University Studies Breadth course 3

Spring Semester (15 credits)
PHYS 3710 Intermediate Modern Physics 3
University Studies Breadth courses 6
Elective courses 6

Junior Year (30 credits)

Fall Semester (14 credits)
PHYS 3550 Intermediate Classical Mechanics 3
PHYS 3870 (CI) Intermediate Laboratory I 2

Department of Physics

ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
University Studies Breadth course 3
University Studies Depth course 3

Spring Semester (16 credits)
PHYS 3600 Intermediate Electromagnetism 3
PHYS 3880 (CI) Intermediate Laboratory II (as elective credit) 2
PHYS elective course (if not taken sophomore spring) 3
University Studies Depth course 3
Elective courses 5

Senior Year (30 credits)
Fall Semester (15 credits)
PHYS 4650 Optics I (required if PHYS 3700 was not taken, or may be used as a physics elective) 3
Elective courses 12

Spring Semester (15 credits)
PHYS 3700 Thermal Physics (3 cr) **or**
Physics elective course at 3500-level or higher (3 cr) 3
PHYS 4900 (CI) Research in Physics 2
Elective courses 10

Suggested Four-year Course of Study for Bachelor of Arts Degree in Physics

The suggested schedule shown below should be used in conjunction with the major requirement sheet. Students should consult with their advisor to develop an individualized plan of study that is applicable to their interests and degree track.

Prior to enrolling in MATH 1220 (Calculus II), students must have completed MATH 1210 (Calculus I) with a grade of *C-* or better, ***or*** must have received an AP score of *at least 4* on the Calculus AB exam **or** *at least 3* on the Calculus BC exam.

Freshman Year (30 credits)
Fall Semester (15 credits)
PHYS 2210 (QI) General Physics—Science and Engineering I 4
MATH 1220 (QL) Calculus II 4
College of Science sequence requirement 4
University Studies Breadth course 3

Spring Semester (15 credits)
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II 4
MATH 2210 (QI) Multivariable Calculus 3
College of Science sequence requirement 4
University Studies Breadth course 3
Elective course 1

Sophomore Year (30 credits)
Fall Semester (15 credits)
PHYS 2500 Introduction to Computer Methods in Physics 2
PHYS 2710 Introductory Modern Physics 3
MATH 2250 (QI) Linear Algebra and Differential Equations 4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
University Studies Breadth course 3

Spring Semester (15 credits)
PHIL 4310 (DHA) Philosophy of Science 3
University Studies Breadth courses 6
Elective courses 6

Junior Year (30 credits)
Fall Semester (15 credits)
PHYS 3550 Intermediate Classical Mechanics 3
PHYS 3870 (CI) Intermediate Laboratory I 2
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
University Studies Breadth course 3
Required language courses 4

Spring Semester (15 credits)
PHYS 3600 Intermediate Electromagnetism 3
PHYS 3710 Intermediate Modern Physics (3 cr) **or**
Elective course at 3500-level or higher (3 cr) 3
University Studies Depth Social Sciences (DSS) course 3
Required language courses 4
Elective course(s) 2

Senior Year (30 credits)
Fall Semester (15 credits)
PHYS elective course at 3500-level or higher 3
Required language courses 4
Elective courses 8

Spring Semester (15 credits)
PHYS 4900 (CI) Research in Physics 2
PHIL 4320 (DHA) History of Scientific Thought 3
Required language courses 4
Elective courses 6

Suggested Four-year Course of Study for Bachelor of Science Degree in Physics with Professional Emphasis

The suggested schedule shown below should be used in conjunction with the major requirement sheet. Students should consult with their advisor to develop an individualized plan of study that is applicable to their interests and degree track.

Prior to enrolling in MATH 1220 (Calculus II), students must have completed MATH 1210 (Calculus I) with a grade of *C-* or better, ***or*** must have received an AP score of *at least 4* on the Calculus AB exam **or** *at least 3* on the Calculus BC exam.

Freshman Year (30 credits)
Fall Semester (15 credits)
PHYS 2210 (QI) General Physics—Science and Engineering I 4
MATH 1220 (QL) Calculus II 4
College of Science sequence requirement 4
University Studies Breadth course 3

Spring Semester (15 credits)
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II 4
MATH 2210 (QI) Multivariable Calculus 3
College of Science sequence requirement 4
University Studies Breadth course 3
Elective course 1

Sophomore Year (30 credits)
Fall Semester (15 credits)
PHYS 2500 Introduction to Computer Methods in Physics 2
PHYS 2710 Introductory Modern Physics 3
MATH 2250 (QI) Linear Algebra and Differential Equations 4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
University Studies Breadth course 3

Spring Semester (15 credits)
PHYS 3710 Intermediate Modern Physics 3
PHYS 3750 Foundations of Wave Phenomena 3
University Studies Breadth courses 6
Elective course(s) 3

Junior Year (30 credits)
Fall Semester (15 credits)
PHYS 3550 Intermediate Classical Mechanics 3
PHYS 3870 (CI) Intermediate Laboratory I 2
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
University Studies Breadth course 3
University Studies Depth course 3
Elective course 1

Spring Semester (15 credits)
PHYS 3600 Intermediate Electromagnetism 3
PHYS 3700 Thermal Physics 3
PHYS 3880 (CI) Intermediate Laboratory II 2
University Studies Depth course 3
Elective course(s) 4

Senior Year (30 credits)
Fall Semester (15 credits)
PHYS 4650 Optics I 3
PHYS 4700 Quantum Mechanics I 3
PHYS 4900 (CI) Research in Physics 2
Elective courses 7

Spring Semester (15 credits)
PHYS 4600 Advanced Electromagnetism 3
PHYS 4710 Quantum Mechanics II 3
PHYS 4900 (CI) Research in Physics 2
Elective courses 7

Suggested Four-year Course of Study for Bachelor of Science Degree in Physics with Applied Emphasis

The suggested schedule shown below should be used in conjunction with the major requirement sheet. Students should consult with their advisor to develop an individualized plan of study that is applicable to their interests and degree track.

Prior to enrolling in MATH 1220 (Calculus II), students must have completed MATH 1210 (Calculus I) with a grade of *C-* or better, ***or*** must have received an AP score of *at least 4* on the Calculus AB exam **or** *at least 3* on the Calculus BC exam.

Freshman Year (30 credits)
Fall Semester (15 credits)
PHYS 2210 (QI) General Physics—Science and Engineering I 4
MATH 1220 (QL) Calculus II 4
University Studies Breadth courses 6
Elective course 1

Spring Semester (15 credits)
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II 4
MATH 2210 (QI) Multivariable Calculus 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
University Studies Breadth course 3
Elective course(s) 2

Sophomore Year (30 credits)
Fall Semester (14 credits)
PHYS 2500 Introduction to Computer Methods in Physics 2
PHYS 2710 Introductory Modern Physics 3
MATH 2250 (QI) Linear Algebra and Differential Equations 4
College of Science sequence requirement 4
Elective course 1

Spring Semester (16 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
College of Science sequence requirement 4
University Studies Breadth courses 6
Elective course(s) 3

Junior Year (30 credits)
Fall Semester (15 credits)
PHYS 3870 (CI) Intermediate Laboratory I 2
PHYS 3550 Intermediate Classical Mechanics 3
University Studies Breadth course 3
Elective technical course at 3000-level or higher 3
Elective course(s) 4

Spring Semester (15 credits)
PHYS 3600 Intermediate Electromagnetism 3
PHYS 3880 (CI) Intermediate Laboratory II 2
Elective technical course at 3000-level or higher 3
University Studies Depth course 3
Elective course(s) 4

Senior Year (30 credits)
Fall Semester (15 credits)
PHYS 4650 Optics I 3
Elective technical course 3
University Studies Depth course 3
Elective courses 6

Spring Semester (15 credits)
PHYS 3700 Thermal Physics 3
PHYS 4900 (CI) Research in Physics 2
Elective technical course 3
Elective courses 7

Minor in Physics

Majors in other departments may obtain a minor in physics by successfully completing the following courses:
PHYS 2210 (QI) General Physics–Science and Engineering I (4 cr) **and**
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II (4 cr) 8
Or
PHYS 2110 The Physics of Living Systems I (4 cr) **and**
PHYS 2120 (BPS) The Physics of Living Systems II (4 cr) 8
(PHYS 2210 and 2220 are preferred.)

To obtain a physics minor, students must also select 10 additional credits from PHYS courses at the 2500 level and above (*not* to include PHYS courses designated as USU Depth courses). Note that MATH 1100 or 1210 is a prerequisite for PHYS 2110, MATH 1210 is a prerequisite for PHYS 2210, and MATH 1220 is a prerequisite for PHYS 2710.

Bachelor of Science in Physics Teaching

In addition to the College of Science requirements, courses required for the Bachelor of Science in Physics Teaching include the following:

MATH 1210 (QL) Calculus I (F,Sp,Su) 4
MATH 1220 (QL) Calculus II (F,Sp,Su) 4
MATH 2250 (QI) Linear Algebra and Differential Equations (F,Sp,Su) 4
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su) 3

PHYS 2210 (QI) General Physics—Science and Engineering I (4 cr) **and**
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II (4 cr) 8
Or (PHYS 2210, 2220 preferred; **or** PHYS 2110, 2120)
PHYS 2110 The Physics of Living Systems I (4 cr) **and**
PHYS 2120 (BPS) The Physics of Living Systems II (4 cr) 8

PHYS 1040 (BPS) Introductory Astronomy 3
PHYS 2500 Introduction to Computer Methods in Physics 2
PHYS 2710 Introductory Modern Physics 3
PHYS 3710 Intermediate Modern Physics 3
PHYS 3870 (CI) Intermediate Laboratory I 2
In addition, student must select 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). Admission to the STEP with this major requires a minimum GPA of 2.75 in either PHYS 2110 and 2120 **or** PHYS 2210 and 2220, in addition to Department of Secondary Education requirements.

Note: Beginning in 2006, all USU teacher education candidates will be required to take and pass the content exam approved by the Utah State Office of Education in their major content area prior to student teaching.

Suggested Four-year Course of Study for Bachelor of Science Degree in Physics Teaching

The suggested schedule shown below should be used in conjunction with the major requirement sheet. Students should consult with their advisor to develop an individualized plan of study that is applicable to their interests and degree track.

Prior to enrolling in MATH 1220 (Calculus II), students must have completed MATH 1210 (Calculus I) with a grade of *C-* or better, ***or*** must have received an AP score of *at least 4* on the Calculus AB exam **or** *at least 3* on the Calculus BC exam.

Freshman Year (30 credits)
Fall Semester (15 credits)
PHYS 2210 (QI) General Physics—Science and Engineering I 4
MATH 1220 (QL) Calculus II 4
General Science sequence requirement 4
University Studies Breadth course 3

Spring Semester (15 credits)
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II 4
MATH 2250 (QI) Linear Algebra and Differential Equations 4
General Science sequence requirement 4
University Studies Breadth course 3

Sophomore Year (33 credits)
Fall Semester (17 credits)
PHYS 1040 (BPS) Introductory Astronomy 3
PHYS 2500 Introduction to Computer Methods in Physics 2
PHYS 2710 Introductory Modern Physics 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
STAT 3000 (QI) Statistics for Scientists 3
University Studies Breadth course 3

Spring Semester (16 credits)
PHYS 3710 Intermediate Modern Physics 3
General Science requirement 4
University Studies Breadth courses 6
University Studies Depth course 3
Apply for STEP (Secondary Teacher Education Program)

Junior Year (31 credits)
Fall Semester (15 credits)
PHYS 3870 (CI) Intermediate Laboratory I 2
PHYS elective course at 3000-level or higher 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
General Science requirement 4
University Studies Breadth course 3

Spring Semester (16 credits)
PHYS elective course at 3000-level or higher 2
University Studies Breadth course 3
STEP Level 1 courses 11

Senior Year (29 credits)
Fall Semester (17 credits)
SCI 4300 Science in Society 2
University Studies Depth course 3
STEP Level 2 courses 12

Spring Semester (12 credits)
STEP Level 3 Student Teaching 12

Bachelor of Science Degree in Composite Teaching—Physical Science (91-92 credits)
Courses required for the Bachelor of Science in Composite Teaching—Physical Science include the following:
MATH 1210 (QL) Calculus I (F,Sp,Su) 4
MATH 1220 (QL) Calculus II (F,Sp,Su) 4
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su) 3

PHYS 2210 (QI) General Physics—Science and Engineering I (4 cr) **and**
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II (4 cr) 8
Or
PHYS 2110 The Physics of Living Systems I (4 cr) **and**
PHYS 2120 (BPS) The Physics of Living Systems II (4 cr) 8
(PHYS 2210 and 2220 are preferred.)

PHYS 1040 (BPS) Introductory Astronomy 3
PHYS 1080 (BPS) Intelligent Life in the Universe (sometimes listed as USU 1360, ST: Intelligent Life in the Universe) (3 cr) **or**
PHYS 3030 (QI) The Universe (3 cr) 3
Courses in Physics from PHYS courses at the 2500 level and above (including USU Depth courses) 5
CHEM 1210 Principles of Chemistry I (F,Sp) 4
CHEM 1215 Chemical Principles Laboratory I (F,Sp) 1
CHEM 1220 (BPS) Principles of Chemistry II (F,Sp,Su) 4
CHEM 1225 Chemical Principles Laboratory II (F,Sp) 1
CHEM 2300 Principles of Organic Chemistry (F) (3 cr) **or**
CHEM 2310 Organic Chemistry I (F) (4 cr) ..... 3 or 4
CHEM 2315 Organic Chemistry Laboratory I (F) 1

BIOL 1010 (BLS) Biology and the Citizen (F,Sp,Su).....3
GEO 1110 (BPS) The Dynamic Earth: Physical Geology (F,Sp).....4
BMET 2000 (BPS) The Atmosphere and Weather (F,Sp).....3
SCI 4300 Science in Society (F,Sp).....2
Students seeking this degree must complete the requirements for the Secondary Teacher Education Program (STEP). Admission to the STEP with this major requires a minimum GPA of 2.75 in either PHYS 2110 and 2120 **or** PHYS 2210 and 2220, in addition to Department of Secondary Education requirements.

Students who may wish to teach Integrated Science at the middle or junior high school level should talk to their advisor about completing the courses necessary for an Integrated Science endorsement.

Note: Beginning in 2006, all USU teacher education candidates will be required to take and pass the content exam approved by the Utah State Office of Education in their major content area prior to student teaching.

Suggested Four-year Course of Study for Bachelor of Science Degree in Composite Teaching—Physical Science

The suggested schedule shown below should be used in conjunction with the major requirement sheet. Students should consult with their advisor to develop an individualized plan of study that is applicable to their interests and degree track.

Prior to enrolling in MATH 1220 (Calculus II), students must have completed MATH 1210 (Calculus I) with a grade of *C-* or better, ***or*** must have received an AP score of *at least 4* on the Calculus AB exam **or** *at least 3* on the Calculus BC exam.

Freshman Year (31 credits)

Fall Semester (15 credits)
PHYS 2210 (QI) General Physics—Science and Engineering I.....4
MATH 1220 (QL) Calculus II.....4
PHYS 1080/USU 1360 (BPS) Intelligent Life in the Universe.....3
University Studies Breadth course.....3
Elective course.....1

Spring Semester (16 credits)
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II.....4
STAT 3000 (QI) Statistics for Scientists.....3
BIOL 1010 (BLS) Biology and the Citizen.....3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose.....3
University Studies Breadth course.....3

Sophomore Year (32 credits)

Fall Semester (18 credits)
PHYS 1040 (BPS) Introductory Astronomy.....3
GEO 1110 (BPS) The Dynamic Earth: Physical Geology.....4
BMET 2000 (BPS) The Atmosphere and Weather.....3
CHEM 1210 Principles of Chemistry I.....4
CHEM 1215 Chemical Principles Laboratory I.....1
University Studies Breadth course.....3

Spring Semester (14 credits)
CHEM 1220 (BPS) Principles of Chemistry II.....4
CHEM 1225 Chemical Principles Laboratory II.....1
ENGL 1010 (CL1) Introduction to Writing: Academic Prose.....3
PHYS elective course at 2500-level or higher.....3
University Studies Breadth course.....3
Apply for STEP (Secondary Teacher Education Program)

Junior Year (31-33 credits)

Fall Semester (15-17 credits)
CHEM 2300 Principles of Organic Chemistry (3 cr) **or**
CHEM 2310 Organic Chemistry I (4 cr).....3 or 4
CHEM 2315 Organic Chemistry Laboratory I.....1
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode.....3
University Studies Breadth course.....3
University Studies Depth course.....3
PHYS elective course at 2500-level or higher.....2-3

Spring Semester (16 credits)
SCI 4300 Science in Society.....2
University Studies Depth course.....3
STEP Level I courses.....11

Senior Year (24 credits)

Fall Semester (12 credits)
STEP Level 2 courses.....12

Spring Semester (12 credits)
STEP Level 3 Student Teaching.....12

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 the following courses:
PHYS 1000 (BPS) Introductory Astronomy.....3

PHYS 2210 (QI) General Physics—Science and Engineering I (4 cr) **and**
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II (4 cr).....8
Or
PHYS 2110 The Physics of Living Systems I (4 cr) **and**
PHYS 2120 (BPS) The Physics of Living Systems II (4 cr).....8
(PHYS 2210 and 2220 are preferred.)

Courses in Physics chosen from PHYS 2500 and/or courses above the 3000 level (including USU Depth courses).....6

SCI 4300 Science in Society (F,Sp) (2 cr) **or**
Science course (not including Physics) not required by the major, if SCI 4300 is required by the student's major.....2

Note: MATH 1100 or 1210 is a prerequisite for PHYS 2110, MATH 1210 is a prerequisite for PHYS 2210, and MATH 1220 is a prerequisite for PHYS 2710.

In addition, the Teaching Minor in Physics requires completion of the Secondary Teacher Education Program (STEP). Admission to the STEP with this major requires a minimum GPA of 2.75 in either PHYS 2110 and 2120, **or** PHYS 2210 and 2220, in addition to Department of Secondary Education requirements.

Secondary Teacher Education Program (STEP) (35 credits)

Level 1 (11 credits)
SCED 3100 Motivation and Classroom Management (F,Sp).....3
SCED 3210 (CI/DSS) Educational and Multicultural Foundations (F,Sp).....3
SCED 3300 Clinical Experience I (40 hours minimum) (F,Sp).....1
SCED 3400* Teaching Science I (F,Sp).....3
INST 3500 Technology Tools for Secondary Teachers (F,Sp,Su).....1

Level 2 (12 credits)
SCED 4200 (CI) Reading, Writing, and Technology (F,Sp) 3
SCED 4210 Cognition and Evaluation of Student Learning (F,Sp) 3
SCED 4300 Clinical Experience II (40 hours minimum) (F,Sp) 1
SCED 4400* Teaching Science II (F,Sp) 3
SPED 4000 Education of Exceptional Individuals
(may be taken at any time) (F,Sp,Su).....2

Level 3 (12 credits)
SCED 5500 Student Teaching Seminar (2 weeks) (F,Sp) 2
SCED 5630 Student Teaching in Secondary Schools
(13 weeks, full-time) (F,Sp).....10

*Science methods courses (SCED 3400 and 4400) may only be taught once per year. Therefore, students should take whichever one is taught during the term they are in Level 1 or Level 2.

Undergraduate Research Opportunities

The Physics Department at Utah State University has a long record of successfully involving its undergraduate students in research and extracurricular scholarly activities. Learning what science is requires more than just doing homework and taking exams; it requires getting involved in the pursuit of knowledge that is not yet in any textbook. Undergraduates can take PHYS 4900 (Research in Physics) for academic credit. However, many students participate in research activities without credit, because they enjoy being immersed in the act of discovery. Having a meaningful research experience and working closely with faculty are useful for applying for employment, admission to graduate schools, and applying for competitive scholarships. For more information, contact David Peak at david.peak@usu.edu, or visit the following website:
http://www.physics.usu.edu/research/undergrad.html

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. Minimum GPA requirements for participation in departmental honors vary by department, but usually fall within the range of 3.30-3.50. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level. The campus-wide Honors Program, which is open to all qualified students regardless of major, offers a rich array of cultural and social activities, special classes, and the benefit of Honors early registration. Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@cc.usu.edu. Additional information can be found online at: **http://www.usu.edu/honors/**

Learning Objectives

The Physics Department has the following learning objectives. While many of these objectives are applicable to all six departmental programs, some apply only to specific programs. To see which program(s) includes each learning objective, see the footnotes which follow.

1. Capable communication, written and oral[1,2,3,4,5,6]
2. Skepticism[1,2,3,4,5,6]
3. Ability in critical thinking and problem solving[1,2,3,4,5,6]
4. Knowledge of physics subjects to an advanced undergraduate level[1,2,3,4,5,6]
5. Wide knowledge of physics subjects to an advanced undergraduate level[2,3]
6. Knowledge of focused applied areas of study to the undergraduate level[4]
7. Experience in experimental physics[1,2,3,4,5,6]
8. Experience in physics research[1,2,3,4,5,6]
9. Knowledge of computer methods in physics[1,2,3,4,5,6]
10. Knowledge of broadening subjects[1,2,3,4,5,6]
11. Knowledge of mathematics to undergraduate calculus level[1,2,3,4,5,6]
12. Knowledge of mathematics to undergraduate differential equations level[1,2,3,4,5]
13. Knowledge of statistics to undergraduate level[5,6]
14. Knowledge of philosophy of science to the undergraduate level[1]
15. Knowledge of a foreign language to the undergraduate level[1]

Programs:
The footnotes following each of the preceding learning objectives indicate which program(s) include that objective. The six undergraduate programs are as follows:

[1]BA degree in physics
[2]BS degree in physics
[3]BS degree in physics with professional emphasis
[4]BS degree in physics with applied emphasis
[5]BS degree in physics teaching
[6]BS degree in composite teaching

Assessment

The Physics Department supports an ongoing program of assessment based upon input from students, alumni, colleagues, professional organizations, etc. For details, see:
http://www.physics.usu.edu/assessment/assessment.htm

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 Microgravity Research Team (MRT) scholarships for students interested in designing and constructing experiments to be flown in space and in participating in other MRT activities. Inquiries should be made with the Physics advisor in SER 250.

Additional Information

Information concerning degree programs, recommended schedules of courses, career opportunities, and opportunities to participate in the Microgravity Research Team (MRT) 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/**

Major requirement sheets, which provide details of undergraduate programs in physics, can be obtained from the department, or online at: **http://www.usu.edu/majorsheets/**

Graduate Programs

Admission Requirements

In addition to the general requirements for admission established by the School of Graduate Studies (see pages 101-102), 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*, pages 462-463.)

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 PHYS 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 classwork, 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 classwork from the following courses:

PHYS 4600 Advanced Electromagnetism 3
PHYS 6240 Space Environment and Engineering 3
PHYS 6310 Solar-terrestrial Physics I 3
PHYS 6320 Solar-terrestrial Physics II 3
PHYS 6330 Plasma Physics I 3
PHYS 6340 Plasma Physics II 3
PHYS 7210 Spacecraft Instrumentation (Sp) 3
PHYS 7500 Advanced Topics in Physics (Topic) 3

Three to six 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:

PHYS 5340 Methods of Theoretical Physics I 3
PHYS 5350 Methods of Theoretical Physics II 3
PHYS 6010 Classical Mechanics I 3
PHYS 6110 Electrodynamics I 3
PHYS 6210 Quantum Mechanics I 3
PHYS 6410 Statistical Mechanics I 3
One State of Matter course 3
Two courses in Advanced Topics 6

The State of Matter requirement can be fulfilled by taking any one of PHYS 6330 (Plasma Physics I), 6530 (Solid State Physics I), or 6930 (Quantum Field Theory I). These courses must be completed no more than one year after PhD qualification. Each student is required to pass PHYS 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 in 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/photonic materials involving group III-V elements using a commericial, 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.

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 100).

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 this may require additional postdoctoral research experience).

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
Robert W. Schunk, space plasma physics
Jan J. Sojka, atmospheric and space physics
Michael J. Taylor, atmospheric and space physics
Charles G. Torre, mathematical and gravitational physics
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. Bialkowski, nonlinear optics and laser spectroscopy
Yeaton H. Clifton, mathematical physics
Raymond DeVito, medical physics
Leonard F. Hall, structure forming systems
Allen Q. Howard, electromagnetic theory
R. Gilbert Moore, space physics
David Rees, atmospheric physics
Ray W. Russell, astronomy
Neal D. Shinn, surface interface physics
John R. Tucker, device physics and superconductivity

Professors Emeritus
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
W. John Raitt, space plasma physics
John K. Wood, spectroscopy

Associate Professors
Eric D. Held, plasma physics
D. Mark Riffe, surface physics
Tsung-Cheng Shen, surface physics, nanotechnology
James T. Wheeler, mathematical physics, field theory

Research Associate Professors
Abdallah R. Barakat, space plasma physics
Howard G. Demars, space physics
Timothy E. Doyle, random and disordered systems
J. Steven Hansen, image processing
Ajay Singh, plasma physics
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
Jill A. Marshall, physics education
David J. Vieira, nuclear physics
Vladimir Zavyalov, condensed matter physics

Associate Professor Emeritus
Robert E. McAdams, nuclear physics

Assistant Professor
Haeyeon Yang, surface physics, nanotechnology

Adjunct Assistant Professor
Jeremy R. King, astrophysics

Lecturer
Tonya B. Triplett, physics education

Course Descriptions

Physics (PHYS), pages 691-694

Department of Plants, Soils, and Biometeorology

Department Head: Larry A. Rupp
Location: Agricultural Science 322C
Phone: (435) 797-2233
FAX: (435) 797-3376
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, donnam@ext.usu.edu

Graduate Program Coordinator:
Paul G. Johnson, Agricultural Science 306, (435) 797-7039, paul.johnson@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

Graduate specializations: *Biometeorology MS, PhD*—Agricultural Meteorology, Climatology, Micrometeorology, Remote Sensing, Turbulence in Plant Canopies; *Plant Science MS, PhD*—Crop Physiology, Crop Production and Management, Molecular Biology, Plant Breeding and Cytology, Plant Biotechnology and Tissue Culture, Plant Nutrition, Space Biology, Weed Science; *Soil Science MS, PhD*—Molecular Biology, 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, Soils and Irrigation; *Master of Professional Studies in Horticulture (MPSH)*—Water Efficient Landscaping

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 16-20) 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, or Soil Classifier 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. This certification is granted *in addition* to the bachelor's degree.

Applied Ornamental Horticulture Certificates and AAS Degree

This program provides practical training in greenhouse and nursery management, turf production, and landscape management. 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

Crop Science Major Core Courses (30 credits)

All Crop Science majors must complete the following courses:

BIOL 1610 Biology I (F)....4
BIOL 1620 (BLS) Biology II (Sp)....4
BIOL 4400 (QI) Plant Physiology (F)....4
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp)....3
MATH 1050 (QL) College Algebra (F,Sp,Su)....4
PHYS 1100 (BPS) Great Ideas in Physics....3
PSB 1050 Plants, Soils, and Biometeorology Orientation (F)....1
PSB 4890 (CI) Senior Seminar (F,Sp) (take one credit per semester)....2
SOIL 3000 Fundamentals of Soil Science (F,Sp)....4

In addition to the courses listed above, students must complete the course requirements for *either* Emphasis A (Agronomy) *or* B (Research/Biotechnology).

A. Agronomy Emphasis (56 credits)

Students must complete *all* of the following courses for the Agronomy Emphasis (9 credits).

CHEM 1110 (BPS) General Chemistry I (F,Sp)....4
CHEM 1115 General Chemistry Laboratory (Sp)....1
CHEM 1120 (BPS) General Chemistry II (Sp)....4

Additional Crop-related Courses:

Students must complete at least 36 credits chosen from the following crop-related courses, including all courses identified with an asterisk (*):

BIOL 3060 (QI) Principles of Genetics (F,Sp,Su)....4
BIOL 4410 Plant Structure (Sp)....3
BIOL 4500* Applied Entomology (Sp)....3
BIOL 5410* Introduction to Plant Pathology (Sp)....4
PLSC 2650 Identification and Selection of Plants in Production Agriculture (F)....1
PLSC 3500 The Structure and Function of Economic Crop Plants (Sp)....3
PLSC 3700 Plant Propagation (F)....4
PLSC 3800 Turfgrass Management (F)....3
PLSC 4280 Field Crops (F, odd years)....3
PLSC 4320 Forage Production and Pasture Ecology (F)....3
PLSC 4600 (QI) Cereal Science (Sp, even years)....3
PLSC 5200 Crop Physiology (Sp)....2
PLSC 5210 Crop Physiology Laboratory (Sp)....1
PLSC 5550* Weed Biology and Control (F)....4
PLSC 5700 Principles of Plant Breeding (Sp, odd years)....3
PLSC 5750 Crop Biotechnology (Sp)....2
PSB 4250 Internship in Plants, Soils, and/or Biometeorology (F,Sp,Su)....1-4
PSB 5200 Site-Specific Agriculture and Landscape/Horticultural Management (Sp, half semester)....3

Additional Soils-related Courses:

Students must complete at least 11 credits chosen from the following soils-related courses:

SOIL 4000 Soil and Water Conservation (F)....4
SOIL 4700 Irrigated Soils (Sp, half semester)....3
SOIL 5050 Principles of Environmental Soil Chemistry (Sp odd)....3
SOIL 5130 Soil Genesis, Morphology, and Classification (F even)....4
SOIL 5310 Soil Microbiology (F, even years)....3
SOIL 5320 Soil Microbiology Laboratory (F, even years)....2
SOIL 5550 (QI) Soils and Plant Nutrient Bioavailability (Sp)....3
SOIL 5560 Analytical Techniques for the Soil Environment (Sp)....2
SOIL 5650 Environmental Soil Physics (F)....3

B. Research/Biotechnology Emphasis (58 credits)

Students must complete *all* of the following courses for the Research/Biotechnology Emphasis (38 credits).

BIOL 3060 (QI) Principles of Genetics (F,Sp,Su)....4
CHEM 1210 Principles of Chemistry I (F,Sp)....4
CHEM 1215 Chemical Principles Laboratory I (F,Sp)....1
CHEM 1220 (BPS) Principles of Chemistry II (F,Sp,Su)....4

CHEM 1225 Chemical Principles Laboratory II (F,Sp) 1
CHEM 2310 Organic Chemistry I (F) 4
CHEM 2315 Organic Chemistry Laboratory I (F,Sp) 1
CHEM 2320 Organic Chemistry II (Sp) 4
CHEM 2325 Organic Chemistry Laboratory II (Sp, blocks 1 & 2) 1
CHEM 3700 Introductory Biochemistry (Sp) 3
CHEM 3710 Introductory Biochemistry Laboratory (Sp) 1
MATH 1060 Trigonometry (F,Sp,Su) 2
PLSC 5200 Crop Physiology (Sp) 2
PLSC 5210 Crop Physiology Laboratory (Sp) 1
PLSC 5750 Crop Biotechnology (Sp) 2
SOIL 5550 (QI) Soils and Plant Nutrient Bioavailability (Sp) 3

Additional Crop-related Courses:
Students must complete at least 18 credits chosen from the following crop-related courses:
PLSC 2650 Identification and Selection of Plants in Production Agriculture (F) 1
PLSC 3700 Plant Propagation (F) 4
PLSC 4280 Field Crops (F odd) 3
PLSC 4300 World Food Crops and Cropping Systems: The Plants That Feed Us (F even) 3
PLSC 4320 Forage Production and Pasture Ecology (F) 3
PLSC 4600 (QI) Cereal Science (Sp, even years) 3
PLSC 5430 Plant Nutrition (F odd) 2
PLSC 5440 Plant Molecular, Cellular, and Developmental Biology I (Sp) 3
PLSC 5450 Plant Molecular, Cellular, and Developmental Biology II (Sp) 3
PLSC 5550 Weed Biology and Control (F) 4
PLSC 5600 Plant Water Relations (F) 2
PLSC 5700 Principles of Plant Breeding (Sp, odd years) 3
PSB 5160 Methods in Biotechnology: Cell Culture (Sp) 3
PSB 5240 Methods in Biotechnology: Protein Purification Techniques (Sp) 3
PSB 5260 Methods in Biotechnology: Molecular Cloning (F) 3
SOIL 5560 Analytical Techniques for the Soil Environment (Sp) 2
STAT 2000 (QI) Statistical Methods (F,Sp) (3 cr) **or**
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su) (3 cr) 3

The following courses are also recommended:
BIOL 4410 Plant Structure (Sp) 3
BIOL 4500 Applied Entomology (Sp) 3
BIOL 5210 Cell Biology (F) 3
BIOL 5230 Developmental Biology (Sp) 3
BIOL 5410 Introduction to Plant Pathology (Sp) 4
MATH 1210 (QL) Calculus I (F,Sp,Su) 4
PHYS 2110 The Physics of Living Systems I 4
PLSC 5440 Plant Molecular, Cellular, and Developmental Biology I (Sp) 3
PLSC 5450 Plant Molecular, Cellular, and Developmental Biology II (Sp) 3

Sample Curriculum for Crop Science Major—Agronomy Emphasis

The sample curriculum shows most lower-division courses selected freshman and sophomore years, and most upper-division courses selected junior and senior years.

Freshman Year (30 credits)

Fall Semester (15 credits)
BIOL 1610[1] Biology I 4
MATH 1050 (QL)[1] College Algebra 4
PSB 1050[1] Plants, Soils, and Biometeorology Orientation 1
CHEM 1110 (BPS)[2] General Chemistry I 4
Elective course(s)[6] 2

Spring Semester (15 credits)
BIOL 1620 (BLS)[1] Biology II 4
CHEM 1120 (BPS)[2] General Chemistry II 4
CHEM 1115[2] General Chemistry Laboratory 1
ECON 1500 (BAI)[1] Introduction to Economic Institutions, History, and Principles 3
PSB 2040[6] Introduction to Biotechnology 1
Elective course(s)[6] 2

Sophomore Year (28 credits)

Fall Semester (16 credits)
PLSC 4280[3] Field Crops 3
PLSC 4320[3] Forage Production and Pasture Ecology 3
USU 1320 (BHU) Civilization: Humanities 3
USU 1330 (BCA) Civilization: Creative Arts 3
ENGL 2010 (CL2)[5] Intermediate Writing: Research Writing in a Persuasive Mode 3
PLSC 2650[3] Identification and Selection of Plants in Production Agriculture 1

Spring Semester (12 credits)
PLSC 3500[3] The Structure and Function of Economic Crop Plants 3
PHYS 1100 (BPS) Great Ideas in Physics 3
BIS 2100 Principles of Management Information Systems (F,Sp,Su) 3
BIOL 4500[7] Applied Entomology 3

Junior Year (31 credits)

Fall Semester (15 credits)
BIOL 3060 (QI)[3] Principles of Genetics 4
SOIL 3000[1] Fundamentals of Soil Science 4
HIST 3850 (DHA/CI)[5] History of Utah 3
Elective course(s)[6] 4

Spring Semester (16 credits)
BIOL 5410[7] Introduction to Plant Pathology 4
PLSC 4600 (QI)[3] Cereal Science (taught even years *only*) 3
PLSC 5700[3] Principles of Plant Breeding (taught odd years *only*) 3
SOIL 4700[4] Irrigated Soils (half semester) 3
STAT 3000 (QI)[6] Statistics for Scientists 3

Senior Year (30 credits)

Fall Semester (15 credits)
BIOL 4400 (QI)[1] Plant Physiology 4
PLSC 5550[7] Weed Biology and Control 4
PSB 4250[3] Internship in Plants, Soils, and/or Biometeorology 2
PSB 4890 (CI)[1] Senior Seminar 1
SOIL 4000[4] Soil and Water Conservation 4

Spring Semester (15 credits)
BIOL 4410[3] Plant Structure 3
PLSC 5200[3] Crop Physiology 2
PLSC 5210[3] Crop Physiology Laboratory 1
SOIL 5550 (QI)[4] Soils and Plant Nutrient Bioavailability 3
SOIL 5560[4] Analytical Techniques for the Soil Environment 2
Elective course(s)[6] 4

Sample Curriculum for Crop Science Major—Research/Biotechnology Emphasis

The sample curriculum shows most lower-division courses selected freshman and sophomore years, and most upper-division courses selected junior and senior years.

Freshman Year (28 credits)
Fall Semester (15 credits)
BIOL 1610[1] Biology I 4
MATH 1050 (QL)[1] College Algebra 4
PSB 1050[1] Plants, Soils, and Biometeorology Orientation 1
CHEM 1210[8] Principles of Chemistry I 4
CHEM 1215[8] Chemical Principles Laboratory I 1
Elective course(s)[11] 1

Spring Semester (13 credits)
BIOL 1620 (BLS)[1] Biology II 4
CHEM 1220 (BPS)[8] Principles of Chemistry II 4
CHEM 1225[8] Chemical Principles Laboratory II 1
ECON 1500 (BAI)[1] Introduction to Economic Institutions, History, and Principles 3
PSB 2040[11] Introduction to Biotechnology 1

Sophomore Year (30 credits)
Fall Semester (15 credits)
CHEM 2310[8] Organic Chemistry I 4
CHEM 2315[8] Organic Chemistry Laboratory I 1
USU 1320 (BHU) Civilization: Humanities 3
USU 1330 (BCA) Civilization: Creative Arts 3
ENGL 2010 (CL2)[5] Intermediate Writing: Research Writing in a Persuasive Mode 3
PLSC 2650[9] Identification and Selection of Plants in Production Agriculture 1

Spring Semester (15 credits)
CHEM 2320[8] Organic Chemistry II 4
CHEM 2325[8] Organic Chemistry Laboratory II (blocks 1 & 2) 1
PHYS 1100 (BPS)[1] Great Ideas in Physics 3
BUS 3100 (DSS)[5] Survey of Management Information Systems 3
MATH 1210 (QL)[10] Calculus I 4

Junior Year (28 credits)
Fall Semester (15 credits)
BIOL 3060 (QI)[8] Principles of Genetics 4
SOIL 3000[1] Fundamentals of Soil Science 4
PLSC 3700[9] Plant Propagation 4
HIST 3850 (DHA/CI)[5] History of Utah 3

Spring Semester (13 credits)
CHEM 3700[8] Introductory Biochemistry 3
CHEM 3710[8] Introductory Biochemistry Laboratory 1
PLSC 4600 (QI)[9] Cereal Science (taught even years *only*) 3
STAT 3000 (QI)[11] Statistics for Scientists 3
Elective course(s)[11] 3

Senior Year (32 credits)
Fall Semester (15 credits)
BIOL 4400 (QI)[1] Plant Physiology 4
BIOL 5210[10] Cell Biology 3
PLSC 5550[9] Weed Biology and Control 4
PSB 4890 (CI)[1] Senior Seminar 1
Elective course(s)[11] 3

Spring Semester (17 credits)
BIOL 5230[10] Developmental Biology 3
PLSC 5200[8] Crop Physiology 2
PLSC 5210[8] Crop Physiology Laboratory 1
PLSC 5750[8] Crop Biotechnology 2
SOIL 5550 (QI)[8] Soils and Plant Nutrient Bioavailability 3
Elective course(s)[11] 5

[1]This course is required as part of the Crop Science Major Core.
[2]This course is required for the Agronomy Emphasis.
[3]This course is included in the Additional Crop-related Courses for the Agronomy Emphasis.
[4]This course is included in the Additional Soils-related Courses for the Agronomy Emphasis.
[5]This course is a restricted elective. Other courses may be used to satisfy this requirement.
[6]This course is an unrestricted elective.
[7]Students must complete at least 9 credits selected from these Agronomy Emphasis courses.
[8]This course is required for the Research/Biotechnology Emphasis.
[9]This course is included in the Additional Crop-related Courses for the Research/Biotechnology Emphasis.
[10]This course is a recommended elective for the Research/Biotechnology Emphasis.
[11]This course is an unrestricted elective. Some suggested courses are indicated.

ARCPACS Certification

For more information, students should refer to the American Society of Agronomy website at: **http://www.agronomy.org** *or* **http://www.agronomy.org/certification**

ARCPACS Requirements

Certified Professional Agronomist (84 credits)
Certified Professional Crop Scientist (84 credits)

Students wishing to obtain ARCPACS certification must satisfy the requirements for the Bachelor of Science degree, as well as complete any additional courses.

For **Certified Agronomist** or **Certified Weed Scientist**, take 9 credits chosen from the following courses. For **Certified Crop Scientist**, take 15 credits chosen from the following courses.
PLSC 3800 Turfgrass Management (F) 3
PLSC 4280 Field Crops (F) 3
PLSC 4320 Forage Production and Pasture Ecology (F) 3
PLSC 4600 (QI) Cereal Science (Sp, even years) 3
PLSC 5200 Crop Physiology (Sp) 2
PLSC 5210 Crop Physiology Laboratory (Sp) 1
PLSC 5700 Principles of Plant Breeding (Sp, odd years) 3

All ARCPACS categories (Agronomy, Crop Science, and Weed Science) require the following course:
SOIL 5550 (QI) Soils and Plant Nutrient Bioavailability (Sp) 3

For **Certified Agronomist**, take at least 6 credits from the following list:
SOIL 4000 Soil and Water Conservation (F) 4
SOIL 4700 Irrigated Soils (Sp, half semester) 3
SOIL 5050 Principles of Environmental Soil Chemistry (Sp) 3
SOIL 5130 Soil Genesis, Morphology, and Classification (F) 4

For **Certified Agronomist** or **Certified Crop Scientist**, take at least two of the following three courses:
BIOL 4500 Applied Entomology (Sp) 3
BIOL 5410 Introduction to Plant Pathology (Sp) 4
PLSC 5550 Weed Biology and Control (F) 4

For **Certified Agronomist** or **Certified Crop Scientist**, take *all* of these courses:
ASTE 3050 (CI) Technical and Professional Communication Principles in Agriculture (F,Sp) 3
SPCH 1020 (CI) Public Speaking (F,Sp) 3
CS 1030 (BPS) Foundations of Computer Science, and the Application of Computer Science to the Investigation of Physical Systems and Phenomena (F,Sp,Su) 3
ECON 2010 (BSS) Introduction to Microeconomics (F,Sp) 3

STAT 1040 (QL) Introduction to Statistics (F,Sp,Su) 3
CHEM 3650 Environmental Chemistry (Sp) 3

For **Certified Weed Scientist**, choose 9 credits from the above list. In addition, take at least 19 credits from the following, including the four courses identified with an asterisk (*):
BIOL 4410* Plant Structure (Sp) 3
BIOL 4420* Plant Taxonomy (Sp) 3
BIOL 4500 Applied Entomology (Sp) 3
BIOL 5410 Introduction to Plant Pathology (Sp) 4
PLSC 2200* Pest Management Principles and Practices (Sp) 3
PLSC 5550* Weed Biology and Control (F) 4

Horticulture Major

Students must complete the core courses and courses for one of the four emphases to fulfill the requirements for a Horticulture Degree.

Core Courses (23-26 credits)
CHEM 1110 (BPS) General Chemistry I (F,Sp) (4 cr) **or**
CHEM 1210 Principles of Chemistry I (F,Sp) (4 cr) 4
MATH 1050 (QL) College Algebra (F,Sp,Su) 4
OSS 1400 Microcomputer Applications (F,Sp,Su) 3
PLSC 2250 Occupational Experience in Agronomy and Horticulture (F,Sp,Su) (1-4 cr) **or**
PSB 4250 Internship in Plants, Soils, and/or Biometeorology (F,Sp,Su) (1-4 cr) 1-4
PLSC 2650 Identification and Selection of Plants in Production Agriculture (F) 1
PSB 1050 Plants, Soils, and Biometeorology Orientation (F) 1
PSB 4890 (CI) Senior Seminar (take one credit per semester) (F,Sp) .. 2
SOIL 3000 Fundamentals of Soil Science (F,Sp) 4
WILD 2200 (BLS) Ecology of Our Changing World (F,Sp) 3

A. Ornamental Horticulture Emphasis (49 credits minimum)

In addition to the Core Courses, select 40 credits from the following courses. Those marked with an asterisk (*) are required.
ASTE 3080 Compact Power Units for Agricultural and Turfgrass Applications (Sp) 3
BIOL 1610* Biology I (F) 4
BIOL 1620 (BLS)* Biology II (Sp) 4
BIOL 3060 (QI)* Principles of Genetics (F,Sp,Su) 4
PLSC 2100 (BLS) Introduction to Horticulture (F) 3
PLSC 2600* Annual and Perennial Plant Materials (F) 1.5
PLSC 2620* Woody Plant Materials: Trees and Shrubs for the Landscape (F) 3
PLSC 3050 Greenhouse Management and Crop Production (Sp) 4
PLSC 3300 Residential Landscapes (Sp) 3
PLSC 3400 Landscape Management Principles and Practices (F) 3
PLSC 3700 Plant Propagation (F) 4
PLSC 3800 Turfgrass Management (F) 3
PLSC 4400* Modern Vegetable Production (F) 3
PLSC 4500* Fruit Production (Sp) 4
PLSC 4800 Professional Turfgrass Management (Sp, even years) 2
PSB 2800 Fundamentals of Organic Agriculture (Sp) 3
SOIL 5550 (QI)* Soils and Plant Nutrient Bioavailability (Sp) 3

Select two of the following courses:
BIOL 4500 Applied Entomology (Sp) 3
BIOL 5410 Introduction to Plant Pathology (Sp) 4
PLSC 5550 Weed Biology and Control (F) 4

Select two of the following courses:
BIOL 4400 (QI) Plant Physiology (F) 4
BIOL 4410 Plant Structure (Sp) 3
CHEM 1120 (BPS) General Chemistry II (Sp) 4
PLSC 3500 The Structure and Function of Economic Crop Plants (Sp) 3
PLSC 5200 Crop Physiology (Sp, half semester) 2
PLSC 5210 Crop Physiology Laboratory (Sp) 1

B. Landscape Maintenance and Construction Emphasis (47.5-48.5 credits)

In addition to the Core Courses, students must complete the following courses for the Landscape Maintenance and Construction Emphasis. All courses are required.
BIOL 1610 Biology I (F) 4
LAEP 1200 Basic Graphics in Landscape Architecture (F) 4
LAEP 2600 (QI) Landscape Construction I (F) 4
LAEP 3500 Planting Design (F) 2
LAEP 3610 Landscape Construction II (Sp) 4
PLSC 2200 Pest Management Principles and Practices (Sp) 3
PLSC 2600 Annual and Perennial Plant Materials (F) 1.5
PLSC 2620 Woody Plant Materials: Trees and Shrubs for the Landscape (F) 3
PLSC 3300 Residential Landscapes (Sp) 3
PLSC 3400 Landscape Management Principles and Practices (F) 3
PLSC 3500 The Structure and Function of Economic Crop Plants (Sp) 3
PLSC 3800 Turfgrass Management (F) 3
PLSC 4400 Modern Vegetable Production (F) (3 cr) **or**
PLSC 4500 Fruit Production (Sp) (4 cr) ..... 3 or 4
PLSC 5550 Weed Biology and Control (F) 4
SOIL 4700 Irrigated Soils (Sp, half semester) 3

The following courses are suggested as electives:
ASTE 3200 Irrigation Principles and Practices (Sp) 3
PLSC 2100 (BLS) Introduction to Horticulture (F) 3
PLSC 2610 Indoor Plants and Interiorscaping (F) 1.5
PLSC 3700 Plant Propagation (F) 4
PLSC 4800 Professional Turfgrass Management (Sp, even years) 2
PSB 5200 Site-Specific Agriculture and Landscape/Horticultural Management (Sp, half semester) 3
SOIL 5550 (QI) Soils and Plant Nutrient Bioavailability (Sp) 3

C. Turfgrass Management Emphasis (48-53 credits)

In addition to the Core Courses, students must complete the following courses for the Turfgrass Management Emphasis.
BIOL 1610 Biology I (F) 4
BIOL 1620 (BLS) Biology II (Sp) 4
BIOL 3060 (QI) Principles of Genetics (F,Sp,Su) 4
PLSC 2620 Woody Plant Materials: Trees and Shrubs for the Landscape (F) 3
PLSC 3400 Landscape Management Principles and Practices (F) 3
PLSC 3800 Turfgrass Management (F) 3
PLSC 4400 Modern Vegetable Production (F) (3 cr) **or**
PLSC 4500 Fruit Production (Sp) (4 cr) ..... 3 or 4
PLSC 4800 Professional Turfgrass Management (Sp, even years) 2

The following courses are suggested as electives. Select a minimum of two courses from each category:
Horticulture
ASTE 3080 Compact Power Units for Agricultural and Turfgrass Applications (Sp) 3
ASTE 3200 Irrigation Principles and Practices (Sp) 3
PLSC 2200 Pest Management Principles and Practices (Sp) 3
PLSC 3300 Residential Landscapes (Sp) 3
PLSC 3700 Plant Propagation (F) 4
PLSC 5100 Landscape Irrigation Management (Sp) 3
PLSC 5550 Weed Biology and Control (F) 4
SOIL 4700 Irrigated Soils (Sp, half semester) 3
WILD 5300 Wildlife Damage Management Principles (Sp) 3

Science
BIOL 2220 General Ecology (F,Sp) 3
BIOL 3040 Plants and Civilization (F) 3
BIOL 4400 (QI) Plant Physiology (F) 4
BIOL 4410 Plant Structure (Sp) 3
BIOL 4420 Plant Taxonomy (Sp) 3
BIOL 4500 Applied Entomology (Sp) 3
BIOL 5410 Introduction to Plant Pathology (Sp) 4
CHEM 1120 (BPS) General Chemistry II (Sp) 4
CHEM 1215 General Chemistry Laboratory (F,Sp) 1
PLSC 3500 The Structure and Function of Economic Crop Plants (Sp) 3
PLSC 5200 Crop Physiology (Sp) 2
PLSC 5210 Crop Physiology Laboratory (Sp) 1
PLSC 5430 Plant Nutrition (F odd) 2
SOIL 4000 Soil and Water Conservation (F) 4
SOIL 5550 (QI) Soils and Plant Nutrient Bioavailability (Sp) 3
STAT 2000 (QI) Statistical Methods (F,Sp) 3

Business
ACCT 2010 Survey of Accounting I (F,Sp,Su) 3
ASTE 3050 (CI) Technical and Professional Communication Principles in Agriculture (F,Sp) 3
BA 3500 Fundamentals of Marketing (F,Sp,Su) 3
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp) 3
MHR 2050 Legal and Ethical Environment of Business (F,Sp,Su) 3
MHR 3110 (DSS) Managing Organizations and People (F,Sp,Su) 3
MHR 3710 Developing Team and Interpersonal Skills (F,Sp) 3

D. Business Emphasis (48 credits)

In addition to the Core Courses, select 30 credits from the following courses. Those marked with an asterisk (*) are required.
BIOL 1610* Biology I (F) 4
PLSC 2100 (BLS) Introduction to Horticulture (F) 3
PLSC 2200* Pest Management Principles and Practices (Sp) 3
PLSC 2600 Annual and Perennial Plant Materials (F) 1.5
PLSC 2620 Woody Plant Materials: Trees and Shrubs for the Landscape (F) 3
PLSC 3050 Greenhouse Management and Crop Production (Sp) 4
PLSC 3300 Residential Landscapes (Sp) 3
PLSC 3400* Landscape Management Principles and Practices (F) 3
PLSC 3500* The Structure and Function of Economic Crop Plants (Sp) 3
PLSC 3700 Plant Propagation (F) 4
PLSC 3800 Turfgrass Management (F) 3
PLSC 4400* Modern Vegetable Production (F) 3
PLSC 4500* Fruit Production (Sp) 4
PLSC 5200 Crop Physiology (Sp) 2
PLSC 5210 Crop Physiology Laboratory (Sp) 1
PLSC 5550* Weed Biology and Control (F) 4
PSB 2800 Fundamentals of Organic Agriculture (Sp) 3
SOIL 4700 Irrigated Soils (Sp, half semester) 3
SOIL 5550 (QI)* Soils and Plant Nutrient Bioavailability (Sp) 3

The following courses are required for a Business Minor and the Business Emphasis:
ACCT 2010 Survey of Accounting I (F,Sp,Su) 3
BA 3460 Fundamentals of Personal Investing 3
BA 3500 Fundamentals of Marketing (F,Sp,Su) 3
MHR 2050 Legal and Ethical Environment of Business (F,Sp,Su) (3 cr) **or**
BUS 3100 (DSS) Survey of Management Information Systems (F,Sp,Su) (3 cr) 3
MHR 3110 (DSS) Managing Organizations and People (F,Sp,Su) 3

E. Science Emphasis (48 credits minimum)

In addition to the Core Courses, students must select 44 credits from the following courses for the Science Emphasis. Those marked with an asterisk (*) are required.
BIOL 1610* Biology I (F) 4
BIOL 1620 (BLS)* Biology II (Sp) 4
BIOL 3060 (QI)* Principles of Genetics (F,Sp,Su) 4
BIOL 4400 (QI)* Plant Physiology (F) 4
BIOL 4410 Plant Structure (Sp) 3
CHEM 1120 (BPS) General Chemistry II (Sp,Su) 4
CHEM 1215 Chemical Principles Laboratory I (F,Sp) 1
CHEM 1220 (BPS) Principles of Chemistry II (F,Sp,Su) 4
CHEM 1225 Chemical Principles Laboratory II (F,Sp) 1
CHEM 2310 Organic Chemistry I (F) 4
CHEM 2320 Organic Chemistry II (Sp) 4
CHEM 3700 Introductory Biochemistry (Sp) 3
CHEM 3710 Introductory Biochemistry Laboratory (Sp) 1
MATH 1060 Trigonometry (F,Sp,Su) 2
MATH 1100 (QL)* Calculus Techniques (F,Sp,Su) 3
PHYS 1200 (BPS) Introduction to Physics by Hands-on Exploration 4
PLSC 3700 Plant Propagation (F) 4
PLSC 4400* Modern Vegetable Production (F) 3
PLSC 4500* Fruit Production (Sp) 4
PLSC 5200* Crop Physiology (Sp) 2
PLSC 5210 Crop Physiology Laboratory (Sp) 1
PLSC 5430 Plant Nutrition (F odd) 2
PLSC 5440 Plant Molecular, Cellular, and Developmental Biology I (Sp) 3
PLSC 5450 Plant Molecular, Cellular, and Developmental Biology II (Sp) 3
PLSC 5600 Plant Water Relations (F) 2
PLSC 5760 Crop Ecology (Sp) 2
PSB 2800 Fundamentals of Organic Agriculture (Sp) 3
SOIL 3200 (DSC) Microbes in Environmental Action (Sp) 3
SOIL 5550 (QI)* Soils and Plant Nutrient Bioavailability (Sp) 3
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su) 3
Select any Ornamental Horticulture class* 3

Select one of the following:
BIOL 4500 Applied Entomology (Sp) 3
BIOL 5410 Introduction to Plant Pathology (Sp) 4
PLSC 5550 Weed Biology and Control (F) 4

Sample Curriculum for Horticulture Major—Ornamental Horticulture Emphasis

The sample curriculum shows most lower-division courses selected freshman and sophomore years, and most upper-division courses selected junior and senior years.

Freshman Year (29 credits)

Fall Semester (15 credits)
BIOL 1610[13] Biology I 4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
PLSC 2620[13] Woody Plant Materials: Trees and Shrubs for the Landscape 3
PLSC 2650[12] Identification and Selection of Plants in Production Agriculture 1
PSB 1050[12] Plants, Soils, and Biometeorology Orientation 1
Any USU elective course(s)[14] 3

Spring Semester (14 credits)
BIOL 1620 (BLS)[13] Biology II 4
MATH 1050 (QL)[12] College Algebra 4
OSS 1400[12] Microcomputer Applications 3
WILD 2200 (BLS)[12] Ecology of Our Changing World 3

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Sophomore Year (29.5 credits)
Fall Semester (15.5 credits)
CHEM 1110 (BPS)[12] General Chemistry I 4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
PLSC 2600[13] Annual and Perennial Plant Materials 1.5
Any Breadth American Institutions (BAI)/USU course, as required 3
Any emphasis elective course(s), as advised 4

Spring Semester (14 credits)
PLSC 4500[13] Fruit Production 4
SOIL 3000[12] Fundamentals of Soil Science 4
Any Breadth Social Sciences (BSS)/USU course, as required 3
Any emphasis elective course(s), as advised 3

Junior Year (31 credits)
Fall Semester (15 credits)
PLSC 4400[13] Modern Vegetable Production 3
Any Breadth Humanities (BHU)/USU course, as required 3
Any Depth Social Sciences (DSS) course 3
Any emphasis elective course(s), as advised 3
Any USU elective course(s)[14] 3

Spring Semester (16 credits)
SOIL 5550 (QI)[13] Soils and Plant Nutrient Bioavailability 3
Any USU elective courses[14] 6
Any emphasis elective courses, as advised 7

Senior Year (34 credits)
Fall Semester (17 credits)
BIOL 3060 (QI)[13] Principles of Genetics 4
PSB 4250[12] Internship in Plants, Soils, and/or Biometeorology 2
PSB 4890 (CI)[12] Senior Seminar 1
Any Depth Humanities and Creative Arts (DHA) course 3
Any emphasis elective course(s), as advised 4
Any USU elective course(s)[14] 3

Spring Semester (17 credits)
PSB 4890 (CI)[12] Senior Seminar 1
Any Breadth Creative Arts (BCA)/USU course, as required 3
Any Quantitative Intensive (QI) course 3
Any emphasis elective courses, as advised 7
Any USU elective course(s)[14] 3

Sample Curriculum for Horticulture Major—Landscape Maintenance and Construction Emphasis

The sample curriculum shows most lower-division courses selected freshman and sophomore years, and most upper-division courses selected junior and senior years.

Freshman Year (29 credits)
Fall Semester (16 credits)
BIOL 1610[15] Biology I 4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
LAEP 1200[15] Basic Graphics in Landscape Architecture 4
PLSC 2620[15] Woody Plant Materials: Trees and Shrubs for the Landscape 3
PLSC 2650[12] Identification and Selection of Plants in Production Agriculture 1
PSB 1050[12] Plants, Soils, and Biometeorology Orientation 1

Spring Semester (13 credits)
MATH 1050 (QL)[12] College Algebra 4
OSS 1400[12] Microcomputer Applications 3
PLSC 2200[15] Pest Management Principles and Practices 3
WILD 2200 (BLS)[12] Ecology of Our Changing World 3

Sophomore Year (32.5 credits)
Fall Semester (16.5 credits)
CHEM 1110 (BPS)[12] General Chemistry I 4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
LAEP 2600 (QI)[15] Landscape Construction I 4
PLSC 2600[15] Annual and Perennial Plant Materials 1.5
SOIL 3000[12] Fundamentals of Soil Science 4

Spring Semester (16 credits)
LAEP 3610[15] Landscape Construction II 4
PLSC 3300[15] Residential Landscapes 3
Any Breadth Social Sciences (BSS)/USU course, as required 3
Any USU elective courses[14] 6

Junior Year (29 credits)
Fall Semester (14 credits)
LAEP 3500[15] Planting Design 2
PLSC 4400[15] Modern Vegetable Production 3
Any Breadth Humanities (BHU)/USU course, as required 3
Any Depth Social Sciences (DSS) course 3
Any USU elective course(s)[14] 3

Spring Semester (15 credits)
PLSC 3500[15] The Structure and Function of Economic Crop Plants 3
PSB 4250[12] Internship in Plants, Soils, and/or Biometeorology 3
SOIL 4700[15] Irrigated Soils 3
Any Breadth American Institutions (BAI)/USU course, as required 3
Any USU elective course(s)[14] 3

Senior Year (30 credits)
Fall Semester (14 credits)
PLSC 3400[15] Landscape Maintenance Principles and Practices 3
PLSC 3800[15] Turfgrass Management 3
PLSC 5550[15] Weed Biology and Control 4
PSB 4890 (CI)[12] Senior Seminar 1
Any USU elective course(s)[14] 3

Spring Semester (16 credits)
PSB 4890 (CI)[12] Senior Seminar 1
Any Breadth Creative Arts (BCA)/USU course, as required 3
Any Depth Humanities and Creative Arts (DHA) course 3
Any emphasis elective course(s), as advised 3
Any USU elective courses[14] 6

Sample Curriculum for Horticulture Major—Turfgrass Management Emphasis

The sample curriculum shows most lower-division courses selected freshman and sophomore years, and most upper-division courses selected junior and senior years.

Freshman Year (32 credits)
Fall Semester (15 credits)
BIOL 1610[16] Biology I 4
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
PLSC 2620[16] Woody Plant Materials: Trees and Shrubs for the Landscape 3
PLSC 2650[12] Identification and Selection of Plants in Production Agriculture 1
PSB 1050[12] Plants, Soils, and Biometeorology Orientation 1

Spring Semester (17 credits)
BIOL 1620 (BLS)[16] Biology II 4
MATH 1050 (QL)[12] College Algebra 4

OSS 1400[12] Microcomputer Applications 3
WILD 2200 (BLS)[12] Ecology of Our Changing World 3
Emphasis elective horticulture course, as advised 3

Sophomore Year (32 credits)
Fall Semester (16 credits)
CHEM 1110 (BPS)[12] General Chemistry I 4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
PLSC 3400[16] Landscape Management Principles and Practices 3
Any Breadth Social Sciences (BSS)/USU course, as required 3
Emphasis elective horticulture course, as advised 3

Spring Semester (16 credits)
PLSC 4500[16] Fruit Production 4
SOIL 3000[12] Fundamentals of Soil Science 4
PSB 4250[12] Internship in Plants, Soils, and/or Biometeorology 2
Emphasis elective science course, as advised 3
Any USU elective course(s)[14] 3

Junior Year (30 credits)
Fall Semester (15 credits)
MHR 3110 (DSS) Managing Organizations and People 3
Any Breadth Humanities (BHU)/USU course, as required 3
Emphasis elective horticulture course, as advised 3
Any USU elective courses[14] 6

Spring Semester (15 credits)
PLSC 4800[16] Professional Turfgrass Management 2
PSB 4890 (CI)[12] Senior Seminar 1
Any Breadth Creative Arts (BCA)/USU course, as required 3
Emphasis elective science course, as advised 3
Emphasis elective business course, as advised 3
Any USU elective course(s)[14] 3

Senior Year (26 credits)
Fall Semester (13 credits)
PLSC 3800[16] Turfgrass Management 3
PSB 4890 (CI)[12] Senior Seminar 1
Any Depth Humanities and Creative Arts (DHA) course 3
Any Communications Intensive (CI) course 3
Any USU elective course(s)[14] 3

Spring Semester (13 credits)
BIOL 3060[16] Principles of Genetics 4
Any Quantitative Intensive (QI) course 3
Any emphasis elective course, as advised 3
Any USU elective course(s)[14] 3

Sample Curriculum for Horticulture Major—Business Emphasis

The sample curriculum shows most lower-division courses selected freshman and sophomore years, and most upper-division courses selected junior and senior years.

Freshman Year (28 credits)
Fall Semester (12 credits)
BIOL 1610[17] Biology I 4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
PLSC 2650[12] Identification and Selection of Plants in Production Agriculture 1
PSB 1050[12] Plants, Soils, and Biometeorology Orientation 1
Any USU elective course(s)[14] 3

Spring Semester (16 credits)
ACCT 2010[17] Survey of Accounting I 3
MATH 1050 (QL)[12] College Algebra 4
OSS 1400[12] Microcomputer Applications 3
PLSC 2200[17] Pest Management Principles and Practices 3
WILD 2200 (BLS)[12] Ecology of Our Changing World 3

Sophomore Year (32 credits)
Fall Semester (16 credits)
BA 3500[17] Fundamentals of Marketing 3
CHEM 1110 (BPS)[12] General Chemistry I 4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Any Breadth American Institutions (BAI)/USU course, as required 3
Any emphasis elective course, as advised 3

Spring Semester (16 credits)
MHR 2050[17] Legal and Ethical Environment of Business 3
PLSC 3500[17] The Structure and Function of Economic Crop Plants 3
SOIL 3000[12] Fundamentals of Soil Science 4
Any Breadth Social Sciences (BSS)/USU course, as required 3
Any emphasis elective course(s), as advised 3

Junior Year (30 credits)
Fall Semester (15 credits)
MHR 3110 (DSS)[17] Managing Organizations and People 3
PLSC 4400[17] Modern Vegetable Production 3
Any Breadth Humanities (BHU)/USU course, as required 3
Any emphasis elective course(s), as advised 3
Any USU elective course(s)[14] 3

Spring Semester (15 credits)
BA 3460[17] Fundamentals of Personal Investing 3
SOIL 5550 (QI)[17] Soils and Plant Nutrient Bioavailability 3
Any emphasis elective course, as advised 3
Any USU elective courses[14] 6

Senior Year (30 credits)
Fall Semester (16 credits)
PLSC 5550[17] Weed Biology and Control 4
PSB 4250[12] Internship in Plants, Soils, and/or Biometeorology 2
PSB 4890 (CI)[12] Senior Seminar 1
Any Depth Humanities and Creative Arts (DHA) course 3
PSB upper-division course, as advised 3
Any USU elective course(s)[14] 3

Spring Semester (14 credits)
PLSC 4500[17] Fruit Production 4
PSB 4890 (CI)[12] Senior Seminar 1
Any Breadth Creative Arts (BCA)/USU course, as required 3
Any USU elective courses[14] 6

Sample Curriculum for Horticulture Major—Science Emphasis

The sample curriculum shows most lower-division courses selected freshman and sophomore years, and most upper-division courses selected junior and senior years.

Freshman Year (27 credits)
Fall Semester (13 credits)
BIOL 1610[18] Biology I 4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
PLSC 2650[12] Identification and Selection of Plants in Production Agriculture 1
PSB 1050[12] Plants, Soils, and Biometeorology Orientation 1
Any USU elective course(s)[14] 4

Spring Semester (14 credits)
BIOL 1620 (BLS)[18] Biology II 4
MATH 1050 (QL)[12] College Algebra 4
OSS 1400[12] Microcomputer Applications 3
WILD 2200 (BLS)[12] Ecology of Our Changing World 3

Sophomore Year (31 credits)
Fall Semester (14 credits)
BIOL 4400 (QI)[18] Plant Physiology 4
CHEM 1110 (BPS)[12] General Chemistry I 4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Any Breadth American Institutions (BAI)/USU course, as required 3

Spring Semester (17 credits)
SOIL 3000[12] Fundamentals of Soil Science 4
Any Breadth Social Sciences (BSS)/USU course, as required 3
Any emphasis elective courses, as advised 6
Any USU elective course(s)[14] 4

Junior Year (31 credits)
Fall Semester (15 credits)
PLSC 4400[18] Modern Vegetable Production 3
Any Breadth Humanities (BHU)/USU course, as required 3
Any Depth Social Sciences (DSS) course 3
Any emphasis elective course(s), as advised 3
Any USU elective course(s)[14] 3

Spring Semester (16 credits)
PLSC 4500[18] Fruit Production 4
SOIL 5550 (QI)[18] Soils and Plant Nutrient Bioavailability 3
Any USU elective course(s)[14] 3
Any emphasis elective courses, as advised 6

Senior Year (32 credits)
Fall Semester (16 credits)
MATH 1100 (QL)[18] Calculus Techniques 3
PSB 4250[12] Internship in Plants, Soils, and/or Biometeorology 2
PSB 4890 (CI)[12] Senior Seminar 1
Any Depth Humanities and Creative Arts (DHA) course 3
Any USU elective courses[14] 7

Spring Semester (16 credits)
PLSC 5200 Crop Physiology 2
BIOL 3060 (QI)[18] Principles of Genetics 4
PSB 4890 (CI)[12] Senior Seminar 1
Any Breadth Creative Arts (BCA)/USU course, as required 3
Any Quantitative Intensive (QI) course 3
Any emphasis elective course, as advised 3

[12]This course is required as part of the Horticulture Major Core.
[13]This course is required for the Ornamental Horticulture Emphasis.
[14]These courses are unrestricted electives.
[15]This course is required for the Landscape Maintenace and Construction Emphasis.
[16]This course is required for the Turfgrass Management Emphasis.
[17]This course is required for the Business Emphasis.
[18]This course is required for the Science Emphasis.

Environmental Soil/Water Science Major

Preparatory Core Courses (43-49 credits)

Required Courses (18 credits)
BIOL 1610 Biology I (F) 4
BIOL 1620 (BLS) Biology II (Sp) 4
GEO 1110 (BPS) The Dynamic Earth: Physical Geology (F,Sp) 4
STAT 2000 (QI) Statistical Methods (F,Sp) (3 cr) **or**
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su) (3 cr) 3
WILD 2200 (BLS) Ecology of Our Changing World (F,Su) (3 cr) **or**
BIOL 2220 General Ecology (F,Sp) (3 cr) 3

Chemistry Courses (9 or 13 credits)
Complete *one* of the two following blocks of Chemistry courses:
Block 1 (9 credits)
CHEM 1110 (BPS) General Chemistry I (F,Sp) 4
CHEM 1115 General Chemistry Laboratory (Sp) 1
CHEM 1120 (BPS) General Chemistry II (Sp) 4

Block 2 (13 credits)[19]
CHEM 1210 Principles of Chemistry I (F,Sp) 4
CHEM 1215 Chemical Principles Laboratory I (F,Sp) 1
CHEM 1220 (BPS) Principles of Chemistry II (F,Sp,Su) 4
CHEM 1225 Chemical Principles Laboratory II (F,Sp) 1
CHEM 2300 Principles of Organic Chemistry (F) 3

Mathematics Courses (10 or 8 credits)
Complete *one* of the two following blocks of Mathematics courses:
Block 1 (10 credits)
MATH 1050 (QL) College Algebra (F,Sp,Su) 4
MATH 1060 Trigonometry (F,Sp,Su) 2
MATH 1210 (QL) Calculus I (F,Sp,Su) 4

Block 2 (8 credits)[19]
MATH 1210 (QL) Calculus I (F,Sp,Su) 4
MATH 1220 (QL) Calculus II (F,Sp,Su) 4

Physics Courses (8 credits)
Complete *one* of the two following blocks of Physics courses:
Block 1 (8 credits)
PHYS 2110 The Physics of Living Systems I 4
PHYS 2120 (BPS) The Physics of Living Systems II 4

Block 2 (8 credits)[19]
PHYS 2210 (QI) General Physics—Science and Engineering I 4
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II 4

Professional Core Courses (26 credits)

SOIL 3000 Fundamentals of Soil Science (F,Sp) 4
SOIL 5050 Principles of Environmental Soil Chemistry (Sp odd) 3
SOIL 5130 Soil Genesis, Morphology, and Classification (F) 4
SOIL 5310 Soil Microbiology (F, even years) (3 cr) **or**
SOIL 5550 (QI)[20] Soils and Plant Nutrient Bioavailability (Sp) (3 cr) 3
SOIL 5560 Analytical Techniques for the Soil Environment (Sp) 2
SOIL 5600 Surface Hydrologic Field Methods (Sp) 3
SOIL 5650 Environmental Soil Physics (F) 3
SOIL 5750 Environmental Quality: Soil and Water (Sp) 2
PSB 4890 (CI) Senior Seminar (F,Sp) (take 1 credit per semester) 2

[19]Students in the **Water Emphasis** should take the **Block 2** courses in Chemistry, Mathematics, and Physics.
[20]Students in the **Plant Emphasis** must select **SOIL 5550**.

Emphases

Students must select 12 credits from one or a combination of the following three emphases.

Soil Emphasis

BMET 5250 Remote Sensing of Land Surfaces (Sp) 4
CEE 5190 Geographic Information Systems for Civil Engineers (Sp) 3
CHEM 3000 (QI) Quantitative Analysis (F) 3
GEO 3500 Mineralogy and Crystallography (F) 4
GEO 3550 (CI) Sedimentation and Stratigraphy (F) 4
GEO 3600 Geomorphology (F) 4
GEO 5410[21] Introduction to Clay Mineralogy (Sp) 2
GEO 5600 Geochemistry (F) 3
GEO 5630 Photogeology 2

PSB 5200 Site-Specific Agriculture and Landscape/Horticultural Management (Sp, half semester) 3
SOIL 3100 Soils and Civilization (Sp) 3
SOIL 3200 (DSC) Microbes in Environmental Action (Sp) 3
SOIL 4000 Soil and Water Conservation (F) 4
SOIL 5310 Soil Microbiology (F) 3
SOIL 5320 Soil Microbiology Laboratory (F, even years) 2
SOIL 5350 Wildland Soils (Sp) 3
SOIL 5550 (QI) Soils and Plant Nutrient Bioavailability (Sp) 3
WATS 4750[21] Fundamentals of Remote Sensing Science (F) 3
WATS 4930 Geographic Information Systems (F) 4
WATS 5930 Geographic Information Analysis (Sp) 4
WILD 5750 Applied Remote Sensing (F) 3

Water Emphasis

ASTE 5260 (CI) Environmental Impacts of Agricultural Systems (F) 3
BIE 5010[21] Principles of Irrigation Engineering (F) 3
BIE 5110[21] Sprinkle and Trickle Irrigation (F) 4
BIE 5150[21] Surface Irrigation Design (Sp) 3
BMET 4300 General Meteorology (F) 3
BMET 5250 Remote Sensing of Land Surfaces (Sp) 4
BMET 5500 Land-Atmosphere Interactions (Sp) 3
BMET 5700 Environmental Measurements (Sp) 3
CEE 3430 Engineering Hydrology (Sp) 3
CHEM 3000 (QI) Quantitative Analysis (F) 3
GEO 5150[21] Fluvial Geomorphology (F) 3
GEO 5510 (QI) Groundwater Geology (F) 3
GEO 5520 (CI)[21] Techniques of Groundwater Investigations (Sp) 3
PLSC 5200 Crop Physiology (Sp) 2
PLSC 5210 Crop Physiology Laboratory (Sp) 1
SOIL 4000 Soil and Water Conservation (F) 4
SOIL 4700 Irrigated Soils (Sp, half semester) 3
WATS 3700 (CI) Fundamentals of Watershed Science (Sp) 3
WATS 4500 Limnology: Ecology of Inland Waters (Sp) 3
WATS 4510 Aquatic Ecology Practicum (F) 3
WATS 4530 Water Quality and Pollution (Sp) 3
WATS 5640[21] Riparian Ecology and Management (Sp) 3

Plant Emphasis

BIOL 2410 Plants and Fungi in the Field (Su) 2
BIOL 4400 (QI) Plant Physiology (F) 4
BIOL 4410 Plant Structure (Sp) 3
BIOL 4420 Plant Taxonomy (Sp) 3
BMET 5500 Land-Atmosphere Interactions (Sp) 3
PLSC 2100 (BLS) Introduction to Horticulture (F) 3
PLSC 2600 Annual and Perennial Plant Materials (F) 1.5
PLSC 2620 Woody Plant Materials: Trees and Shrubs for the Landscape (F) 3
PLSC 3400 Landscape Management Principles and Practices (F) 3
PLSC 3800 Turfgrass Management (F) 3
PLSC 4280 Field Crops (F) 3
PLSC 4320 Forage Production and Pasture Ecology (F) 3
PLSC 4400 Modern Vegetable Production (F) 3
PLSC 4500 Fruit Production (Sp) 4
PLSC 4800[21] Professional Turfgrass Management (Sp) 2
PLSC 5200[21] Crop Physiology (Sp) 2
PLSC 5210[21] Crop Physiology Laboratory (Sp) 1
PLSC 5430[21] Plant Nutrition (F, odd years) 2
PLSC 5550 Weed Biology and Control (F) 4
PLSC 5760[21] Crop Ecology (Sp) 2
PSB 2800 Fundamentals of Organic Agriculture (Sp) 3
SOIL 4700 Irrigated Soils (Sp, half semester) 3
WILD 3600 Wildland Plant Ecology and Identification (F) 4
WILD 3700 (CI) Inventory and Assessment in Natural Resource and Environmental Management (F) 3
WILD 3710 Monitoring and Assessment in Natural Resource and Environmental Management (Sp) 3

[21] Prerequisites are required for this course.

Sample Curriculum for Environmental Soil/Water Science Major

The sample curriculum shows most lower-division courses selected freshman and sophomore years, and most upper-division courses selected junior and senior years.

Freshman Year (31 credits)

Fall Semester (14 credits)
BIOL 1610 Biology I 4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
GEO 1110 (BPS) The Dynamic Earth: Physical Geology 4
Any Breadth Creative Arts (BCA)/USU course, as required 3

Spring Semester (17 credits)
BIOL 1620 (BLS) Biology II 4
MATH 1050 (QL) College Algebra 4
OSS 1400 Microcomputer Applications 3
WILD 2200 (BLS) Ecology of Our Changing World 3
Any emphasis elective course, as advised 3

Sophomore Year (31 credits)

Fall Semester (16 credits)
CHEM 1110 (BPS) General Chemistry I 4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Any Breadth Humanities (BHU)/USU course, as required 3
Any Breadth Social Sciences (BSS)/USU course, as required 3
Any emphasis elective course, as advised 3

Spring Semester (15 credits)
CHEM 1115 General Chemistry Laboratory (1 cr) **or**
CHEM 1215[22] Chemical Principles Laboratory I (1 cr) 1
CHEM 1120 (BPS) General Chemistry II (4 cr) **or**
CHEM 1220 (BPS)[22] Principles of Chemistry II (4 cr) 4
SOIL 3000 Fundamentals of Soil Science 4
Any Depth Humanities and Creative Arts (DHA)/USU course, as required 3
Any emphasis elective course, as advised 3

Junior Year (31 credits)

Fall Semester (15 credits)
MATH 1060 Trigonometry 2
SOIL 5130 Soil Genesis, Morphology, and Classification 4
STAT 2000 (QI) Statistical Methods (3 cr) **or**
STAT 3000 (QI) Statistics for Scientists (3 cr) 3
Any Depth Social Sciences (DSS) course 3
Any Communications Intensive (CI) course 3

Spring Semester (16 credits)
MATH 1210 (QL) Calculus I 4
PHYS 2110 The Physics of Living Systems I 4
SOIL 5050 Principles of Environmental Soil Chemistry 3
SOIL 5560 Analytical Techniques for the Soil Environment 2
Any emphasis elective course, as advised 3

Senior Year (31 credits)

Fall Semester (16 credits)
PHYS 2120 (BPS) The Physics of Living Systems II 4
SOIL 5650 Environmental Soil Physics 3
Any Breadth American Institutions (BAI)/USU course, as required 3
Any USU elective courses 6

Spring Semester (15 credits)
PSB 4890 (CI) Senior Seminar 1
SOIL 5550 (QI) Soils and Plant Nutrient Bioavailability 3
SOIL 5600 Surface Hydrologic Field Methods 3
SOIL 5750 Environmental Quality: Soil and Water 2
Any USU elective courses 6

[22]Students in the **Water Emphasis** should take CHEM 1215 and 1220, rather than CHEM 1115 and 1120.

Ornamental Horticulture Program One-year Certificate (27 credits)

The 27 credits are distributed as follows:
PLSC 2600 Annual and Perennial Plant Materials (F) 1.5
PLSC 2620 Woody Plant Materials: Trees and Shrubs for the Landscape (F) 3
Additional PLSC courses selected from Associate of Applied Science Core Classes** 18.5-20
Courses selected from Approved Electives 3-5

**Students should choose courses that emphasize either Floriculture or Landscape Horticulture.

Ornamental Horticulture Program Associate of Applied Science Degree (60 credits)

The 60 credits are distributed as follows. Some courses require biology prerequisite courses.

University Studies Requirements (15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose (F,Sp,Su) . 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode (F,Sp,Su) 3
Social Sciences/Humanities Breadth Courses 6
Life Sciences/Physical Sciences Breadth Course 3

Professional Requirement
All of the Core Courses 34-37
Courses selected from Approved Electives 7-10

Core Courses (34-37 credits)
OSS 1400 Microcomputer Applications (F,Sp,Su) 3
PSB 1050 Plants, Soils, and Biometeorology Orientation (F) 1
PLSC 2100 (BLS) Introduction to Horticulture (F) 3
PLSC 2200 Pest Management Principles and Practices (Sp) 3
PLSC 2250 Occupational Experience in Agronomy and Horticulture (F,Sp,Su) 1-4
PLSC 2600 Annual and Perennial Plant Materials (F) 1.5
PLSC 2620 Woody Plant Materials: Trees and Shrubs for the Landscape (F) 3
PLSC 2650 Identification and Selection of Plants in Production Agriculture (F) 1
PLSC 3050 Greenhouse Management and Crop Production (Sp) 4
PLSC 3300 Residential Landscapes (Sp) 3
PLSC 3400 Landscape Management Principles and Practices (F) 3
PLSC 3700 Plant Propagation (F) 4
PLSC 3800 Turfgrass Management (F) 3

Approved Electives (11-15 credits)
Choose electives from the following courses or choose from any courses that are part of a BS Degree in Horticulture.
BIOL 1610 Biology I (F) 4
CHEM 1110 (BPS) General Chemistry I (F,Sp) 4
PLSC 2900 Special Problems in Plant Science (F,Sp,Su) 1-4
PLSC 3500 The Structure and Function of Economic Crop Plants (Sp) 3
PLSC 4400 Modern Vegetable Production (F) 3
PLSC 4500 Fruit Production (Sp) 4
SOIL 3000 Fundamentals of Soil Science (F,Sp) 4

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*, 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 the following courses: PLSC 4280 and 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, 5750.

Ornamental Horticulture Minor (16 credits required)

The following courses are required: SOIL 2000 or 3000, PLSC 2200, 2620. Select the balance of credits from the following courses: PLSC 2100, 2600, 3050, 3300, 3400, 3700, 3800, 4400, 4500.

Horticulture Minor (16 credits required)

SOIL 2000 or 3000 is required. Select 6 credits from the following courses: PLSC 2100, 2200, 4400, 4500, one ornamental horticulture course. Select the remaining credits from the following: PLSC 2650, 3050, 3300, 3800, PSB 2800, SOIL 3000.

Undergraduate Research Opportunities

The Plants, Soils, and Biometeorology Department is dedicated to providing undergraduate students with opportunities to participate with faculty members in research and creative activities. Examples of recent research include seed germination requirements, plant growth regulators, salt cedar control, pasture growth dynamics, soil-less media characteristics, gene sequencing, and essential oils from native plants. In addition to faculty mentorship of such activities, students may obtain grants of up to $1,000 for support of their projects. For further information, students may contact any departmental faculty member, or view the undergraduate research website at:
http://www.usu.edu/research/undergrad/

Departmental Assessment

Review and assessment of departmental programs is a commitment of the Plants, Soils, and Biometeorology Department. In 2002, the department completed a USDA-Cooperative State Research, Education, and Extension Service review. On an ongoing basis, the

department evaluates all academic programs. More information about departmental assessment can be found at:
http://psb.usu.edu/htm/about/assessment/

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. Minimum GPA requirements for participation in departmental honors vary by department, but usually fall within the range of 3.30-3.50. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level. The campus-wide Honors Program, which is open to all qualified students regardless of major, offers a rich array of cultural and social activities, special classes, and the benefit of Honors early registration. Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@cc.usu.edu. Additional information can be found online at: **http://www.usu.edu/honors/**

Additional Information

For more information about requirements for undergraduate programs and the sequence in which courses should be taken, see major requirement sheets available from the Plants, Soils, and Biometeorology Department, or accessed online at:
http://www.usu.edu/majorsheets/

Graduate Programs

Admission Requirements

See general admission requirements, pages 101-102. 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. This program is available to out-of-state students at in-state tuition rates through WICHE-WRGP.

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 100-101 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 100).

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, as 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
Daniel T. Drost, vegetable production
Lawrence E. Hipps, biometeorology
David J. Hole, cereal breeding
Roger K. Kjelgren, urban horticulture
H. Paul Rasmussen, horticulture
V. Philip Rasmussen, sustainable agriculture
Larry A. Rupp, ornamental horticulture
Ralph E. Whitesides, weed science

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
Lynn M. Dudley, soil physical chemistry
Wilford R. Gardner, soil physics
Henry F. Mayland, soil science
Charles W. Robbins, soil science
Edward J. Souza, plant breeding and genetics
John M. Stark, microbial ecology and biogeochemistry
Dale R. Westermann, soil science
Raymond M. Wheeler, plant physiology
James L. Wright, soil science

Professors Emeritus
Rulon S. Albrechtsen, plant breeding
Keith R. Allred, forage physiology
J. LaMar Anderson, pomology
Gaylen L. Ashcroft, biometeorology
William F. Campbell, crop stress physiology
Wade G. Dewey, plant breeding
John O. Evans, weed science
Alvin R. Hamson, horticulture
R. John Hanks, soil physics
Anthony H. Hatch, horticulture
Donald T. Jensen, climatology
Jerome J. Jurinak, soil chemistry
R. Paul Larsen, horticulture
DeVere McAllister, plant breeding
Frank B. Salisbury, plant physiology
Schuyler D. Seeley, pomology
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
Brent L. Black, pomology
Grant E. Cardon, soil science
Robert R. Gillies, biometeorology
Paul R. Grossl, biogeochemist
Paul G. Johnson, turfgrass science
Jennifer W. MacAdam, forage production and physiology
Jeanette M. Norton, soil microbiology

Research Associate Professor
Esmaiel Malek, biometeorology

Adjunct Associate Professors
Ari M. Ferro, phytoremediation
Kevin B. Jensen, forage breeding
Thomas A. Jones, plant genetics
Helga Van Miegroet, forest soils

Assistant Professors
Thomas C. Griggs, agronomy
Scott B. Jones, soil physics
Kelly L. Kopp, water conservation/turfgrass science
Heidi A. Kratsch, ornamental horticulture
Corey V. Ransom, weed science
Dominique J. P. Roche, small grains, breeding/genetics
Yajun Wu, plant stress physiology, cell wall proteins

Research Assistant Professor
Raymond L. Cartee, soils and irrigation

Adjunct Assistant Professors
Jayne Belnap, biological soil crusts
Nathaniel Brunsell, biometeorology
Shaun Bushman, plant genetics, molecular biology
David G. Chandler, surface hydrology
Richard T. Lamar, environmental microbiology
Steven R. Larson, research geneticist
Susan Meyer, seed biology
Michael Peel, plant breeding
Joseph Robins, plant genetics
Blair L. Waldron, research geneticist

Department of Plants, Soils, and Biometeorology

Senior Lecturer
D. Craig Aston, ornamental horticulture

Lecturer
M. Cathryn Myers-Roche, academic advisor

Research Associates
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 694-696

Soil Science (SOIL), pages 715-716

Biometeorology (BMET), pages 583-584

Plants, Soils, and Biometeorology (PSB), pages 700-701

Department of Political Science

Department Head: Roberta Q. Herzberg
Location: Main 320A
Phone: (435) 797-1307
FAX: (435) 797-3751
E-mail: bobbi.herzberg@usu.edu
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Assistant Department Head: Michael S. Lyons, Main 330D, (435) 797-1312, mike.lyons@usu.edu

Graduate Program Director: Patria D. Julnes, Main 324D, (435) 797-3889, patria.julnes@usu.edu

Undergraduate Advisors:
Political Science:
Roberta Q. Herzberg, Main 320A, (435) 797-1307, bobbi.herzberg@usu.edu
Law and Constitutional Studies:
Anthony A. Peacock, Main 330B, (435) 797-1314, anthony.peacock@usu.edu
International Studies:
Veronica Ward, Main 324E, (435) 797-1319, veronica.ward@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

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 2.5 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

A. Total credits in Political Science Courses: 36

B. Overall GPA: 2.00

C. Average GPA in Political Science Courses: 2.50

D. Required Courses (15 credits)
POLS 1100 (BAI) U.S. Government and Politics (F,Sp) 3
POLS 2100 Introduction to International Politics (F,Sp) (3 cr) **or**
POLS 2200 (BSS) Comparative Politics (F,Sp) (3 cr) 3
POLS 2300 Introduction to Political Theory (F,Sp) 3
POLS 3000 (QI)[1] Introduction to Political Research (F,Sp) 3
POLS 4990 (CI)[2] Senior Research Seminar (F,Sp) 3

E. Area Requirements (15 credits minimum)
Select **two** of the following four areas: U.S. Government and Policy, International Relations, Comparative Politics, and Political Theory. Complete **nine upper-division credits** in one of the selected areas and **six upper-division credits** in the other. Even though a course may be listed under more than one area, it can be applied to *only one area*. Prior to taking the upper-division courses in a particular area, students must take the introductory course corresponding to that specific area.

1. U.S. Government and Policy
POLS 1100, U.S. Government and Politics, must be taken prior to taking any of the upper-division coursework listed below.
POLS 3110 Parties and Elections (Sp) 3
POLS 3120 Law and Politics (F) 3
POLS 3130 United States Legislative Politics (Sp) 3
POLS 3140 The Presidency (F) 3
POLS 3150 State and Local Government (Sp) 3
POLS 3170 Law and Economics (F) 3
POLS 3810 Introduction to Public Policy (F) 3
POLS 4120 American Constitutional Law (F) 3
POLS 4140 Political Organizations 3
POLS 4810 Politics and Public Policy (F) 3
POLS 4820 Natural Resources and Environmental Policy (Sp) 3
POLS 4890[3] Special Topics (F,Sp) 3
POLS 5110 Social Policy (F) 3
POLS 5130 Law and Policy (Sp) 3
POLS 5140 Law, Politics, and War (F) 3
POLS 5180 Natural Resource Policy (Sp) 3

2. International Relations
POLS 2100, Introduction to International Politics, *or* **POLS 2200**, Comparative Politics, must be taken prior to taking any of the upper-division coursework listed below.
POLS 3100 Global Issues (F) 3
POLS 3400 United States Foreign Policy (F,Sp) 3
POLS 4210 European Union Politics (Sp) 3
POLS 4280 Politics and War (Sp) 3
POLS 4410 Global Negotiations (Sp) 3

POLS 4450 (CI) United States and Latin America (Sp) 3
POLS 4460 National Security Policy (Sp) 3
POLS 4470 Foreign Policy in the Pacific (Sp) 3
POLS 4890[3] Special Topics (F,Sp) 3
POLS 5200 Global Environment (F) 3
POLS 5210 Comparative Political Change/Development (F) 3
POLS 5270 Latin American Politics and Development (Sp) 3
POLS 5290 Development in Europe (Sp) 3
POLS 5480 International Trade Policy (Sp) 3

3. Comparative Politics
POLS 2200, Comparative Politics, *or* **POLS 2100**, Introduction to International Politics, must be taken prior to taking any of the upper-division coursework listed below.
POLS 3190 Gender, Power, and Politics (F) 3
POLS 3210 Western European Government and Politics (F) 3
POLS 3220 Russian and East European Government and Politics (F) 3
POLS 3230 Middle Eastern Government and Politics (F) 3
POLS 3250 Chinese Government and Politics (F) 3
POLS 3270 Latin American Government and Politics (F) 3
POLS 3430 Political Geography (Sp) 3
POLS 4210 European Union Politics (Sp) 3
POLS 4220 (CI) Ethnic Conflict and Cooperation (Sp) 3
POLS 4230 Issues in Middle East Politics (Sp) 3
POLS 4260 Southeast Asian Government and Politics (Sp) 3
POLS 4410 Global Negotiations (Sp) 3
POLS 4450 (CI) United States and Latin America (Sp) 3
POLS 4890[3] Special Topics (F,Sp) 3
POLS 5120 Economics of Russia and Eastern Europe, 9th Century to 21st Century (F) 3
POLS 5140 Law, Politics, and War (F) 3
POLS 5210 Comparative Political Change/Development (F) 3
POLS 5230 Development in the Middle East (Sp) 3
POLS 5270 Latin American Politics and Development (Sp) 3
POLS 5290 Development in Europe (Sp) 3
POLS 5350 Evolution, Conflict, and Cooperation (Sp) 3
POLS 5440 Gender and World Politics (Sp) 3

4. Political Theory
POLS 2300, Introduction to Political Theory, must be taken prior to taking any of the upper-division coursework listed below.
POLS 3310 American Political Thought (F) 3
POLS 3320 The Foundations of American Constitutionalism 3
POLS 4130 Constitutional Theory (Sp) 3
POLS 4310 (CI) History of Political Thought I (Sp) 3
POLS 4320 History of Political Thought II (Sp) 3
POLS 4890[3] Special Topics (F,Sp) 3

F. Electives (6 credits)

In addition to the 15 credits of required prerequisite courses and the 15 credits of area courses, students must complete six upper-division elective credits. Any upper-division Political Science courses may be used to fulfill this requirement, with **two exceptions**:

1. Not more than **three** credits in Directed Readings courses (POLS 4910) can apply to this requirement.

2. Not more than **three** credits in the following courses can apply to this requirement:
   POLS 5910 Campaign Internship (F,Sp,Su) 1-12
   POLS 5920 Washington Internship (F,Sp,Su) 1-12
   POLS 5930 State Government Internship (F,Sp,Su) 1-12
   POLS 5940 Administrative Internship (F,Sp,Su) 1-12

[1]Prerequisite: STAT 1040 or MATH 1030.
[2]POLS 3000 must be taken before POLS 4990.
[3]The subject matter of POLS 4890 determines the area to which it applies.

Sample Four-year Plan for Political Science Major

Minimum GPA for Admission: 2.0, USU; 2.0, Career
Minimum GPA for Graduation: 2.5, major courses; 2.0, USU; 2.0, Career
Minimum Grade Accepted: *C-* in major courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (30 credits)

Fall Semester (15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
POLS 1100 (BAI) United States Government and Politics 3
POLS 2100 Introduction to International Politics (3 cr) **or**
POLS 2200 (BSS) Comparative Politics (3 cr) 3
University Studies Breadth course 3
Elective course(s) 3

Spring Semester (15 credits)
POLS 2300 Introduction to Political Theory 3
Quantitative Literacy (QL) course 3
University Studies Breadth courses 6
Elective course(s) 3

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (30 credits)

Fall Semester (15 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
POLS upper-division course 3
University Studies Breadth course 3
Elective courses 6

Spring Semester (15 credits)
POLS upper-division courses 6
Communications Intensive (CI) course 3
University Studies Breadth course 3
Elective course(s) 3

Junior Year (30 credits)

Fall Semester (15 credits)
POLS 3000 (QI) Introduction to Political Research 3
POLS upper-division course 3
Depth Humanities and Creative Arts (DHA) course 3
Elective courses 6

Spring Semester (15 credits)
POLS 4990 (CI) Senior Research Seminar 3
POLS upper-division course 3
Depth Life and Physical Sciences (DSC) course 3
Elective courses 6

Senior Year (30 credits)

Fall Semester (15 credits)
POLS upper-division course 3
Upper-division elective courses 6
Elective courses 6

Spring Semester (15 credits)
POLS upper-division course 3
Upper-division elective courses 6
Elective courses 6

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.

A. Total Credits in Political Science Courses: 36

Please note that none of the courses can be taken *Pass/Fail*; all Political Science courses must be taken for a letter grade. Also, all courses must be attended in their entirety. One must not take these courses during an internship.

B. Career Total and USU Cumulative GPAs: 3.00

C. Average GPA in Political Science Courses: 3.00

D. Required Courses (21 credits)

POLS 1100 (BAI) U.S. Government and Politics (F,Sp) 3
POLS 2300 Introduction to Political Theory (F,Sp) 3
POLS 3120 Law and Politics (F) 3
POLS 3170 Law and Economics (F) 3
POLS 4120 American Constitutional Law (F) 3
POLS 5130 Law and Policy (Sp) (3 cr) **or**
POLS 5140 Law, Politics, and War (F) (3 cr) 3
POLS 3320 The Foundations of American Constitutionalism (3 cr) **or**
POLS 4130 Constitutional Theory (Sp) (3 cr) **or**
POLS 4140 Political Organizations (3 cr) 3

E. Course Sequencing

Law and Constitutional Studies majors are **required** to complete POLS 1100 (U.S. Government and Politics) as a prerequisite to all 3000- and 4000-level Political Science courses. It is **advised** that Law and Constitutional Studies majors take POLS 3120 (Law and Politics) prior to POLS 4120 (American Constitutional Law), 4130 (Constitutional Theory), 5130 (Law and Policy), or 5140 (Law, Politics, and War).

F. Area Requirements (6 credits minimum)

Students must take a minimum of **six upper-division credits** in U.S. Government and Policy in addition to courses required for this major.

G. Electives (9 credits)

Any Political Science upper-division courses can be used to complete the major and fulfill this requirement, with **two exceptions**:

1. Not more than **three** credits in Directed Readings courses (POLS 4910) can apply to this requirement.

2. Not more than **three** credits in the following courses can apply to this requirement:
   POLS 5910 Campaign Internship (F,Sp,Su) 1-12
   POLS 5920 Washington Internship (F,Sp,Su) 1-12
   POLS 5930 State Government Internship (F,Sp,Su) 1-12
   POLS 5940 Administrative Internship (F,Sp,Su) 1-12

Sample Four-year Plan for Law and Constitutional Studies Major

Minimum GPA for Admission: 3.0, USU; 3.0, Career
Minimum GPA for Graduation: 3.0, major courses; 3.0, USU; 3.0, Career
Minimum Grade Accepted: *C* in major courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (30 credits)

Fall Semester (15 credits)
POLS 1100 (BAI) United States Government and Politics 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
University Studies Breadth courses 6
Elective course(s) 3

Spring Semester (15 credits)
POLS 2300 Introduction to Political Theory 3
University Studies Breadth courses 6
Quantitative Literacy (QL) course 3
Elective course(s) 3

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (30 credits)

Fall Semester (15 credits)
POLS 3120 Law and Politics 3
POLS 3170 Law and Economics 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
University Studies Breadth course 3
Elective course(s) 3

Spring Semester (15 credits)
POLS upper-division elective (U.S. Government and Politics) courses 6
Communications Intensive (CI) course 3
Elective courses 6

Junior Year (30 credits)

Fall Semester (15 credits)
POLS 4120 American Constitutional Law 3
POLS upper-division elective course 3
Quantitative Intensive (QI) course 3
Depth Humanities and Creative Arts (DHA) course 3
Elective course(s) 3

Spring Semester (15 credits)
POLS 3320 The Foundations of American Constitutionalism (3 cr) **or**
POLS 4130 Constitutional Theory (3 cr) **or**
POLS 4140 Political Organizations (3 cr) 3
POLS upper-division elective course 3
Depth Life and Physical Sciences (DSC) course 3
Elective courses 6

Senior Year (30 credits)

Fall Semester (15 credits)
POLS 5140 Law, Politics, and War 3
POLS upper-division elective course 3
Communications Intensive (CI) course 3
Elective courses 6

Spring Semester (15 credits)
Upper-division elective courses 6
Elective courses 9

Political Science Minor

Students can obtain a minor in political science by completing a total of 18 credits in the field. The following courses must be included:

POLS 1100 (BAI) U.S. Government and Politics (F,Sp) 3
POLS 2100 Introduction to International Politics (F,Sp) (3 cr) **or**
POLS 2200 (BSS) Comparative Politics (F,Sp) (3 cr) 3
POLS 2300 Introduction to Political Theory (F,Sp).....3

The remaining credits must be from upper-division courses.

Political Science Teaching Minor

This minor is designed specifically for students seeking careers in secondary education. Students must have at least 18 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.

International Studies Major

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 students' capacity to make informed judgments regarding complex international and global issues. For information about requirements for this major, see pages 347-349.

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 earned at least 15 credits in political science courses 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 Political Science departmental office for applications (usually available around the first week of January and due back the first week of February) at (435) 797-1306 or visit the office in Main 320.

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. Minimum GPA requirements for participation in departmental honors vary by department, but usually fall within the range of 3.30-3.50. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level. The campus-wide Honors Program, which is open to all qualified students regardless of major, offers a rich array of cultural and social activities, special classes, and the benefit of Honors early registration. Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@cc.usu.edu. Additional information can be found online at: **http://www.usu.edu/honors/**

Additional Information

For detailed information about requirements for the majors and minors within the Political Science Department, see the major requirement sheets, which can be obtained from the department, or online at: **http://www.usu.edu/majorsheets/**

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 31** 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, and may be 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 May 15.

Department of Political Science

Course Requirements

Effective Fall 2006, the master's degree in Political Science will consist of three area tracks, with each student choosing **one** of the three. Details of requirements and courses follow. Completion of the degree requires a total of 30 credits, along with a thesis.

Public Policy Track

Required Courses (6 credits)
POLS 6010 Research Design (F) 3
POLS 6020 Public Policy Analysis (Sp) 3

Elective Courses (12 credits)
Students must complete 12 credits, chosen from the following list:
BA 6420 Financial Problems (F)
(for MSS in Public Administration students *only*).....3
POLS 5110 Social Policy (F).....3
POLS 5130 Law and Policy (Sp).....3
POLS 5480 International Trade Policy (Sp) 3
POL S 6100 Introduction to Public Administration.....3
POLS 6400 United States Foreign Policy 3
Political Theory and Democracy (course being developed)

Note: Students in the Public Policy Track may also select courses from the Democratic Theory and Practice Track.

Democratic Theory and Practice Track

Required Courses (6 credits)
POLS 6010 Research Design (F) 3
POLS 6240 Democratic Theories and Practice (F).....3

Elective Courses (12 credits)
Students must complete 12 credits, chosen from the following list:
ECON 5150 Comparative Economic Systems (Sp) 3
POLS 5130 Law and Policy (Sp).....3
POLS 5140 Law, Politics, and War (F).....3
POLS 5230 Development in the Middle East (Sp).....3
POLS 5270 Latin American Politics and Development (Sp) 3
POLS 5290 Development in Europe (Sp) 3
POLS 5480 International Trade Policy (Sp) 3
POLS 6100 Introduction to Public Administration 3
POLS 6250 Theories of War and Peace (F,Sp) 3
POLS 6400 United States Foreign Policy 3
Comparative Politics: Asia (course being developed)
Political Theory and Democracy (course being developed)

Note: Students in the Democratic Theory and Practice Track may also select courses from the Conflict and Security Track.

Conflict and Security Track

Required Courses (6 credits)
POLS 6010 Research Design (F) 3
POLS 6210 Conflict and Security (Sp).....3

Elective Courses (12 credits)
Students must complete 12 credits, chosen from the following list:
ECON 5150 Comparative Economic Systems (Sp) 3
POLS 5140 Law, Politics, and War (F).....3
POLS 5230 Development in the Middle East (Sp).....3
POLS 5270 Latin American Politics and Development (Sp) 3
POLS 6230 Terrorism and Counter-Terrorism (Sp).....3
POLS 6240 Democratic Theories and Practice (F).....3
POLS 6250 Theories of War and Peace (F,Sp) 3
POLS 6400 United States Foreign Policy 3
SOC 5650 Developing Societies (F) 3
Comparative Politics: Asia (course being developed)
Political Theory and Democracy (course being developed)

Note: Students in the Conflict and Security Track may also select courses from the Democratic Theory and Practice Track.

Other Requirements (12 credits)

The remaining 12 credits needed for the degree may be chosen from the following:

POLS 6910 Graduate Tutorial (F,Sp,Su).....1-3
(may count up to 6 credits toward the degree, subject to approval)
POLS 6920 Internship (F,Sp,Su).....1-15
(may count up to 3 credits toward the degree, subject to approval)
POLS 6970 Thesis Research (F,Sp,Su).....1-9
(may count up to 3 credits toward the degree)
Approved graduate courses taught outside of Political Science 1-3

Political Science Faculty

Professors
William L. Furlong, Latin America, Central America, democratization, development, U.S. foreign policy
Peter F. Galderisi, parties, elections, interest groups, research methods, statistics
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
Brian Theadore "Ted" Stewart, constitutional law
James L. Waite, European policy, comparative European government, methodology, public opinion

Professor Emeritus
Stanford Cazier, U.S. government, public law

Associate Professors
David B. Goetze, human cooperation and conflict, ethnic conflict, evolutionary theory
Roberta Q. Herzberg, public choice, health policy, public policy, U.S. government
Patria D. Julnes, public administration, organization theory, information technology management, quantitative and statistical methods
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

Adjunct Associate Professor
Charles E. Kay, environmental policy ecology

Assistant Professors
Huiyun Feng, Chinese politics, East Asian politics, comparative politics, international relations
V. James Strickler, public law

Department of Political Science

Senior Lecturer
Carol L. McNamara, political theory, presidency

Lecturers
Jeannie L. Johnson, international relations, comparative cultures
Shannon Peterson, international relations, U.S. foreign policy, comparative politics, foreign policy decision making

Course Descriptions

Political Science (POLS), pages 696-698
Latin American Studies (LATS), page 659

Department of Psychology

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Location: Emma Eccles Jones Education 487E
Phone: (435) 797-3274
Department Mailing Address:
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Logan UT 84322-2810
FAX: (435) 797-1448
E-mail: psydept@cc.usu.edu
WWW: http://www.cehs.usu.edu/psyc/

Graduate Program Coordinators:

Combined Clinical/Counseling/School PhD:
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susan.crowley@usu.edu

Research and Evaluation Methodology PhD:
Donal G. Sinex, Veterinary Science and Bacteriology 220,
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School Psychology MS:
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School Counseling MS:
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Undergraduate Program Faculty Coordinator:
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Undergraduate Advisors:
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karen.ranson@usu.edu

Tressa M. Haderlie, Education 477, (435) 797-0097,
thaderlie@cc.usu.edu

Degrees offered: Bachelor of Science (BS), Bachelor of Arts (BA), Master of Science (MS), Educational Specialist (EdS), 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.

Assessment of Learning Objectives

Didactic, Laboratory, Tutorial, and Independent Coursework

All required, primary elective, and secondary elective courses in psychology address the programmatic learning objectives 1 through 6. Syllabi and ancillary course materials specify detailed learning objects in these six areas that are correlated with each unit of each course. Students complete a pre-test assessment in each of the courses pertaining to their knowledge, critical thinking and problem solving skills, principle mastery, and understanding of the scientific and quantitative methods encompassed by the discipline of psychology on which the course focuses. Their achievement of objectives in these areas is assessed periodically throughout the semester in the form of unit exams, written literature reviews or original research proposals, laboratory experiments and written exercises, or homework assignments. Post-tests are administered at the close of the semester. Records are kept of the students' performance in each area, and final course grades are determined based on mastery of the objectives.

Successful preparation and mastery of the programmatic objectives 5 and 6 are intensively addressed and assessed via the applied and research service-learning experiences that faculty offer to students via independent apprenticeship; independent research; independent applied service-learning coursework (PSY 2250, 4250, 4910, 4920, 4950, 4960, 5500, 5720, 5900, 5910, 5930, 5950, and 5960); supervision of honors' coursework in any of the required, primary elective, and secondary elective courses in psychology; active student engagement in professional psychological organizations that model the standards and expectations of each employment career or post-baccalaureate graduate education opportunity in psychology (Psi Chi, American Psychological Association, American Psychological Society, and Student Analysis of Behavior Association); student poster or paper presentations at professional societies; and student submissions to competitive undergraduate journals dedicated to teaching or research in psychology. Students prepare a detailed set of learning objectives tailored to the goals of their independently supervised teaching,

applied projects, and/or research projects. These objectives and goals form the basis for a contract to be fulfilled by the end of semester. In collaboration with the faculty or the appointed field supervisor, student progress and the final grade are assessed based on the students' successful and productive efforts toward mastering the objectives and meeting their goals. Students are expected to demonstrate mastery of the requirements of the American Psychological Association Style Manual (5th edition) in their required courses and selected coursework from the primary electives. Effective Fall 2006, students entering the psychology major must take PSY 2950 and 4950 *instead of* PSY 5950 and 5960.

PSY 2950, 4950, and 4960 additionally provide students with the presentation and documentation skills needed to achieve objectives 5 and 6 (e.g., to prepare and successfully complete applications for employment, employment interviews, graduate school admission materials, letters of intent, candidate interviews, a resume, and a curriculum vita). Because PSY 2950 provides specific information that students need to document their competency and achievement of learning objectives 5 and 6, the department *strongly* advises students to enroll in PSY 2950 *very early* in their undergraduate careers. Students should take this course as soon as they know they wish to major in psychology. PSY 2950 should be taken *no later* than the semester immediately following admission to the major. Students are also strongly advised to affiliate themselves with a faculty mentor *early* in their careers and to participate actively in the teaching and research experiences that will help them document continued achievements and mastery of objectives 5 and 6. Students should thus also enroll early in the independent research study or applied courses (PSY 4910, 5900, 5910, and 5930).

Departmental-level Competency Assessments
Students are required to complete a pre-test, as well as two post-tests, and to submit written documentation of their progress and program accomplishments. Students should make arrangements with the Psychology Advising Office to complete the pre-test and the two post-tests, and they should submit all written documentation to this office.

Student completion of the departmental competency pre-test in psychology is a formal requirement for admission to the psychology major. The pre-test is a web-based, multiple-choice assessment of students' incoming knowledge and mastery of required and elective coursework, and is correlated with the programmatic learning objectives 1-4. The Psychology Advising Office *will not* initiate the graduation application process until students have additionally completed two formal *post-test* assessments of their progress through the program, which are correlated with learning objectives 1-4. Specifically, students must take the departmental competency *post-test* in psychology, which is similar but not identical to the pre-test, as well as a departmentally prepared and administered analogue of the Graduate Record Examination subject test in psychology. Students' performance in each content area of the three tests is recorded and maintained in a confidential, password-protected file accompanied by students' pre-test and post-test scores from assessments administered in each USU-affiliated course in psychology. Graduation is not currently contingent upon the level of performance on these tests. Test performance is used, however, as a formative assessment of programmatic achievement.

Final approval of each student's application for graduation is additionally contingent upon the student's submission of three documents to the advising office. The student must submit a professionally prepared curriculum vita in APA style, in both hard copy and electronic (PDF) format. The vita must reflect the culmination of the student's research, applied, and service-learning experiences and accomplishments in, or related to, the field of psychology. The vita must be current, must reflect all of the student's work (up to two weeks prior to graduation), and may include his or her scores on standardized national tests (e.g., the GRE, MCAT, LSAT, and/or MAT, where applicable). It should also include a current e-mail address and phone number that will allow the student to be contacted after graduation to volunteer information regarding his or her post-graduation successes. Along with the vita, each student must submit an accompanying approval form that has been signed by his or her faculty mentor, or USU-affiliated and approved sponsor. The student must additionally complete a departmental exit survey that compiles information regarding the student's perception of the program and his or her success in securing employment or admission to graduate programs. The vita and survey documents are used to assess program objectives 5 and 6.

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. Some classes are available by WebCT. Students should check with the Psychology Advising Office at the time of registration for availability. 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

Pre-psychology Admission Requirements

Students are admitted to the Department of Psychology as Pre-psychology majors by meeting the Utah State University admission requirements (see pages 16-20). 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, 1410, 2800, and 2950. 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.

A student who wishes to be officially recognized as a psychology major or psychology teaching major must submit a formal application to the Department of Psychology Undergraduate Advising Office at Utah State University. The formal application will be reviewed and approved by the USU Psychology Department advisorial staff only. This contingency applies to all students, including those in the on-campus programs and in any of the USU Distance Education, Continuing Education, or Extension programs. Applications that have been reviewed by a USU Psychology Department advisor and meet all requirements will be processed in a timely fashion.

Students who wish to fulfill the major requirements via any of the USU Distance Education, Continuing Education, or Extension programs or sites must contact the Psychology Department Advising Office on the

Department of Psychology

Logan campus to be informed of the contingencies regarding timely progression through the program. Students need to carefully review their program of study with the Psychology Department Advising Office. Students should be aware that their program of study will be delayed when either (1) they fail to contact advisors at the Logan campus or (2) Continuing Education deviates from the published schedule of courses.

General Undergraduate Psychology Major:

Required Courses (24 credits), plus
Primary Electives (16 credits),
Secondary Electives (3 credits), and
Apprenticeship (3 credits)

Requirements for a psychology major consist of a broad preparation of 24 credits of specified coursework, plus a minimum of 19 credits of approved Psychology elective courses, and 3 credits of an apprenticeship, which allows for integration of coursework knowledge (theory) through application, for a total of 46 credits. At least 20 Psychology credits must be upper-division, 12 of which must be taken at USU.

A. Required Courses (24 credits)

PSY 1010 (BSS) General Psychology (F,Sp,Su) 3
PSY 1100 Developmental Psychology: Infancy and Childhood (F,Sp) .. 3
PSY 1400 Analysis of Behavior: Basic Principles (F,Sp,Su) 3
PSY 1410 Analysis of Behavior: Basic Principles Lab (F,Sp,Su) 1
PSY 2800 (QI) Psychological Statistics (F,Sp) 3
PSY 2950 Orientation to Psychology as a Career and Profession (F,Sp,Su) 2
PSY 3500 (CI) Scientific Thinking and Methods in Psychology (F,Sp) .. 3
PSY 5100 History and Systems of Psychology (Sp) 3
PSY 5330 Psychometrics (F) 3

B. Primary Elective Courses (16 credits)

Group 1. **Select 3 credits from the following:**
PSY 3510 Social Psychology (F,Su) 3
PSY 4210 Personality Theory (Sp) 3

Group 2. **Select 3 credits from the following:**
PSY 3450 Perception and Psychophysics (F) 3
PSY 3460 Physiological Psychology (Sp) 3

Group 3. **Select 4 credits from the following:**
PSY 3400 Analysis of Behavior: Advanced (F,Sp) 4
PSY 4420 Cognitive Psychology (Sp) (3 cr) **and**
PSY 4430 Cognitive Psychology Laboratory (Sp) (1 cr) 4

Group 4. **Select 6 credits from the following:**
PSY 3110 Health Psychology (Sp) 3
PSY 3120 Abuse, Neglect, and the Psychological Dimensions of Intimate Violence (F,Su) 3
PSY 3210 Abnormal Psychology (F,Sp) 3
PSY 5200 (CI) Introduction to Interviewing and Counseling (F) 3
Drugs and Behavior course (number and approval pending) 3

C. Secondary Elective Courses (3 credits minimum)

Select at least 3 credits from the following. (A course from the Primary Electives list may count as fulfilling the Secondary Elective requirement *if and only* if it has not been counted as a Primary Elective requirement.)

PSY 1210 Psychology of Human Adjustment (F,Sp) 3
PSY 2100 Developmental Psychology: Adolescence (Sp) 3
PSY 3660 Educational Psychology for Teachers (F,Sp) 2
PSY 3720 Behavior Modification (Sp) 3
PSY 4230 Psychology of Gender (Sp) 3
PSY 4240 Multicultural Psychology (F) 3
PSY 4510 (CI) Effective Social Skills Interventions (Sp) 3
PSY 4960 (CI) Advanced Undergraduate Apprenticeship (F) 3
PSY/PEP 4000 Mental Aspects of Sports Performance (F,Sp,Su) (3 cr) **or**
PSY/PEP 5050 Psychological Aspects of Sports Performance (Sp) (3 cr) 3
PSY/COMD 4790 Psychological Principles and Individuals who are Deaf and Hard of Hearing (Sp) 3
SPED 1010 (BSS) Disability in the American Experience 3

D. Required Apprenticeship Course (2 credits)

PSY 2950 Orientation to Psychology as a Career and Profession (F,Sp,Su) 2

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 better 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.)

Students must meet the above minimum requirements in order to graduate with a major in psychology. These requirements include completing all of the required assessments and providing the supporting documentation (see *Assessment of Learning Objectives* on pages 484-485).

Meeting these minimum requirements alone is *insufficient* to prepare for competitive employment opportunities or to secure admission to graduate school. Students who are planning to secure optimal employment or graduate admissions need to first affiliate with a faculty mentor, as well as become involved in research or applied experiences with the faculty member, *as soon* as they know they will pursue a major in psychology. These students should enroll in one of PSY 5900, 5910, or 5930 *as soon as* they have identified a mentor and have met Utah State University's admission requirements for the Department of Psychology Pre-psychology Major designation. They should pursue their own creative research opportunity experience with the faculty member and enroll in PSY 4910 during the second semester of their junior year and absolutely *no later* than the first semester of their senior year. They should plan to enroll in an additional section of PSY 5900, 5910, or 5930 during their senior year.

Suggested Sample Four-year Plan for Psychology Major

Students should check with the Psychology Undergraduate Office regarding availability of courses each semester.

Freshman Year (30 credits)

Fall Semester (15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
PSY 1010 (BSS) General Psychology 3
STAT 1040 (QL)[1] Introduction to Statistics 3
University Studies Breadth courses[2] 6
Passing scores on Computer and Information Literacy (CIL) exams[3] 0
(**Note:** The CIL requirement is met *only* by passing all six exams.)

Spring Semester (15 credits)
PSY 1400 Analysis of Behavior: Basic Principles 3
PSY 1410 Analysis of Behavior: Basic Principles Lab 1
PSY 2800 (QI) Psychological Statistics 3

PSY 2950 Orientation to Psychology as a Career and Profession (F,Sp,Su) 2
University Studies Breadth courses[2] 6

Sophomore Year (30 credits)
Fall Semester (15 credits)
PSY 1100 Developmental Psychology: Infancy and Childhood 3
PSY Primary Elective courses (chosen from group 1, 2, 3, or 4)[5] 6-7
University Studies Breadth course[2] 3
Course counting toward minor 3

Spring Semester (15 credits)
ENGL 2010 (CL2) Intermediate Writing: Reseach Writing in a Persuasive Mode 3
PSY 3500 (CI) Scientific Thinking and Methods in Psychology 3
PSY 4950 (CI) Undergraduate Apprenticeship 3
PSY Primary Elective course (chosen from group 1, 2, 3, or 4)[5] 3-4
Course counting toward minor 3

Junior Year (30 credits)
Fall Semester (15 credits)
PSY 5330 Psychometrics 3
PSY Primary Elective course (chosen from group 1, 2, 3, or 4)[5] 3-4
Course counting toward minor 3
Elective course(s) 6

Spring Semester (15 credits)
PSY 5100 History and Systems of Psychology 3
PSY Primary Elective course (chosen from group 1, 2, 3, or 4)[5] 3-4
University Studies Depth course (DHA or DSC) 3
Elective courses 6

Senior Year (30 credits)
Fall Semester (15 credits)
University Studies Depth course (DHA or DSC) 3
PSY Secondary Elective course 3
Course counting toward minor 3
Elective courses 6

Spring Semester (15 credits)
Elective courses or courses counting toward minor (as needed) 15

Note: In order to graduate, students must complete *at least* 120 credits with a minimum USU GPA of 2.75. Of these 120 credits, 40 credits must be completed in upper-division courses (numbered at the 3000-level and above). For psychology courses used to complete the major, a minimum GPA of *at least* 3.0 is required, with no grades below *C-*.

[1]To enroll in STAT 1040, students must have: (1) completed MATH 1010, (2) achieved a score of 70 percent or higher on the MATH 1050 placement test, (3) received an ACT score of 19 or higher, *or* (4) received an SAT score of 460 or higher.
[2]To fulfill the breadth requirements, students must complete *one* course from *each of the six* breadth areas (BAI, BCA, BHU, BLS, BPS, and BSS). PSY 1010 will fulfill the BSS requirement. At least *two* of the remaining five breadth courses *must* be completed in courses having a USU prefix.
[3]Students may fulfill the CIL requirement by taking OSS 1400 and receiving passing scores on all six required CIL exams, which are included in this course. OSS 1400 may be substituted for one of the elective courses.
[4]Apprenticeship courses are in a state of change. Accommodations will be made for students working to complete their degrees under the requirements previously in place, *or* under the new courses, when they become available.
[5]Students must complete 4 credits chosen from Group 3. Students must complete 6 credits (or two courses) chosen from Group 4.

Undergraduate Psychology Minor:

Required Courses (10 credits), plus
Elective Courses (8 credits minimum)

A. Required Courses (10 credits)

PSY 1010 (BSS) General Psychology (F,Sp,Su) 3
PSY 1100 Developmental Psychology: Infancy and Childhood (F,Sp) .. 3
PSY 1400 Analysis of Behavior: Basic Principles (F,Sp,Su) 3
PSY 1410 Analysis of Behavior: Basic Principles Lab (F,Sp,Su) 1

B. Electives (8 credits)

Choose course(s) from required or primary elective courses listed for the Psychology Major to total 18 credits.

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 better in all psychology courses (USU and transfer) in order to have them counted toward major requirements.

A. Required Courses (27 credits)

PSY 1010 (BSS) General Psychology (F,Sp,Su) 3
PSY 1100 Developmental Psychology: Infancy and Childhood (F,Sp) .. 3
PSY 1400 Analysis of Behavior: Basic Principles (F,Sp,Su) 3
PSY 1410 Analysis of Behavior: Basic Principles Lab (F,Sp,Su) 1
PSY 2100 Developmental Psychology: Adolescence (Sp) 3
PSY 2800 (QI) Psychological Statistics (F,Sp) 3
PSY 3500 (CI) Scientific Thinking and Methods in Psychology (F,Sp) .. 3
PSY 3660 Educational Psychology for Teachers (F,Sp) 2
PSY 5100 History and Systems of Psychology (Sp) 3
PSY 5330 Psychometrics (F) 3

B. Elective Courses (16 credits)

***Group 1.* Select 3 credits from the following:**
PSY 3510 Social Psychology (F,Su) 3
PSY 4210 Personality Theory (Sp) 3

***Group 2.* Select 3 credits from the following:**
PSY 3450 Perception and Psychophysics (F) 3
PSY 3460 Physiological Psychology (Sp) 3

***Group 3.* Select 4 credits from the following:**
PSY 3400 Analysis of Behavior: Advanced (F,Sp) 4
PSY 4420 Cognitive Psychology (Sp) (3 cr) **and**
PSY 4430 Cognitive Psychology Laboratory (Sp) (1 cr) 4

Group 4. **Select 6 credits from the following:**
PSY 3110 Health Psychology (Sp) 3
PSY 3120 Abuse, Neglect, and the Psychological Dimensions of Intimate Violence (F,Su) 3
PSY 3210 Abnormal Psychology (F,Sp) 3
PSY 5200 (CI) Introduction to Interviewing and Counseling (F) 3
Drugs and Behavior course (number and approval pending) 3

C. Secondary Teacher Education Program (STEP) (35 credits)
Admission to Secondary Education must be completed approximately one semester before the following courses may be taken.

Level 1 (15-week courses) (11 credits)
Students at Level 1 must complete the following courses:
INST 3500 Technology Tools for Secondary Teachers (F,Sp,Su) 1
SCED 3100 Motivation and Classroom Management (F,Sp) 3
SCED 3210 (CI) Educational and Multicultural Foundations (F,Sp) 3
Special Methods Course (major or minor)[6] 3
Clinical Experience I Course (major or minor)[6] 1

Level 2 (15-week courses) (12 credits)
Students at Level 2 must complete the following courses:
SPED 4000 Education of Exceptional Individuals (may be taken anytime) (F,Sp,Su) 2
SCED 4200 (CI) Reading, Writing, and Technology (F,Sp) 3
SCED 4210 Cognition and Evaluation of Student Learning (F,Sp) 3
Special Methods Course (major or minor)[6] 3
Clinical Experience II Course (major or minor)[6] 1

Level 3
(includes 13 weeks of student teaching and 2 weeks of Student Teaching Seminar) (12 credits)

SCED 5500 Student Teaching Seminar (2 weeks) (F,Sp) 2
SCED 5630 Student Teaching in Secondary Schools (13 weeks, full-time) (F,Sp) 10

[6]Students must complete a methods course and a clinical experience course for each of their teaching subjects. Students should check with the department offering their other teaching subject for methods and clinical experience course numbers in that subject. Students electing Psychology at Level 1 should register for SCED 3500 (methods course) and SCED 3300 (clinical course). Students electing Psychology at Level 2 should register for SCED 3500 (methods course) and SCED 4300 (clinical course).

Undergraduate Psychology Teaching Minor:
Required Psychology Courses (15 credits), plus
Elective Psychology Courses (3 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 better 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.

A. Required Courses (15 credits)
PSY 1010 (BSS) General Psychology (F,Sp,Su) 3
PSY 1100 Developmental Psychology: Infancy and Childhood (F,Sp) .. 3
PSY 1400 Analysis of Behavior: Basic Principles (F,Sp,Su) 3
PSY 1410 Analysis of Behavior: Basic Principles Lab (F,Sp,Su) 1
PSY 2100 Developmental Psychology: Adolescence (Sp) 3
PSY 3660 Educational Psychology for Teachers (F,Sp) 2

B. Electives (3 credits minimum)
Choose course(s) from required or primary elective courses listed for the Psychology Major to total 18 credits.

Note: The Psychology Teaching Minor also requires the completion of the Secondary Teacher Education Program (STEP) (35 credits). See section *C* under Psychology Teaching Major.

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.

Students who pursue the skills tracks in Psychology are encouraged to become involved with the faculty in independent research or applied experiences. Involvement in these experiences is associated with greater chances of successful graduate school admission and/or competitive post-baccalaureate employment, especially for students who pursue this involvement early in their undergraduate careers.

The faculty who teach courses satisfying the skills track requirements are committed to working closely with students to hone their experiences and accomplishments in research methodology and applied fields of psychology.

These faculty have a solid track record in mentoring students. Their students have achieved remarkable success in procuring funding to support student-initiated research projects via Utah State University's competitive University Research Cooperative Opportunity (URCO) mechanism and the national honor society of psychology (Psi Chi).

Their students have been first authors or co-authors on numerous scholarly presentations at regional, national, and international conferences in psychology (e.g., *Association of Behavior Analysis, American Psychological Association, European Conference of Developmental Psychology, International Society for the Study of Behavioral Development, Society for Personality and Social Psychology, Society for Research in Adolescence,* and *Society for Research in Human Development*). Their students have competed successfully each year for awards that recognize their achievements. Together with the faculty, the students have published in premier research journals in psychology (e.g., *Developmental Psychology, Journal of Applied Psychology, Journal of Clinical Psychology, Journal of Experimental Psychology,* and *Sex Roles*) and books in psychology.

The Department of Psychology and Utah State University actively support students' efforts by awarding matching funding to support the attendance of conferences at which they can present their accepted conference presentations.

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 3500, 4510, 4950, 4960, 5200.

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 701-706).

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.

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school.

In the Psychology Department, students may complete an *Honors in University Studies with Department Honors* or a *Department Honors* only program. The requirements for departmental honors are as follows:

Honors Coursework

Honors students must complete 12 credits in courses designated as Honors courses. These courses are selected by students, and are approved by the Department Honors Coordinator and individual faculty members. Any upper-division (3000-level or higher) course may be taken as Honors. Additional courses which will meet the criteria for an Honors designation are determined, in conjuction with the student, by the faculty members teaching the courses.

GPA Requirements

To qualify for departmental honors, students must maintain a cumulative GPA of 3.3 and a GPA of 3.5 within upper-division major requirements and Honors coursework.

Senior Thesis

In order to obtain departmental honors, students are required to design, conduct, and present a senior thesis/project under the supervision of a faculty mentor. The senior thesis/project can be built from the research component of PSY 4950 and 4960.

Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@cc.usu.edu. Additional information can be found online at: **http://www.usu.edu/honors/**

Department of Psychology

Additional Information

For detailed information about course requirements for majors and minors within the Psychology Department, see the major requirement sheet, which is available from the department, or which can be accessed online at: **http://www.usu.edu/majorsheets/**

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 **May 1**. 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 Master of Science 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*. The MS in School Psychology requires a **minimum of 60 semester credits**.

The following courses are required:

PSY 6150 Empirically Supported Treatments for Psychological Disorders of Children and Adolescents (Sp) 3
PSY 6220 Group Counseling (F) 3
PSY 6270 Child Psychopathology (F) 3
PSY 6290 Diversity Issues in Treatment and Assessment (Sp) 3
PSY 6310 Intellectual Assessment (F) 3
PSY 6330 Psychometrics (F) (3 cr) **or**
PSY 6600 Research Design and Analysis I (F,Sp,Su) (3 cr) 3
PSY 6340 Psychological and Educational Consultation (F) 3
PSY 6350 Introduction to Theory and Practicum in Counseling (F) 3
PSY 6360 Practicum in Counseling and Psychotherapy (Sp,Su) 3
PSY 6380 Practicum in School Psychology (F,Sp,Su) (Students must earn 3 credits during each of two semesters.) 6
PSY 6410 Psychoeducational Assessment (Sp) 3
PSY 6450 Introduction to School Psychology (F) 1
PSY 6460 Professional Issues in School Counseling and School Psychology (Sp) 3
PSY 6530 Developmental Psychology (F) 3
PSY 6570 Introduction to Educational and Psychological Research (F,Sp,Su) 3
PSY 6660 Cognition and Instruction (Sp) 3
PSY 6880 Transcultural Assessment Lab (Sp) 1
PSY 6890 Assessment of Child and Adolescent Psychopathology and Personality (Su) 3
PSY 6950 Internship in School Psychology (F,Sp,Su) 3
PSY 6970 Thesis (F,Sp,Su) 2-6

School Counselor Education (NCATE-accredited)

Completion of this program qualifies graduates for professional licensure in School Guidance Counseling. Coursework is formulated to train students in a broad range of skills, including individual and group counseling for diverse populations; behavior and educational assessment and intervention; research and methodological foundations; and ethical, legal, and professional standards. Experiential learning in the form of practicum and internship placements is a critical component of the program. The program is approved by the Utah State Office of Education and most other states. It is offered on campus and via a live, satellite distance education system (EDNET) to sites within Utah's boundaries. The program is accredited by the National Council for Accreditation of Teacher Education.

Absolute undergraduate course prerequisites for admission to the MS in School Counseling are as follows: (1) *Theories of Personality*, (2) *Abnormal Psychology*, and (3) *Psychological Statistics* (or equivalent).

The MS in School Counseling requires a minimum of 48 semester credits. The following courses are required:

PSY 6010 Introduction to Program Evaluation: Evaluation Models and Practical Guidelines (F,Su) 3
PSY 6150 Empirically Supported Treatments for Psychological Disorders of Children and Adolescents (Sp) 3
PSY 6220 Group Counseling (F) 3
PSY 6240 Introduction to School Counseling and Guidance (F) 3
PSY 6250 Internship in School Counseling and Guidance (F,Sp,Su) . 10

PSY 6260 Career Development: Theory and Practice (Sp) 3
PSY 6290 Diversity Issues in Treatment and Assessment (Sp) 3
PSY 6330 Psychometrics (F) 3
PSY 6340 Psychological and Educational Consultation (F) 3
PSY 6350 Introduction to Theory and Practicum in Counseling (F) 3
PSY 6370 Practicum in School Counseling (F,Sp,Su) 3
PSY 6460 Professional Issues in School Counseling and School Psychology (Sp) 3
PSY 6530 Developmental Psychology (F) 3
PSY 6810 Seminar (Grant Writing) (Su) 2

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 enter professional practice in a variety of settings, including VA hospitals, mental health centers, hospitals, clinics, schools, 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:

A. MS Counseling Psychology Degree Curriculum

PSY 6290 Diversity Issues in Treatment and Assessment (Sp) 3
PSY 6310 Intellectual Assessment (F) 3
PSY 6320 Objective Assessment of Personality and Affect (Sp) 3
PSY 6350 Introduction to Theory and Practicum in Counseling (F) 3
PSY 6360 Practicum in Counseling and Psychotherapy (Sp,Su) 3
PSY 6530 Developmental Psychology (F) 3
PSY 6650 Theories of Learning: The Behavioral Perspective (F) (3 cr) **or**
PSY 6660 Cognition and Instruction (Sp) (3 cr) 3
PSY 6570 Introduction to Educational and Psychological Research (F,Sp,Su) 3
PSY 6600 Research Design and Analysis I (F,Sp,Su) 3
PSY 6850 Introduction to the Combined Doctoral Program (F) 1
PSY 6970 Thesis (F,Sp,Su) 1-6

B. PhD Program Courses

PSY 6220 Group Counseling (F) 3
PSY 6510 Social Psychology (Sp) 3
PSY 6750 Empirically Supported Treatments for Adult Psychological Disorders (Sp) 3
PSY 6880 Transcultural Assessment Lab (Sp) 1
PSY 7100 Biological Basis of Behavior (Sp) 3
PSY 7250 Professional Ethics and Standards (F) 1-3
PSY 7270 Psychopathology (F) 3
PSY 7350 Practicum in School Psychology (F,Sp,Su) 3
PSY 7360 Practicum in Counseling Psychology (F,Sp,Su) 3
PSY 7370 Practicum in Clinical Psychology (F,Sp,Su) 3
PSY 7610 Research Design and Analysis II (Sp,Su) 3
PSY 7670 Literature Reviews in Education and Psychology (F,Sp) 2
PSY 7910 Independent Research (F,Sp,Su) 1-3
PSY 7950 Internship in Professional Psychology (F,Sp,Su) 1
PSY 7970 Dissertation (F,Sp,Su) 1-18
Electives 6

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 capable of contributing to the knowledge base in psychology and education utilizing experimental and evaluation methods. While satisfying the department's general requirements, students may design their programs to become specialists in a variety of areas, such as program evaluation, experimental health psychology, analysis of behavior, 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 63 total credits** past the MS degree (total of 40 credits):

A. MS Degree Curriculum

PSY 6010 Introduction to Program Evaluation: Evaluation Models and Practical Guidelines (F,Su) 3
PSY 6570 Introduction to Educational and Psychological Research (F,Sp,Su) 3
PSY 6600 Research Design and Analysis I (F,Sp,Su) 3

Content Requirements (12 credits):
Students must complete four of the following five courses:
PSY 6510 Social Psychology (Sp) 3
PSY 6530 Developmental Psychology (F) 3
PSY 6650 Theories of Learning: The Behavioral Perspective (F) 3
PSY 6660 Cognition and Instruction (Sp) 3
PSY 7100 Biological Basis of Behavior (Sp) 3

Other Requirements (4 credits):
INST 7920 College Teaching Seminar (online course offered through USU School of Graduate Studies) 1
PSY 6910 Independent Research: Demonstration of Computer Analysis, Instrument Critique, and Study Design Critique Competencies (F,Sp,Su) 1
PSY 7250 Professional Ethics and Standards (F) 2

B. PhD Degree Curriculum
PSY 7090 Research and Evaluation Methodology Program Seminar (F,Sp) 1
PSY 7670 Literature Reviews in Education and Psychology (F,Sp) 2
PSY 7700 Grant Writing (Sp) 3
PSY 7780 Multivariate Methods in Psychology and Education (F) 3

Specialty Area Electives (21 credits):
Students should consult with their supervisory committee to determine which Specialty Area Electives they should complete.

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 Research and Evaluation Methodology 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: *Ascione*—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; *Cheney*—behavioral pharmacology, basic operant learning; *Crowley*—anxiety, depression, supervision and training; *DeBerard*—health psychology, behavioral medicine, spinal surgery outcome and technique efficacy; *Domenech Rodríguez*—Latino family dynamics, parent training programs; *Fargo*—statistical methods, quantitative neuropsychology, seizure disorders, classification statistics; *Ferguson*—bullying, victimization, emotional well-being, religious thinking; *Field*—adolescent behavior disorders, rural mental health issues, school psychology; *Franco*—student services, minority health issues, multicultural psychology; *Galliher*—social and dating relationship processes and dymanics in adolescence and rural mental health service delivery; *Gilbertson*—early intervention and prevention of behavior problems, school psychology; *Gimpel Peacock*—ADHD, behavioral disorders of children; *Julnes*—evaluation theory, human service delivery, family; *Lehman*—Web/Internet learning variables and efficacy, educational psychology; *Odum*—experimental analysis of behavior, behavior pharmacology; *Roberts*—early intervention with families of young children, community-based systems of services; *Schroder*—sexual risk behavior, models of health behavior, stress and coping; *Shahan*— experimental analysis of behavior, drug self-administration, behavior momentum, conditioned reinforcement, behavior economics; *Sinex*—processing of central auditory system, neuropsychology of sound discrimination; *Stein*—addictive behaviors and models, drug and alcohol prevention/treatment; *J. Tschanz*—neuropsychology of Alzheimer's disease and other dimentias; *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 also 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 of their program.

Psychology Faculty

Professors
Frank R. Ascione, developmental
Carl D. Cheney, physiological
Susan L. Crowley, counseling
Tamara J. Ferguson, social and developmental psychology
Richard N. Roberts, developmental
Charles L. Salzberg, applied behavior analysis
Donal G. Sinex, auditory neurophysiology
David M. Stein, clinical psychology
Karl R. White, research and evaluation methodology

Research Professors
Byron R. Burnham, qualitative evaluation methods
Russell Snyder, auditory neurophysiology

Professors Emeritus
Marvin G. Fifield, school and counseling
J. Grayson Osborne, behavior therapy, child
Blaine R. Worthen, research and evaluation methodology

Associate Professors
M. Scott DeBerard, health psychology
George Julnes, research and evaluation methodology
Amy L. Odum, behavior analysis
Gretchen Gimpel Peacock, school
Melanie M. Domenech Rodríguez, counseling, child clinical
JoAnn T. Tschanz, neuropsychology, abnormal psychology, physiological psychology

Research Associate Professor
Mark S. Innocenti, school psychology

Assistant Professors
Scott C. Bates, social and community psychology
Jamison Fargo, statistical methods, neuropsychology
Clint Field, school psychology
Renee V. Galliher, clinical psychology
Donna M. Gilbertson, school psychology
Timothy Shahan, behavior analysis
Kerstin E. E. Schroder, health psychology

Research Assistant Professor
Susan G. Friedman, research methods

Adjunct and Clinical Faculty
Ann M. Berghout Austin, infancy through childhood
Carolyn 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
Margaret R. "Peg" Hennon, career guidance and assessment
Randall M. Jones, family research management
Joan A. Kleinke, counseling and personnel services
Steve Lehman, educational psychology
J. Russell Mason, sensory evaluation, ethology
Kent E. Nabers, gero-psychology
Mark A. Nafziger, counseling psychology
Maria C. Norton, research and evaluation methodology
D. Kim Openshaw, marriage and family therapy
Lori A. Roggman, developmental
Carol Rosenthal, instructional design and technology
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

Course Descriptions

Psychology (PSY), pages 701-706

Religious Studies Major and Minor

Program Director: Norman L. Jones
Location: Main 323
Phone: (435) 797-1290
FAX: (435) 797-3899
TTY: (435) 797-1290
E-mail: diane.buist@usu.edu
WWW: http://www.usu.edu/history

Degrees offered: Bachelor of Science (BS), Bachelor of Arts (BA)

Program Description

The Religious Studies BS or BA degree requires a total of 36 credits for the major, as well as 15 credits in a complementary minor.

Students begin their course of study by completing two lower-division courses. One is a survey of religions, and the other is a methodology course.

Students must take 27 credits of upper-division coursework, distributed over the following three areas: **Cultural Inquiry** (humanistic approaches), **Scientific Inquiry** (social scientific approaches), and **Doctrinal Inquiry** (philosophical and theological approaches).

At the end of the program, students completing either the BA or the BS degree must take a capstone seminar.

The minor in religious studies requires the same two lower-division courses as the major, and at least one upper-division course chosen from each of the three areas of approach.

Purpose and Outcomes

Students completing the BA or BS degree in Religious Studies should be able to demonstrate the ability to:

1. understand the influence of religion upon culture, and the influence of culture upon religion;
2. analyze the influence of religious value systems on individuals;
3. apply appropriate methods of research and argumentation to questions concerning religion and culture;
4. communicate their findings in clear, well-reasoned writing; and
5. express cultural literacy concerning the major religions of the world.

Requirements

New students accepted in good standing by the University may apply for admission to the Religious Studies Program. Students transferring from another institution or another major will be admitted if they have an overall minimum GPA of 2.5.

Candidates must earn a grade of *C* or better in all courses used to meet the requirements of the Religious Studies major or minor.

Degree Options

Students in the program may work toward one of the following two degrees:

Bachelor of Arts (BA) Degree

Students enrolled in the BA degree focus their work on cultural questions within religious studies. Since sufficient coursework in a foreign language is required, students should consider completing courses offered by USU in Latin, Greek, Chinese, or other appropriate languages. The BA degree requires a minimum proficiency in a foreign language. This proficiency may be established in one of the following ways:

1. Sixteen 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 better

Bachelor of Science (BS) Degree

Students enrolled in the BS degree focus their work on quantitative or clinical questions within religious studies. Students should consider completing upper-division courses in social science methods or statistics. Students must complete 15 credits of math and science beyond the University Studies requirements.

Religious Studies Major

Students must complete at least 36 credits in interdisciplinary coursework. A grade of *C* or better must be earned in all classes used for the major.

Required Courses (9 credits)

RELS 1010 Introduction to Religious Studies 3
Historical and comparative survey of the principal beliefs and practices of the world’s religions, as well as an exploration of their interplay with the cultures in which they exist. Following general introduction to the study of religion, course includes units on Hinduism, Buddhism, Chinese and Japanese religions, Islam, Judaism, Christianity, and the “new religions” in America.

RELS 2010 Introduction to Religious Studies Methodology.....3
Pre-major course helping students to understand the discipline of religious studies. Explores the questions asked by religious studies, as well as the methods used to answer these questions. Helps students gain an understanding of the various approaches to the study of religion and the history of attempts to understand religion in cultural contexts.

RELS 4990 Religious Studies Capstone.....3
Students write a substantial research paper dealing with a religious studies topic and demonstrating their command of the research methods, documentation, and style of professional communication used in the discipline.

Elective Courses (27 credits)

Complete at least 6 credits of coursework in *each* of the following three divisions. The total credits for coursework completed in this section must be *at least* 27 credits.

Cultural Inquiry
Courses in this section use the methods of the arts and humanities to explore religious expression and the ways in which religion and behavior interact over time.

Select at least two of the following courses:
ENGL 3070 (DHA) Perspectives in Folklore (F,Su).....3
In-depth study of folklore for nonmajors. Topics vary according to faculty expertise. Also taught as HIST 3070.

ENGL 3700 (CI) Regional Folklore (F,Sp).....3
Study of folklore and folklife as they relate to regional cultures. Also taught as HIST 3700.

HIST 3110 (DHA/CI) 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 ART 3110.

HIST 3150 (CI) 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 3220 (DHA/CI) 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 3250 (DHA/CI) Renaissance Europe 1300 to 1520 (F,Sp) 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 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 3850 (DHA/CI) History of Utah (Sp).....3
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 intensive. Requires use of USU Special Collections and Archives. Prerequisite: ENGL 2010.

HIST 4210 Celtic Europe (F,Sp).....3
History of Celtic peoples in British Isles, Scandinavia, and continental Europe, from Neolithic times to the Norman Conquest in 1066. Computer intensive.

HIST 4230 (DHA/CI) 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 4790 American Religious History 3
Varieties of American religious experience from settlement to the present.

RELS 3010 Introduction to Buddhism 3
General survey of historical development, basic doctrine, and practice of Hinayana and Mahayana Buddhism.

RELS 3020 Introduction to Hinduism 3
Surveys history, doctrinal developments, and sociological concerns of Hinduism from the Vedic Period through the Modern Period. Focuses primarily on Hindu religious thought as applied to Hindu life through various modes of religious action.

RELS 4010 Buddhism in the West.....3
One-semester introduction to Buddhism in the Western world for nonspecialists in Buddhism. Focuses on development of Buddhism as a Western religious phenomenon. Presents interpretive, historical introduction to Buddhism in the West.

Note: RELS 3010, 3020, and 4010 are taught alternating years. Check with the Religious Studies Program for information about when these courses will be taught.

Scientific Inquiry
Courses in this section use the methods of the social sciences to explore religious values and behavior on an individual and a societal level.

Select at least two of the following courses:
ANTH 3160 (DSS) Anthropology of Religion (F) 3
Cross-cultural description and theoretical analysis of religion and its functional relationships to human psychology, society, and the natural environment.

ANTH 4110 (d6110) (DSS) Southwest Indian Cultures, Past and Present (F) 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.

ANTH 4130 (DSS) Medical Anthropology: Matter, Culture, Spirit, and Health (Sp) 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 cluster capstone course.

PHIL 3750 Religion and Science in the Modern World (Sp) 3
Study of problems addressing the relation of religion to science in the modern world (e.g., evolution, Big Bang, origin of life).

PSY 3500 (DSS) Scientific Thinking and Methods in Psychology (F,Sp).....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. Prerequisite: PSY 1010.

PSY 3510 (DSS) Social Psychology (F,Su).....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.

PSY 4420 (DSS) Cognitive Psychology (Sp) 3
In-depth study of basic concepts, methods, and theories involved in perception, memory, and thinking. Lab required. Prerequisite: PSY 1010.

PSY 4430 Cognitive Psychology Laboratory (Sp).....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.

SOC 3110 (CI) Methods of Social Research (F,Sp) 3
Examines surveys, field techniques, and observational studies. Prerequisite: Completion of 6 credits of Sociology coursework.

SOC 3500 Social Psychology (F,Sp).....3
Explores interaction between the social system and the individual. Examines human behavior in terms of positions people occupy in the social structure.

SOC 4330 Sociology of Religion (F) 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.

Doctrinal Inquiry
Courses in this section use the methods of philosophy and theology, exploring systems of belief and major theological models.

Select at least two of the following courses:
PHIL 3100 (CI) Ancient Philosophy (F) 3
Development of philosophical thought in the Ancient Greek world. Readings from the pre-Socratics, Plato, Aristotle, the Stoics, and Epicureans.

PHIL 3110 Medieval Philosophy (Sp).....3
Neo-Platonism with stress on Plotinus, St. Augustine, and early Christian philosophy; early medieval thought; St. Thomas Aquinas and the rise of scholasticism; and philosophical thought in the Renaissance.

PHIL 3120 (CI) Early Modern Philosophy (F).....3
Philosophers and philosophical disputes in Western Europe from 1400-1750. Figures and topics may include: Bacon, Hobbes, Descartes, Locke, Hume, nominalism, empiricism, rationalism, religion, politics, and morals.

PHIL 3700 Philosophy of Religion (F) 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.

PHIL 3710 Philosophies of East Asia (F) 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.

PHIL 3720 Philosophical Theology After Kant (F).....3
Explores attempts to reconstruct the reasonable basis of religion in the two centuries after the Enlightenment.

PHIL 3730 (CI) Philosophy of the New Testament (Sp) 3
Historical and intellectual context of the development of the New Testament. Character, ideas, and historical setting of the various documents.

PHIL 4300 (DHA) Epistemology (F).....3
Study of foundations of knowledge and belief systems, and related topics in epistemology, including perception, certainty, and skepticism.

Minor in Religious Studies

The minor in Religious Studies requires15 credits. Students must earn a grade of *C* or better in all courses counted toward the minor. Students must complete the following courses.

RELS 1010 Introduction to Religious Studies 3
Historical and comparative survey of the principal beliefs and practices of the world's religions, as well as an exploration of their interplay with the cultures in which they exist. Following general introduction to the study of religion, course includes units on Hinduism, Buddhism, Chinese and Japanese religions, Islam, Judaism, Christianity, and the "new religions" in America.

RELS 2010 Introduction to Religious Studies Methodology.....3
Pre-major course helping students to understand the discipline of religious studies. Explores the questions asked by religious studies, as well as the methods used to answer these questions. Helps students gain an understanding of the various approaches to the study of religion and the history of attempts to understand religion in cultural contexts.

In addition to the two RELS courses listed above, students must also complete *at least one* upper-division course chosen from each of the following three areas of approach: Cultural Inquiry, Scientific Inquiry, and Doctrinal Inquiry.

Sample Four-year Plan for Religious Studies Major

Minimum GPA for Admission: 2.5, USU; 2.0, Career
Minimum GPA for Graduation: 2.5, major courses; 2.0, USU
Minimum Grade Accepted: *C* in all major requirements

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (30-34 credits)
Fall Semester (15-17 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
RELS 1010 Introduction to Religious Studies 3
Science or Foreign Language course(s) (BS/BA requirement) 3-5
University Studies Breadth courses 6

Spring Semester (15-17 credits)
Religious Studies upper-division course 3
Science or Foreign Language course(s) (BS/BA requirement) 3-5
Quantitative Literacy (QL) course 3
University Studies Breadth courses 6

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (30-34 credits)
Fall Semester (15-17 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
RELS 2010 Introduction to Religious Studies Methodology 3
Religious Studies upper-division course 3
Science or Foreign Language Course(s) (BS/BA requirement) 3-5
University Studies Breadth course 3

Spring Semester (15-17 credits)
Religious Studies upper-division courses 6
Science or Foreign Language course(s) (BS/BA requirement) 3-5
University Studies Breadth course 3
Minor course(s) 3

Junior Year (30 credits)
Fall Semester (15 credits)
Religious Studies upper-division courses 6
Communications Intensive (CI) course 3
Quantitative Intensive (QI) course 3
Depth Social Sciences (DSS) course (cannot be used toward minimum credits for Religious Studies major) 3

Spring Semester (15 credits)
Religious Studies upper-division course 3
Communications Intensive (CI) course 3
Depth Life and Physical Sciences (DSC) course 3
Minor courses 6

Senior Year (30 credits)
Fall Semester (15 credits)
Religious Studies upper-division courses 9
Minor courses 6

Spring Semester (15 credits)
RELS 4990 Religious Studies Capstone 3
Upper-division course 3
Elective and/or minor courses 9

Course Descriptions

Religious Studies (RELS), page 708

Department of Secondary Education

Interim Department Head: Martha T. Dever
Location: Emma Eccles Jones Education 330
Phone: (435) 797-2222
FAX: (435) 797-1441
E-mail: seced@usu.edu
WWW: http://secondaryeducation.usu.edu/

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), Master of Education (MEd), and Educational Specialist (EdS) 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. Students must complete all requirements of the premajor prior to being admitted to the full major. 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, (5) recommendations from advisors in major and minor fields, and (6) submission of a criminal background check (a legislative mandate). 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 61 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.

A. History (30 credits)

The History requirement is met by completing the *History Teaching Minor*, plus three additional upper-division courses approved by the student's advisor. Requirements for the History Teaching Minor can be found on pages 334-335.

B. Geography (16-19 credits)

GEOG 1000 (BPS) Physical Geography (F,Sp,Su).....3
GEOG 1300 (BSS) World Regional Geography (F,Sp).....3
GEOG 1400 (BSS) Human Geography (Sp).....3
GEOG 3850 Map, Air Photo, and GIS Interpretation (F).....4
GEOG 4200 (CI) Regional Geography (Utah) (F,Sp,Su).....3
GEOG 4200 (CI) Regional Geography (International Course) (optional) (F,Sp,Su) ..... (3)
Note: Students who complete GEOG 4200, Regional Geography (International Course), in addition to the other Geography courses listed above, qualify to receive a Geography Teaching Minor.

C. Economics (3 credits)

ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp) 3

D. Political Science (6 credits)

POLS 1100 (BAI) United States Government and Politics (F,Sp).....3
POLS 2200 (BSS) Comparative Politics (F,Sp) (3 cr) **or**
POLS 3130 (DSS) United States Legislative Politics (Sp) (3 cr).....3

E. Psychology/Sociology (6 credits)

PSY 1010 (BSS) General Psychology (F,Sp,Su) 3
SOC 1010 (BSS) Introductory Sociology (F,Sp).....3

Suggested Four-year Course of Study for Social Studies Composite Teaching Major

Freshman Year (30-31 credits)
Fall Semester (15-16 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
HIST 2700 (BAI) United States to 1877 3
PSY 1010 (BSS) General Psychology 3
MATH 1050 (QL) College Algebra (4 cr) **or**
STAT 1040 (QL) Introduction to Statistics (3 cr)....3 or 4
USU 1340 (BSS) Social Systems and Issues 3

Spring Semester (15 credits)
ENGL 2010 (CL2) Intermediate Writing: Reseach Writing in a Persuasive Mode 3
GEOG 1000 (BPS) Physical Geography....3
HIST 1060 (BHU) Introduction to Islamic Civilization (3 cr) **or**
HIST 1100 (BHU) Foundations of Western Civilization: Ancient and Medieval (3 cr) **or**
HIST 1500 (BHU) Cultural and Economic Exchange in the Pre-Nineteenth Century World (3 cr) 3
POLS 1100 (BAI) United States Government and Politics 3
Breadth Creative Arts (BCA) course....3

Sophomore Year (30 credits)
Fall Semester (15 credits)
GEOG 1300 (BSS) World Regional Geography....3
ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles 3
HIST 1100 (BHU) Foundations of Western Civilization: Ancient to Medieval (3 cr) **or**
HIST 1110 (BHU) Foundations of Western Civilization: Modern (3 cr) **or**
HIST 1510 (BHU) The Modern World (3 cr)....3
HIST 2710 (BAI) United States 1877-Present (optional, but recommended)....3
USU 1350 (BLS) Integrated Life Science 3

Spring Semester (15 credits)
GEOG 1400 (BSS) Human Geography 3
POLS 2200 (BSS) Comparative Politics (3 cr) **or**
POLS 3130 United States Legislative Politics (3 cr) 3
HIST upper-division elective courses 9

Junior Year (30 credits)
Fall Semester (16 credits)
GEOG 3850 Map, Air Photo, and GIS Interpretation....4
GEOG 4200 (CI) Regional Geography: Utah 3
Quantitative Intensive (QI) course....3
HIST upper-division elective courses 6

Spring Semester (14 credits)
GEOG 4200 (CI) Regional Geography: International (optional, but recommended)....3
HIST 4850 Interpreting the Past for Teachers (3 cr) **or**
HIST 4860 Teaching History (3 cr) **or**
HIST 4870 Teaching World History: Themes, Approaches, and Materials (3 cr)....3
SPED 4000 Education of Exceptional Individuals 2
HIST 4850 Interpreting the Past for Teachers (3 cr) **or**
HIST 4860 Teaching History (3 cr) **or**
HIST 4870 Teaching World History: Themes, Approaches, and Materials (3 cr)....3
Depth Life and Physical Sciences (DSC) course 3

Senior Year (30 credits)
Fall Semester (15 credits)
Recommended courses in STEP Program (see advisor)....15

Spring Semester (15 credits)
Recommended courses in STEP Program (see advisor)....15

Certification Semester (12 credits)
STEP Student Teaching courses....12

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 Licensure

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 pursing 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. (**Note:** Secondary Education majors should complete SCED 3210 prior to taking SCED 4710.)

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

Department of Secondary Education

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.

Composite Teaching Majors (46 credits minimum)

Agricultural Education, Art Education, Biological Science, Earth Science, Engineering and Technology Education, Family and Consumer Sciences Education, Music Education, Mathematics and Statistics Education, and Social Studies Education.

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.

Teaching Minors (16 credits minimum)

Chemistry, Economics, English, Geography, Health Education, History, Mathematics, Modern Languages, Physical Education Coaching, Physics, Political Science, Psychology, Sociology, Speech Communication, 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.* All courses in the STEP Program must be completed with a minimum grade of *C*-.

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 are required to complete on Levels 1 and 2 to prepare for student teaching at Level 3. Student teaching in a composite teaching major, or in at least one teaching major and one teaching minor, is required.

A. Level 1 (15-week courses)

INST 3500 Technology Tools for Secondary Teachers (F,Sp,Su).....1
SCED 3100 Motivation and Classroom Management (F,Sp).....3
SCED 3210 (CI/DSS) Educational and Multicultural Foundations (F,Sp).....3
SCED 3300 Clinical Experience I (30 hours minimum in field).....1
Special Methods I[1] (major or minor).....3

B. Level 2 (15-week courses)

SPED 4000 Education of Exceptional Individuals (F,Sp,Su) (may be taken anytime).....2
SCED 4200 (CI) Reading, Writing, and Technology (F,Sp).....3
SCED 4210 Cognition and Evaluation of Student Learning (F,Sp).....3
SCED 4300 Clinical Experience II (30 hours minimum in field).....1
Special Methods II[2] (major or minor).....3

C. Level 3 (includes 13 weeks of student teaching and 10 weeks of Student Teaching Seminar)

Student Teaching Seminar[3] (10 weeks).....2
Student Teaching[4] (13 weeks, full-time).....10

[1]The Special Methods I course is taught by various departments under various course numbers. Course title varies among departments.
[2]The Special Methods II course is taught by various departments under various course numbers. Course title varies among departments.
[3]The Student Teaching Seminar course is taught under course number 5500 in various departments. Course title varies among departments.
[4]The Student Teaching course is taught under course number 5630 in various departments. Course title varies among departments.

Clinical Experience

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.

Student Teaching

Students must attend the Student Teaching Enrollment Meeting (STEM) one year in advance of their student teaching semester. Applications for student teaching and each semester's deadlines will be discussed at the STEM. Information concerning the Praxis II and the content minor test, which must be taken before student teaching, will also be discussed. Students must complete 80 percent of their teaching major/minor (or composite major) requirements prior to student teaching.

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.

Only the courses approved for the semester may be taken during student teaching.

Assessment

The Department of Secondary Education is committed to principles and practices of continual assessment of its programs and its students. Information about current assessment tools that are being used by the department can be found at:
http://secondaryeducation.usu.edu/a_home.php

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. Minimum GPA requirements for participation

in departmental honors vary by department, but usually fall within the range of 3.30-3.50. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level. The campus-wide Honors Program, which is open to all qualified students regardless of major, offers a rich array of cultural and social activities, special classes, and the benefit of Honors early registration. Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@cc.usu.edu. Additional information can be found online at: **http://www.usu.edu/honors/**

Additional Information

For detailed information about requirements for teaching majors and minors, students should see the major requirement sheet(s) for the subject area(s) in which they plan to seek licensure or receive a teaching minor. These requirement sheets can be found online at: **http://www.usu.edu/majorsheets/**

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 101-102).

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 on a rolling basis. Students applying for doctoral programs should consult the director of the Interdepartmental Doctoral Program for information about application deadlines. *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. Two University departments—Art and Management Information Systems—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 specialities. 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 specialities; 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.

Educational Specialist Degree (EdS)

The EdS is a 36-42 credit post-masters degree designed to enable experienced educators to specialize and improve their professional competence in specific areas or fields. The EdS degree meets the advanced study needs of persons seeking leadership roles in public education, junior colleges, and small private and state colleges. The coursework requirements extend competencies for individuals serving in such positions as program developers, trainers, curriculum specialists, supervisors, instructional leaders, and college instructors. The EdS is also related to certification needs of some educational leaders. Areas of emphasis in the Department of Secondary Education are: Instructional Leadership; Supervision and Leadership; Schooling, Culture, and Society; Engineering and Technology Education; Teaching and Learning in Higher Education; and Reading and Writing. The EdS is especially appropriate for those individuals who wish preparation beyond the master's degree level, but who are not interested in doctoral work with its greater emphasis on developing proficiencies in conducting independent research.

Department of Secondary Education

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 251-252 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 up to four 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 Emeritus
Ross R. Allen, mathematics education, comparative education
Eldon M. Drake, journalism, general student teaching
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, multicultural education, ESL/Bilingual

Associate Professor Emeritus
Varnell A. Bench, extension, administration, supervision

Assistant Professors
George G. Hruby, literacy/reading
Sherry Marx, ESL/bilingual/multicultural
L. Ruth Struyk, classroom assessment, classroom management, measurement, instructional supervision, program evaluation

Continuing Education Assistant Professors
Todd Campbell, science
Peggie Lee Clelland, literacy, reading
Laurie Culbreth, English education
Steven Laing, educational leadership

Lecturer
Barbara Cangelosi, classroom management

Adjunct Clinical Instructor
Loo Leong Guan Eddie, instructional technology

Undergraduate Advisor
Harold E. Heap, classroom management, adolescent development

Course Descriptions

Secondary Education (SCED), pages 709-712

Academic Service-Learning Program and Certificate

Coordinator: Robert H. Schmidt
Location: Taggart Student Center 326
Phone: (435) 797-7947
FAX: (435) 797-2919
E-mail: servelearn@cc.usu.edu

Staff Assistant: To be appointed, Taggart Student Center 326, (435) 797-2912, servelearn@cc.usu.edu

Program Description

Utah State University has implemented an Academic Service-Learning Program that leads to a Certificate in Service-Learning. This program provides a much-needed and desired academic component complementing the extensive public service efforts of many USU students. It supports broader state and national movements promoting more civic engagement among college and university students. It also supports USU's undergraduate educational mission, which is to prepare citizen scholars "*...who participate and lead in local, regional, national, and global communities*."

Service-Learning is a well-researched and highly effective teaching pedagogy, which incorporates community service into the course curriculum. Academic Service-Learning is a credit-bearing educational experience where students: (1) gain a broader understanding of course content, (2) earn a deeper appreciation of the discipline, (3) help meet community needs, (4) reflect on service activities, and (5) develop an enhanced sense of civic responsibility. Many opportunities for service-learning are available for USU students. Course sections listed in the *Schedule of Classes* with the SL designation have been approved by the Service-Learning Steering Committee to meet the criteria listed above. For a current list of SL-designated courses, contact the Service-Learning Coordinator.

The program is housed organizationally within the Office of the Provost. The program's faculty and staff work very closely with the ASUSU Service Vice President, the Val R. Christensen Service Center program directors, the Student Involvement and Leadership Center, and the Vice President for Student Services. The Service-Learning Coordinator is assisted by a steering committee consisting of faculty, students, and staff.

Certificate

Service-Learning Scholars are awarded a Service-Learning Certificate, which is recorded on a student's official transcript, enabling employers and graduate programs to see evidence of a student's determination to go the extra mile. As Service-Learning Scholars, students will also be recognized at graduation with a banquet in their honor, cords to wear during commencement, and their names in the graduation program.

Admission Requirements

Service-Learning Scholars at USU are an elite group of students dedicated to making a difference in their community. Each year, 25 students will be admitted to the program. Admission to the program is competitive and is limited to a maximum of 100 students at any one time. In order to gain admittance to the program, students must submit an application, have a 3.0 or higher grade point average, and submit a written essay detailing their interest in Service-Learning and their dedication to community engagement.

Certificate Requirements

To receive a Service-Learning Certificate, a student must:

1. Apply for and be accepted to the Service-Learning Scholars Program.
2. Earn a *minimum* of 9 SL designated credits (with a grade of *B* or better in each course).
3. Perform a *minimum* of 400 service hours.
4. Develop and complete an approved capstone project.
5. Maintain and present a reflective portfolio.

The 9 credits must come from an approved list of Service-Learning courses. Course adaptations will be considered by the Service-Learning Coordinator (for example, an instructor may work with one student in a non-SL course to complete the SL requirement). For answers to any questions, as well as an up-to-date list of approved SL courses and program applications, students should contact the Service-Learning Coordinator.

Interdepartmental Program in Social Sciences

Degree Coordinator:
Gary Kiger, Dean of College of Humanities, Arts, and Social Sciences
Location: Main 338
Phone: (435) 797-1195

Degree offered: Master of Social Sciences (MSS)

Primary Disciplines: History, Political Science, and Sociology

Secondary 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 primary 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 primary discipline, plus a minimum of 15 credits from one of the following two tracks: *Track A*: a minimum of 15 credits from two approved primary disciplines, with at least two courses in each secondary discipline. *Track B*: a minimum of 15 credits from an approved secondary discipline and a cluster, with at least two courses in the secondary discipline and two courses in the cluster. Courses counted in a cluster must be outside the selected primary discipline and secondary discipline. 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 101-102. 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 primary discipline.

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 primary discipline and (a) one from each of the secondary disciplines, or (b) one from a secondary 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 primary discipline, but in some cases, with the approval of the student's supervisory committee, it may be written in one of the secondary disciplines. Information specific to each primary 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.

Department of Sociology, Social Work and Anthropology

Department Head: Richard S. Krannich
Location: Main 224
Phone: (435) 797-1230
FAX: (435) 797-1240
E-mail: ann.johns@usu.edu
WWW: http://www.usu.edu/sswa

Undergraduate Program Directors:
Sociology:
Peggy Petrzelka, Main 216E, (435) 797-0981, peggyp@hass.usu.edu
Social Work:
Terry L. Peak, Main 239D, (435) 797-4080, tpeak@hass.usu.edu
Anthropology:
Patricia M. Lambert, Main 245A, (435) 797-2603, plambert@hass.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 Inequality, and Social Change and Development

Undergraduate Programs

Objectives

The department offers educational programs for students to prepare for positions in business, social welfare, teaching, research, personnel, government service, social services, law enforcement, and industry, as well as providing liberal and general education for all interested students. The department offers a wide range of courses for the study of social, cultural, and behavioral dynamics. The department also provides University Studies, Liberal Arts, 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. Undeclared and 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 (effective Fall Semester 2005). 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 1010 with a grade of *C*+ or better, and must have completed an application form (available from the department).

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. Minimum GPA requirements for participation in departmental honors vary by department, but usually fall within the range of 3.30-3.50. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level. The campus-wide Honors Program, which is open to all qualified students regardless of major, offers a rich array of cultural and social activities, special classes, and the benefit of Honors early registration. Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@cc.usu.edu. Additional information can be found online at: **http://www.usu.edu/honors/**

Additional Information

Major requirement sheets, which provide detailed information about requirements for majors and minors within the Sociology, Social Work and Anthropology Department, can be obtained from the department, or accessed online at: **http://www.usu.edu/majorsheets/**

Sociology

Undergraduate Program Director: Peggy Petrzelka
Program Office: Main 224, (435) 797-1230

The study of the human individual and human groups is central to sociology. Sociology offers a broad foundation for understanding human behavior on an individual and group basis, and encourages 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, such as race, class, and gender, as they have developed through history; and research 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 criminology and deviance, retirement and other aspects of aging, the causes and prevention of juvenile delinquency, and the cultural characteristics of various social 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 minor 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 (QL) Introduction to Statistics 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 must 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 SOC 1010 (BSS) Introductory Sociology (effective Fall Semester 2005) and a *C-* or better in all other courses to be counted toward the major.

3. A minor outside the program is encouraged but not required.

4. Complete the following required courses (15 credits):
   SOC 1010 (BSS) Introductory Sociology (F,Sp).....3
   SOC 3010 Race, Class, and Gender (F,Sp).....3
   SOC 3110 (CI)[1] Methods of Social Research (F,Sp).....3
   SOC 3120 (QI)[2] Social Statistics I (F,Sp).....3
   SOC 4010 Contemporary Sociological Theory (F,Sp).....3

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 Social Problems (F,Sp).....3
SOC 3410 Juvenile Delinquency (F,Sp).....3
SOC 3420 Criminology (F,Sp).....3
SOC 3430 Social Deviance (F).....3
SOC 3750 Sociology of Aging (F).....3
SOC 4420 (CI) Criminal Law and Justice (Sp).....3
SOC 4800 Seminar in Sociology (F,Sp).....1-3

b. Groups and Institutions
SOC 2370 Sociology of Gender (F).....3
SOC 3320 Sociology of Work and Organization (Sp).....3
SOC 3330 Medical Sociology (F).....3
SOC 3500 Social Psychology (F,Sp).....3
SOC 4330 Sociology of Religion (F).....3
SOC 4350 Political Sociology (Sp).....3
SOC 4800 Seminar in Sociology (F,Sp).....1-3

c. Population, Environment, and Development
SOC 3200 Population and Society (F,Sp).....3
SOC 3600 Sociology of Urban Places (F).....3
SOC 3610 Rural Sociology (F).....3
SOC 4620 Sociology of the Environment and Natural Resources (Sp).....3
SOC 4710 Asian Societies (Sp).....3
SOC 4720 Applied Community Development (Sp).....3
SOC 4730 Women in International Development (Sp).....3
SOC 4800 Seminar in Sociology (F,Sp).....1-3
SOC 5650/6650 Developing Societies (F).....3

[1]Prerequisites: Six credits of departmental courses.
[2]Prerequisites: Six credits of departmental courses; and STAT 1040 or equivalent

Sample Four-year Plan for Sociology Major

Minimum GPA for Admission: 2.5, Overall; 2.5, USU
Additional Matriculation Requirement: Complete SOC 1010 with grade of *C* or better
Minimum GPA for Graduation: 2.5, major; 2.0, USU; 2.0, Overall
Minimum Grade Accepted: *C* in SOC 1010; *C-* in major courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (30 credits)
Fall Semester (15 credits)
SOC 1010 (BSS) Introductory Sociology.....3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose.....3
University Studies Breadth courses.....6
Elective course(s).....3

Spring Semester (15 credits)
SOC 3010 Race, Class, and Gender.....3
STAT 1040 (QL) Introduction to Statistics.....3
Sociology elective course (chosen from *Social Problems* group).....3
University Studies Breadth courses.....6

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (30 credits)
Fall Semester (15 credits)
SOC 3110 (CI) Methods of Social Research 3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Sociology elective course (chosen from *Groups and Institutions* group) 3
University Studies Breadth course 3
Elective course(s) 3

Spring Semester (15 credits)
SOC 3120 (QI) Social Statistics I 3
Sociology upper-division course (chosen from *Population, Environment, and Development* group) 3
Elective courses 9

Junior Year (30 credits)
Fall Semester (15 credits)
SOC 4010 Contemporary Sociological Theory 3
Sociology upper-division course 3
Depth Humanities and Creative Arts (DHA) course 3
Upper-division elective courses 6

Spring Semester (15 credits)
Sociology upper-division courses 6
Depth Life and Physical Sciences (DSC) course 3
Upper-division elective course(s) 4
Elective course(s) 2

Senior Year (30 credits)
Fall Semester (15 credits)
Communications Intensive (CI) course 3
Elective courses 12

Spring Semester (15 credits)
Elective courses 15

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. Sociology minors must maintain a minimum GPA of 2.5 in sociology courses. They must also earn a grade of *C* or better in SOC 1010 (BSS) Introductory Sociology (effective Fall Semester 2005), and a grade of *C-* or better in all other courses to be counted toward the minor.
SOC 1010 (BSS) Introductory Sociology (F,Sp) 3
SOC 1020 Social Problems (F,Sp) 3
Additional credits with a SOC prefix 6

Sociology Student Organization

Alpha Kappa Delta (AKD), the sociology honor society, provides sociology undergraduates with a sense of community and an opportunity to build strong friendships outside of the classroom. Students are encouraged to become involved with AKD. For further information, contact Peggy Petrzelka, **peggyp@hass.usu.edu**.

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 Certificate

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 a minimum of 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 Abuse and Neglect in Family Context (F,Sp) (prereq: Sophomore standing, FCHD 1500, 2400) (3 cr) **or**
PSY 3120 Abuse, Neglect, and the Psychological Dimensions of Intimate Violence (F,Su) (prereq: PSY 1100) (3 cr) 3
JCOM 4030 Mass Media Law (F,Sp) 3
MHR 2050 Legal and Ethical Environment of Business (F,Sp,Su) 3
MHR 3810 Employment Law and Policy Development (F,Sp) 3
MHR 5640 Selected Topics: International Business Law 3
PHIL 1120 (BHU) Social Ethics (F) 3
PHIL 4600 Philosophy of Law (F) 3
PHIL 4610 (DHA) Social and Political Philosophy (Sp) 3
PHIL 5600 Legal Ethics (F) (prereq: PHIL 4600) 3
POLS 3120 Law and Politics (F) 3
POLS 3130 United States Legislative Politics (Sp) 3
POLS 3170 Law and Economics (F) 3
POLS 3320 The Foundations of American Constitutionalism 3
POLS 3810 Introduction to Public Policy (F) 3
POLS 4120 American Constitutional Law (F) 3
POLS 4130 Constitutional Theory (Sp) 3
POLS 4810 Politics and Public Policy (F) 3
POLS 5130 Law and Policy (Sp) 3
SOC 1020 Social Problems (F,Sp) 3
SOC 3410 Juvenile Delinquency (F,Sp) 3
SOC 3420 Criminology (F,Sp) 3
SOC 3430 Social Deviance (F) 3
SOC 4420 (CI) Criminal Law and Justice (Sp) 3
SPED 5070 Policies and Procedures in Special Education (F) 1-3
SW 5350 (CI) Social Welfare Policy (F) 3

Only 12 credits may be selected from a single discipline. The Law and Society Area Studies certificate 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 certificate upon completion of requirements for a degree.

For further information, contact Dr. Kelly Hardwick, (435) 797-8402, in the Department of Sociology, Social Work and Anthropology.

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.

Department of Sociology, Social Work and Anthropology

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 (pages 285-287).

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 the knowledge and skills needed to bring about meaningful social change in individuals, groups, communities, organizations, and society. 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, and economic injustice.

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.

Code of Conduct

During academic and field training, students are required to abide by the Code of Ethics and standards of conduct specified by the National Association of Social Workers (NASW) and the Utah State Board of Social Work Examiners. Failure to do so may result in dismissal from the Social Work Program. A more complete discussion of Social Work Program policies can be accessed at:
http://www.usu.edu/sswa/sw.htm

Licensure

In the State of Utah, graduates with a bachelor's degree in Social Work are eligible to be licensed as social service workers upon graduation. 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 49-59), is required of all majors. Majors are expected to take STAT 1040 (QL), Introduction to Statistics, 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 (Introduction to Statistics) and SOC 3120 (Social Statistics I) 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 on 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. (7) The Social Work Program does ***not*** grant social work course credit for life experience or work experience.

Department of Sociology, Social Work and Anthropology

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 Practice I, SW 4150 Practice II, and SW 4160 Practice III) and the field practicum courses (SW 4870 Beginning Field Practicum and SW 5870 Advanced Field Practicum), 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 1010[3] Introduction to Social Welfare (F,Sp) 3
ANTH 1010 (BSS) Cultural Anthropology (F,Sp) 3
BIOL 1010 (BLS) Biology and the Citizen (F,Sp,Su) 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose (F,Sp,Su) . 3
FCHD 1500 (BSS) Human Development Across the Lifespan (F,Sp) ... 3
PSY 1010 (BSS) General Psychology (F,Sp,Su) 3
SOC 1010 (BSS) Introductory Sociology (F,Sp) 3
STAT 1040 (QL)[4] Introduction to Statistics (F,Sp,Su) 3

[3]Students must take SW 1010 before taking SW 2100 and 2400.
[4]Students must complete STAT 1040 as a prerequisite to SOC 3120 and to fulfill Social Work major requirements.

Second year:

ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode (F,Sp,Su) 3
SW 2100[5] Human Behavior in the Social Environment (Sp) 3
SW 2400[5] Social Work with Diverse Populations (Sp) 3
One elective enrichment course 3
Students should apply for advanced standing during their second year.

[5]Since SW 2100 and 2400 are only offered during spring semester each year, students should plan accordingly.

Third year:

SW 3050[6] Practice I (F) 3
SW 4100 Social Work Research (F) 3
SW 4150 Practice II (Sp) 3
SW 4160 Practice III (Sp) 3
SOC 3120 (QI)[7] Social Statistics I (F,Sp) 3
Two elective enrichment courses 6
Students should apply for the practicum during their third year.

[6]Prior to taking SW 3050, students must apply for advanced standing, to qualify to enroll in practice courses.
[7]STAT 1040 (Introduction to Statistics), plus 6 credits in Social Work and/or Sociology courses, are prerequisites for this course. STAT 1040 and SOC 3120 must be completed in order to graduate with a social work degree.

Required Elective Enrichment Courses

Nine credits of electives are to be chosen during the second and third years, prior to the practicum year. At least two electives are to be taken in Social Work, and one upper-division elective can be taken outside of Social Work.

SW 3350 Child Welfare 3
SW 3360 Adolescents: Theories, Problems, and Issues 3
SW 3450 School Social Work 3
SW 3550 Social Gerontology 3
SW 3650 Mental Health 3
SW 3750 Medical Social Services 3
SW 3850 Spirituality and Social Work 3
SW 3950 Occupational and Environmental Health (offered infrequently; check with department) 3
SW 4900 Topical Issue Seminar 3

Optional Elective

SW 4950[8] Directed Readings (F,Sp) 1-5

Fourth year:

SW 4870[9] Beginning Field Practicum (F) 6
SW 5350 (CI) Social Welfare Policy (F) 3
SW 5870 Advanced Field Practicum (Sp) 6

[8]SW 4950 requires a plan of study, approved by a social work faculty member, at least one semester prior to registration. This course is *not* considered to be a required elective.
[9]Prior to enrolling in Beginning Field Practicum, students must apply for admission to the Field Practicum and must have advanced standing status.

Sample Four-year Plan for Social Work Major

Minimum GPA for Admission: 2.75, major; 2.5, USU; 2.5, Career
Additional Matriculation Requirements: Students must apply for Advanced Standing in the Social Work major. Application requirements include: satisfactory grades in all prerequisite Social Work courses and specific University Studies courses, an essay, and a satisfactory grade (70 percent or better) on the Advanced Placement Test (APT). After the junior year, the practicum requires a satisfactory grade (70 percent or better) on the Generalist Practice Test (GPT).
Minimum GPA for Graduation: 2.75, major; 2.5, USU; 2.5, Career
Minimum Grade Accepted: *C+* in SW 1010; *B-* in SW 3050, 4150, and 4160; *C* in remaining major courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (30 credits)

Fall Semester (15 credits)

SW 1010 Introduction to Social Welfare 3
SOC 1010 (BSS) Introductory Sociology 3
ANTH 1010 (BSS) Cultural Anthropology 3
BIOL 1010 (BLS) Biology and the Citizen 3
Elective course(s) 3

Spring Semester (15 credits)

FCHD 1500 (BSS) Human Development Across the Lifespan 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
PSY 1010 (BSS) General Psychology 3
STAT 1040 (QL) Introduction to Statistics 3
University Studies Breadth course 3

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (30 credits)

Fall Semester (15 credits)

ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
University Studies Breadth courses 6
Social Work elective course 3
Elective course(s) 3

Spring Semester (15 credits)

SW 2100 Human Behavior in the Social Environment 3
SW 2400 Social Work with Diverse Populations 3
University Studies Breadth course 3
Depth Humanities and Creative Arts (DHA) course 3
Elective course(s) 3

Junior Year (30 credits)
Fall Semester (15 credits)
SW 3050 Practice I....3
SW 4100 Social Work Research....3
SOC 3120 (QI) Social Statistics I....3
Social Work upper-division course....3
Upper-division elective course....3

Spring Semester (15 credits)
SW 4150 Practice II....3
SW 4160 Practice III....3
Social Work elective course....3
Depth Life and Physical Sciences (DSC) course....3
Communications Intensive (CI) course....3

Senior Year (30 credits)
Fall Semester (15 credits)
SW 4870 Beginning Field Practicum....6
SW 5350 (CI) Social Welfare Policy....3
Elective courses....6

Spring Semester (15 credits)
SW 5870 Advanced Field Practicum....6
Elective courses....9

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 1 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 retake courses to improve their GPA and reapply for advanced standing during the following year.

To be considered for advanced standing, students must meet the following minimum criteria:

1. Completion of the following courses with a *C* or better:
   ANTH 1010 (BSS) Cultural Anthropology (F,Sp)....3
   BIOL 1010 (BLS) Biology and the Citizen (F,Sp,Su)....3
   ENGL 1010 (CL1) Introduction to Writing: Academic Prose (F,Sp,Su)....3
   ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode (F,Sp,Su)....3
   FCHD 1500 (BSS) Human Development Across the Lifespan (F,Sp)....3
   PSY 1010 (BSS) General Psychology (F,Sp,Su)....3
   SOC 1010 (BSS) Introductory Sociology (F,Sp)....3
   SW 2100 Human Behavior in the Social Environment (Sp)....3
   SW 2400 Social Work with Diverse Populations (Sp)....3
2. Completion of SW 1010 (Introduction to Social Welfare) 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.
6. A satisfactory grade (70 percent or better) on the Advanced Placement Test (APT).

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 *or* may reapply during the following year.

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 (Practice I), SW 4150 (Practice II), and SW 4160 (Practice III); (2) must have completed SW 1010 (Introduction to Social Welfare) with a *C*+ or better; (3) must maintain a minimum overall GPA of 2.5 or better and a minimum 2.75 GPA in the Social Work Major; (4) must receive a grade of *C* or better in all other 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 (Social Welfare Policy).
3. A grade of *B*- or better in SW 3050 (Practice I), SW 4150 (Practice II), and SW 4160 (Practice II).
4. A grade of *C* or better in all courses required for the major and a grade of *C*+ or better in SW 1010 (Introduction to Social Welfare).
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.

8. A satisfactory grade (70 percent or better) on the Generalist Practice Test.

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.

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:

ANTH 1010 (BSS) Cultural Anthropology (F,Sp).....3
BIOL 1010 (BLS) Biology and the Citizen (F,Sp,Su).....3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose (F,Sp,Su) .3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode (F,Sp,Su).....3
FCHD 1500 (BSS) Human Development Across the Lifespan (F,Sp)...3
PSY 1010 (BSS) General Psychology (F,Sp,Su) 3
SOC 1010 (BSS) Introductory Sociology (F,Sp).....3
STAT 1040 (QL) Introduction to Statistics (F,Sp,Su).....3
SW 1010 Introduction to Social Welfare (F) 3
SW 2100 Human Behavior in the Social Environment (Sp) 3
SW 2400 Social Work with Diverse Populations (Sp) 3

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, arrange to take the Advanced Placement Test (APT) during spring semester before they arrive on campus, and take the following courses with the USU Social Work Program:

SW 3050 Practice I (F).....3
SW 4150 Practice II (Sp).....3
SW 4160 Practice III (Sp).....3
SW 4870 Beginning Field Practicum (F) 6
SW 5350 (CI) Social Welfare Policy (F) 3
SW 5870 Advanced Field Practicum (Sp) 6

Social Work faculty members 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 (CL1), 2010 (CL2); ANTH 1010 (BSS); BIOL 1010 (BLS); SOC 1010 (BSS); PSY 1010 (BSS); and SW 2100, 2400 with a grade of *C* or better; (2) completion of SW 1010 with a grade of *C+* or better; (3) junior status (61-90 credits); (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 1, 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 be become involved with the NASW student organization, as well as the USU Social Work Program Theta Gamma chapter of the Phi Alpha Honor Society. Information is available in Main 239.

Social Work Program Outcomes

Social Work Program outcomes are available for review at:
http://www.usu.edu/sswa/swlearningobjectives.htm

Anthropology

Program Director: Patricia M. Lambert
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 populations. 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 first-hand 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 classes, individualized attention, opportunities for laboratory, museum, and field work, and the opportunity of working in teaching assistant positions. All these features give anthropology majors choices and experiences unavailable to undergraduates in most programs. The Anthropology Museum and Field Schools 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 39 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 in anthropology. 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 overall GPA in anthropology courses. A grade of *C* or better must be attained in *all* courses counted for the major, including foreign language and statistics courses. In addition, majors must complete the general requirements of the University in consultation with the student’s advisor, and complete the following major courses:

Required Courses (12 credits)

ANTH 1010 (BSS) Cultural Anthropology (F,Sp).....3
ANTH 1020 (BLS) Biological Anthropology (F).....3
ANTH 2030 (BSS/CI) World Archaeology (F,Sp).....3
ANTH 3990 History and Theories of Anthropology (F).....3

Cultural Anthropology (6 credits minimum)

ANTH 2010 (BSS) Peoples of the Contemporary World (F).....3
ANTH 3110 North American Indian Cultures (F).....3
ANTH 3130 (CI) Peoples of Latin America.....3
ANTH 3150 Applied Anthropology Survey: History, Uses, Methods, and Careers (Methods) (F,Sp).....3
ANTH 3160 (DSS) Anthropology of Religion (F).....3
ANTH 4110/6110 (DSS) Southwest Indian Cultures, Past and Present (F).....3
ANTH 4120 (CI/DSS) Ethnography of Childhood (Methods) (Sp).....3
ANTH 4130 (DSS) Medical Anthropology: Matter, Culture, Spirit, and Health (Sp).....3
ANTH 4150 (QI) Problems in Cultural Anthropology (Methods) (F,Sp).....3
ANTH 5100/6100 (DSS) Anthropology of Sex and Gender (Sp).....3
ANTH 5120/6120 Applied Rural Development (Sp).....3
ANTH 5130/6130 Ethnographic Field School (Methods) (Su).....3-6
ANTH 5160/6160 (DSS) Cities and Development (Sp).....3

Biological/Physical Anthropology (6 credits minimum)

ANTH 3200 (CI/DSS) Perspectives on Race (Sp).....3
ANTH 3250 Osteology (Methods) (F).....3
ANTH 4250 (QI) Problems in Bioarchaeology (Methods) (Sp).....3
ANTH 5210 Physical Anthropology Lab (Methods).....1-3

Archaeology (6 credits minimum)

ANTH 3300 (DSS) Archaeology in North America (Sp).....3
ANTH 3320 (DSS) Ancient Humans and the Environment (F).....3
ANTH 3350 (DSS) Archaeology of Ancient Civilizations (Sp).....3
ANTH 4350 Archaeological Method/Theory and Cultural Resource Management (Sp).....3
ANTH 4360 (DSS) Ancient Desert West (F).....3
ANTH 4380 Peopling of the New World (Sp).....3

Capstone Courses (3 credits minimum)
ANTH 4250 (QI) Problems in Bioarchaeology (Methods) (Sp) 3
ANTH 4350 Archaeological Method/Theory and Cultural Resource Management (Sp).....3
ANTH 4990 Contemporary Issues in Anthropology (Sp).....3
ANTH 5650/6650 (DSS) Developing Societies (F) 3

Departmental Electives
(These *do not* count toward minor requirements.)
Note: *Methods* courses require permission of instructor.
ANTH 2210 (BHU) Introduction to Folklore (F,Sp) 3
ANTH 2720 Survey of American Folklore (Sp).....3
ANTH 3310 (CI) Introduction to Museum Studies (Methods) (Sp).....3
ANTH 4100 The Study of Language (F,Sp).....3
ANTH 4370 Archaeology and Paleoenvironments Field Trip (F) 2
ANTH 4800 Topics in Anthropology.....1-3
ANTH 5190 Applied Anthropology Practicum (Methods) 1-5
ANTH 5300 Archaeology Field School (Methods) (Su).....3-5
ANTH 5310 Archaeology Lab (Methods) 1-3
ANTH 5700 Folk Narrative (Sp) 3
ANTH 5800 Museum Development (Methods) (F,Sp,Su) 1-3
ANTH 5900 Independent Studies 1-3
ANTH 5980 Senior Project.....1
ANTH 6900 Independent Studies 1-3
SOC 4730 Women in International Development (Sp).....3

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** two courses selected from a list of courses approved by the Anthropology Program.

Anthropology majors are encouraged to complete both the foreign language and statistics requirements.

Sample Four-year Plan for Anthropology Major

Minimum GPA for Admission: 2.5, Career
Minimum GPA for Graduation: 2.5, major requirements, including BS and BA required courses; 2.0, Career
Minimum Grade Accepted: *C* in major requirements, including BS and BA required courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (30 credits)
Fall Semester (15 credits)
ANTH 1010 (BSS) Cultural Anthropology 3
ANTH 1020 (BLS) Biological Anthropology 3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
University Studies Breadth course 3
Elective course(s).....3

Spring Semester (15 credits)
ANTH 2030 (BSS/CI) World Archaeology.....3
STAT 1040 (QL) Introduction to Statistics.....3
University Studies Breadth courses 6
Elective course(s).....3

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (30 credits)
Fall Semester (15 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
University Studies Breadth course 3
Anthropology upper-division courses 6
Degree requirement (BS/BA) course.....3

Spring Semester (15 credits)
Anthropology upper-division courses 6
Degree requirement (BS/BA) course.....3
Elective courses 6

Junior Year (30 credits)
Fall Semester (15 credits)
ANTH 3990 History and Theories of Anthropology 3
ANTH 4150 (QI) Problems in Cultural Anthropology.....3
Depth Humanities and Creative Arts (DHA) course 3
Upper-division course(s) 4
Elective course(s).....2

Spring Semester (15 credits)
Anthropology upper-division courses 6
Depth Life and Physical Sciences (DSC) course 3
Elective courses 6

Senior Year (30 credits)
Fall Semester (15 credits)
Anthropology upper-division course (Methods).....3
Communications Intensive (CI) course 3
Elective courses 9

Spring Semester (15 credits)
Anthropology upper-division course (Capstone) 3
Elective courses 12

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 overall GPA in anthropology courses. A grade of *C* or better must be attained in *all* courses counting toward the minor.

Required Courses (9 credits)
ANTH 1010 (BSS) Cultural Anthropology (F,Sp).....3
ANTH 1020 (BLS) Biological Anthropology (F).....3
ANTH 2030 (BSS/CI) World Archaeology (F,Sp) 3

Breadth-in-Anthropology Structured Electives (9 credits minimum)
In addition to the required courses, students must complete a minimum of 9 credits (ANTH 2010, 3000-5000 level courses) in anthropology from the *Structured Electives* in Cultural Anthropology, Biological Anthropology, or Archaeology.

Department of Sociology, Social Work and Anthropology

Sociology Graduate Program

Graduate Program Director: Douglas B. Jackson-Smith
Program Office: Main 224, (435) 797-0582

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 Inequality, and Social Change and 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**

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 may 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 acquired 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, doctoral students are expected to concentrate in and pass written comprehensive examinations 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/environment 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 and Inequality

This specialization is organized around analyses of the social and cultural processes through which social problems come to be recognized, with particular emphasis on race, class, and gender inequality.

Graduate courses in this area include theoretical foundations, as well as topical courses in the areas of criminology, health, gender, environmental justice, and work and occupations. Faculty members in this area have recently conducted extensive research on health risks and behavior, family and work conflict, peer court intervention in juvenile delinquency, and the gendered impacts of labor market restructuring.

Since the sociology program has a joint relationship with social work and anthropology, sociology graduate students have many opportunities to draw from the experience and applied research of these faculty as well.

Social Change and Development

This specialization is designed to provide a broad foundation for students interested in examining the social, political, and economic dynamics and impacts of social change. Two major goals of this program are to: (1) give students the conceptual and analytical foundations enabling them to understand the dynamics and impacts of social change and development, and (2) convey specific skills required for effective performance in applied fields.

While some faculty and students have projects in urbanizing contexts, there is a strong focus on rural sociology. Faculty members have extensive domestic and international experience examining rural community development, demographic changes, labor market restructuring, agrarian transformations, political transitions and social movements, and land use changes.

Core Courses

The core courses for the PhD degree in Sociology include the following:

SOC 7010 Issues in Sociological Theory (Sp) 3
SOC 7100 Advanced Survey Techniques (Sp) 3
SOC 7110 Advanced Sociological Analysis (F) 3
SOC 7150 Advanced Qualitative Methods in Sociology (Sp) 3

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 the MS and MA degrees in Sociology include the following:

SOC 6010 Development of Sociological Theory (F) 3
SOC 6020 Modern Social Theory (F) 3
SOC 6100 Advanced Methods of Social Research (F) 3
SOC 6150 Social Statistics II (Sp) 3

The ability to utilize a statistical package (or permission of instructor) is a prerequisite to SOC 6150 (Social Statistics II).

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 has two active research units: (1) the Institute for Social Science Research on Natural Resources and (2) the Population Research Laboratory. Departmental research is supported by grants from federal and state agencies, local governments, private foundations, and the Utah Agricultural Experiment Station. Faculty members participate in many cross-campus research efforts, including the Women and Gender Research Institute, the USU Water Initiative, the Utah Water Research Laboratory, the Mountain West Center for Regional Studies, and the Natural Resources and Environmental Policy Program.

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. 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. University fellowships are available for exceptionally qualified students.

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, President of Utah State University, environmental sociology, rural sociology, health studies
John C. Allen, rural development, natural resource sociology, survey research methods
E. Helen Berry, demography, ecology, methods, urban
Raymond T. Coward, Provost of Utah State University; social gerontology, health care delivery, rural sociology
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
Bonnie Glass-Coffin, medical anthropology, shamanism, Latin America, applied anthropology, method and theory
Gary Kiger, Dean of College of Humanities, Arts, and Social Sciences; social psychology; gender, work, and family; research methods
Richard S. Krannich, environmental, community, and rural sociology; research methods
David F. Lancy, educational anthropology, ethnography
Jon R. Moris, 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 Emeritus
H. Bruce Bylund, social change, methods
Gordon N. Keller, comparative kinship, applied anthropology
Yun Kim, demography, development, quantitative methodology
Ronald L. Little, environmental sociology, rural, quantitative methodology
Gary E. Madsen, methods, environmental risk
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

Associate Professors
M. Diane Calloway-Graham, women's development, women's clinical and societal issues, social work theory
Douglas B. Jackson-Smith, sociology of agriculture, natural resources and environment, research methods, economic sociology
Patricia M. Lambert, biological anthropology, bioarchaeology, paleopathology
Derek T. Mason, juvenile delinquency
Terry L. Peak, social policy, health care, gerontology

Adjunct Associate Professor
Joanna L. Endter-Wada, cultural anthropology and natural resource policy and sociology

Assistant Professors
Christy Glass, comparative sociology, work and labor markets, inequality
Kelly H. Hardwick, criminology, deviance, theory, methods
Maki Hatanaka, sociology of development, globalization, food and agriculture, social movements
Susan E. Mannon, social inequality, sociology of development, gender
Sandra T. Marquart-Pyatt, environmental sociology, political sociology, methods
Peggy Petrzelka, environmental sociology, rural sociology, social change and development
Bonnie L. Pitblado, archaeology
Eric Reither, demography, health

Adjunct Assistant Professors
Nazih T. Al-Rashid, sociology of work
Krista Lynn Minnotte, family sociology, gender

Lecturers
Shannon T. Browne, social work
Jason Leiker, criminology and juvenile delinquency

Course Descriptions

Sociology (SOC), pages 712-715
Social Work (SW), pages 724-725
Anthropology (ANTH), pages 560-563

Department of Special Education and Rehabilitation

Department Head: Benjamin Lignugaris/Kraft
Location: Emma Eccles Jones Education 313A
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E-mail: lig@cc.usu.edu
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Special Education Master's Programs:
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Doctoral Programs:
Timothy A. Slocum, Education 314, (435) 797-3212, tim.slocum@usu.edu

Doctoral Programs:
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Rehabilitation Counseling Program:
Julie F. Smart, Education 322, (435) 797-3269, jsmart@cc.usu.edu

Multi-university Consortium in Sensory Impairments Coordinator:
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Advising:
Advising and Student Teaching Coordinator:
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Distance Undergraduate Programs Coordinator:
Nancy K. Glomb, Education 327, (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, Transitional/Special Education; *PhD*—Special Education, Applied Behavior Analysis with Individuals with Disabilities, Rehabilitation Counseling, Disabilities Studies, Speech-Language Pathology

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. A Special Education composite licensure program is available with the Department of Elementary Education. A dual licensure program is available with secondary education content majors.

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 certification 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 composite teaching majors with the Department of Elementary Education and dual teaching majors with the Department of Secondary Education. Students completing the dual major requirements in secondary education will be eligible for teacher licensure in one of the special education endorsement areas and the secondary education content major. Students completing the composite 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. A Birth to Age 5 minor is available for Family, Consumer, and Human Development majors.

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 16-20). 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; (2) completion of admission requirements to the College of Education and Human Services Teacher Education Program (see page 118); (3) passing scores on all six Computer and Information Literacy (CIL) exams; and (4) passing score on Special Education Math exam. Students should apply to the department during fall semester of their sophomore year (October deadline). 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.

Department of Special Education and Rehabilitation

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:

A.University Studies Requirements

Competency Requirements (9-13 credits), Breadth Requirements (18 credits), and Depth Education Requirements (5 courses). For more information, see pages 49-59.

B. Professional Education Requirements (20-24 credits)

FCHD 1500 (BSS) Human Development Across the Lifespan (F,Sp) (3 cr) **or**
PSY 1100 Developmental Psychology: Infancy and Childhood (F,Sp) (3 cr) 3
SPED 4000 Education of Exceptional Individuals (F,Sp,Su) 2
SPED 5530 Technology for Teaching Exceptional Learners (Sp) 3
PSY 3660 Educational Psychology for Teachers (Sp) 2
ELED 3000 (CI) Foundation Studies and Practicum in Teaching and Classroom Management Level II (Sp) 6
FCHD 2250 Seminar and Practicum in Early Childhood Education (required only for students completing the Birth to Age 5 Certificate) (Sp) ..... (4)
FCHD 2600 Seminar in Early Childhood Education (F,Sp) 2
FCHD 2630 Practicum in Early Childhood Education (F,Sp) 2

C. 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.

D. Teaching Support (15 credits)

The support 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.

E. Electives (7-20 credits)

Endorsement Areas

Students are required to complete the **Mild/Moderate Disabilities Endorsement**, the **Severe Disabilities Endorsement**, or the **Birth to Age 5 Certificate**.[1]

The following courses are required for the special education training programs. A minimum grade point average of 2.75 is required for admission to the endorsement courses. Most of the courses should be taken during the junior year. Students enrolled in the endorsement programs are required to maintain a GPA of at least 2.75.

Mild/Moderate Disabilities Endorsement (48 credits)

SPED 5010 (QI) Applied Behavioral Analysis 1: Principles, Assessment, and Analysis (F) 3
SPED 5040 Foundations of Effective Assessment and Instructional Practices (F) 3
SPED 5050 Applied Behavioral Analysis 2: Applications (Sp) 3
SPED 5060 Consulting with Parents and Teachers (Sp) 3
SPED 5070 Policies and Procedures in Special Education (F) 3
SPED 5200 (CI)[2] Student Teaching in Special Education (F or Sp) 15
SPED 5310 Teaching Reading and Language Arts to Students with Mild/Moderate Disabilities (F) 4
SPED 5320 Teaching Content Areas and Transition to Students with Mild/Moderate Disabilities (Sp) 3
SPED 5330 Eligibility Assessment for Students with Mild/Moderate Disabilities (F) 1
SPED 5340 Teaching Math to Students with Mild/Moderate Disabilities (Sp) 3
SPED 5410 Practicum: Direct Instruction Reading and Language Arts for Students with Mild/Moderate Disabilities (F) 3
SPED 5420 Practicum: Teaching Mathematics to Students with Mild/Moderate Disabilities (Sp) 4

Severe Disabilities Endorsement (45 credits)

SPED 5010 (QI) Applied Behavioral Analysis 1: Principles, Assessment, and Analysis (F) 3
SPED 5040 Foundations of Effective Assessment and Instructional Practices (F) 3
SPED 5050 Applied Behavioral Analysis 2: Applications (Sp) 3
SPED 5060 Consulting with Parents and Teachers (Sp) 3
SPED 5070 Policies and Procedures in Special Education (F) 3
SPED 5200 (CI)[2] Student Teaching in Special Education (F or Sp) 15
SPED 5510 Curriculum for Students with Severe Disabilities (F) 4
SPED 5520 Curriculum for Secondary-Level Students with Severe Disabilities (Sp) 3
SPED 5540 Assessment of Persons with Severe Disabilities (Sp) 1
SPED 5600 Practicum: Introduction to Instruction of Students with Severe Disabilities (F) 3
SPED 5610 Practicum: Advanced Systematic Instruction of Students with Severe Disabilities (Sp) 4

Birth to Age 5 Certificate (46 credits)

Students who are completing this certificate in addition to the Mild/Moderate Disabilities Endorsement or the Severe Disabilities Endorsement will need to complete only those courses which they have not already taken under their endorsement.[3]

SPED 5010 (QI) Applied Behavioral Analysis 1: Principles, Assessment, and Analysis (F) 3
SPED 5040 Foundations of Effective Assessment and Instructional Practices (F) 3
SPED 5050 Applied Behavioral Analysis 2: Applications (Sp) 3
SPED 5060 Consulting with Parents and Teachers (Sp) 3
SPED 5070 Policies and Procedures in Special Education (F) 3
SPED 5200 (CI)[2] Student Teaching in Special Education (F or Sp) 15
SPED 5710 Young Children with Disabilities: Characteristics and Services (Sp) 3
SPED 5730 Intervention Strategies for Young Children with Disabilities (F) 3
SPED 5810 Seminar and Field Experiences with Infants and Families (Sp) 4
SPED 5820 Preschool Practicum with Young Children with Disabilities in Community Environments (F) 4
SPED 5840 Seminar: Preschool Practicum with Young Children with Disabilities (F) 2

[1] After acceptance to the Special Education major and before beginning the Special Education practica, students are required to complete a background check for conviction of violating any law (except traffic violations).
[2] SPED 5200 should be taken during the senior year.
[3] Students working toward the Birth to Age 5 Certificate are encouraged to complete either the mild/moderate disabilities endorsement or the severe disabilities endorsement, as well as courses included in the Birth to Age 5 Certificate. For additional information, see the special education advisor.

Department of Special Education and Rehabilitation

Suggested Four-year Course of Study for Special Education Major, Mild/Moderate Disabilities Emphasis

This is a model of the requirements and possible sequence of courses. However, students may progress through the program or have more flexibility if they have high ACT scores, CLEP credit, concurrent enrollment credit, AP credit, and/or transfer credit; or if they attend during summer semesters.

Freshman Year (29 credits)
Fall Semester (15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
FCHD 1500 (BSS) Human Development Across the Lifespan 3
STAT 1040 (QL) Introduction to Statistics 3
Teaching Support course (REH 1010 suggested) 3
Breadth Life Sciences (BLS) course[4] 3

Spring Semester (14 credits)
PHYS 1200 (BPS) Introduction to Physics by Hands-on Exploration 4
Teaching Support course (MATH 1050 suggested) 4
Breadth American Institutions (BAI) course[4] 3
Elective course (SPED 4910 suggested) 3

Sophomore Year (28 credits)
Fall Semester (15 credits)
Breadth Creative Arts (BCA) course[4] 3
Depth course 3
Teaching Support course (MATH 2020 suggested) 3
Teaching Support course (ENGL 1120 suggested) 3
Elective course 3
Note: Apply to the program by the October 1 deadline.

Spring Semester (13 credits)
ELED 3000 (CI) Foundation Studies and Practicum in Teaching and Classroom Management Level II 6
SPED 4000 Education of Exceptional Individuals 2
PSY 3660 Educational Psychology for Teachers 2
SPED 5530 Technology for Teaching Exceptional Learners 3

Junior Year (33 credits)
Fall Semester (17 credits)
SPED 5010 (QI) Applied Behavioral Analysis 1: Principles, Assessment, and Analysis 3
SPED 5040 Foundations of Effective Assessment and Instructional Practices 3
SPED 5070 Policies and Procedures in Special Education 3
SPED 5310 Teaching Reading and Language Arts to Students with Mild/Moderate Disabilities 4
SPED 5330 Eligibility Assessment for Students with Mild/Moderate Disabilities 1
SPED 5410 Practicum: Direct Instruction Reading and Language Arts for Students with Mild/Moderate Disabilities 3

Spring Semester (16 credits)
SPED 5050 Applied Behavioral Analysis 2: Applications 3
SPED 5060 Consulting with Parents and Teachers 3
SPED 5320 Teaching Content Areas and Transition to Students with Mild/Moderate Disabilities 3
SPED 5340 Teaching Math to Students with Mild/Moderate Disabilities 3
SPED 5420 Practicum: Teaching Mathematics to Students with Mild/Moderate Disabilities 4

Senior Year (30 credits)
Fall Semester (15 credits)
ENGL 2010 (CL 2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Breadth Humanities (BHU) course[4] 3
Depth course 3
Elective course 3
Teaching Support course (ENGL 3510 suggested) 3
Note: Apply for student teaching by the October 1 deadline.

Spring Semester (15 credits)
SPED 5200 (CI) Student Teaching in Special Education 15

Suggested Four-year Course of Study for Special Education Major, Severe Disabilities Emphasis

This is a model of the requirements and possible sequence of courses. However, students may progress through the program or have more flexibility if they have high ACT scores, CLEP credit, concurrent enrollment credit, AP credit, and/or transfer credit; or if they attend during summer semesters.

Freshman Year (31 credits)
Fall Semester (15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
FCHD 1500 (BSS) Human Development Across the Lifespan 3
Teaching Support course (REH 1010 suggested) 3
Breadth Life Sciences (BLS) course[4] 3
Elective course(s) 3

Spring Semester (16 credits)
STAT 1040 (QL) Introduction to Statistics 3
PHYS 1200 (BPS) Introduction to Physics by Hands-on Exploration 4
Teaching Support course (SPED 4910 suggested) 3
Breadth American Institutions (BAI) course[4] 3
Breadth Creative Arts (BCA) course[4] 3

Sophomore Year (28 credits)
Fall Semester (15 credits)
Teaching Support course (COMD 2910) 4
Teaching Support course (HEP 2000) 2
Breadth Humanities (BHU) course[4] 3
Depth course 3
Elective course(s) 3
Note: Apply to the program by the October 1 deadline.

Spring Semester (13 credits)
ELED 3000 (CI) Foundation Studies and Practicum in Teaching and Classroom Management Level II 6
SPED 4000 Education of Exceptional Individuals 2
PSY 3660 Educational Psychology for Teachers 2
SPED 5530 Technology for Teaching Exceptional Learners 3

Junior Year (30 credits)
Fall Semester (16 credits)
SPED 5010 (QI) Applied Behavioral Analysis 1: Principles, Assessment, and Analysis 3
SPED 5040 Foundations of Effective Assessment and Instructional Practices 3
SPED 5070 Policies and Procedures in Special Education 3
SPED 5510 Curriculum for Students with Severe Disabilities 4
SPED 5600 Practicum: Introduction to Instruction 3

Spring Semester (14 credits)
SPED 5050 Applied Behavioral Analysis 2: Applications 3
SPED 5060 Consulting with Parents and Teachers 3
SPED 5520 Curriculum for Secondary-Level Students with Severe Disabilities 3
SPED 5540 Assessment of Persons with Severe Disabilities 1
SPED 5610 Practicum: Advanced Systematic Instruction of Students with Severe Disabilities 4

Senior Year (31 credits)
Fall Semester (16 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Depth course 3
Teaching Support course 3
Elective courses 7
Note: Apply for student teaching by the October 1 deadline.

Spring Semester (15 credits)
SPED 5200 (CI) Student Teaching in Special Education 15

Suggested Four-year Course of Study for Special Education Major, Early Childhood Special Education Emphasis

This is a model of the requirements and possible sequence of courses. However, students may progress through the program or have more flexibility if they have high ACT scores, CLEP credit, concurrent enrollment credit, AP credit, and/or transfer credit; or if they attend during summer semesters.

Freshman Year (28 credits)
Fall Semester (12 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
FCHD 1500 (BSS) Human Development Across the Lifespan 3
Breadth Life Sciences (BLS) course[4] 3
Teaching Support course (REH 1010 suggested) 3

Spring Semester (16 credits)
STAT 1040 (QL) Introduction to Statistics 3
PHYS 1200 (BPS) Introduction to Physics by Hands-on Exploration 4
Breadth American Institutions (BAI) course[4] 3
Breadth Creative Arts (BCA) course[4] 3
Teaching Support course (SPED 4910 suggested) 3

Sophomore Year (27 credits)
Fall Semester (14 credits)
SPED 4000 Education of Exceptional Individuals 2
COMD 2500 Language, Speech, and Hearing Development 3
Breadth Humanities (BHU) course[4] 3
Depth course 3
Elective course(s) 3
Note: Apply to the program by the October 1 deadline.

Spring Semester (13 credits)
ELED 3000 (CI) Foundation Studies and Practicum in Teaching and Classroom Management Level II 4
PSY 3660 Educational Psychology for Teachers 2
SPED 5530 Technology for Teaching Exceptional Learners 3
FCHD 2600 Seminar in Early Childhood Education 2
FCHD 2630 Practicum in Early Childhood Education 2

Junior Year (33 credits)
Fall Semester (18 credits)
SPED 5010 Applied Behavioral Analysis 1: Principles, Assessment, and Analysis 3
SPED 5040 Foundations of Effective Assessment and Instructional Practices 3
SPED 5070 Policies and Procedures in Special Education 3
SPED 5730 Intervention Strategies for Young Children with Disabilities 3
SPED 5820 Preschool Practicum with Young Children with Disabilities in Community Environments 4
SPED 5840 Seminar: Preschool Practicum with Young Children with Disabilities 2

Spring Semester (15 credits)
SPED 5050 Applied Behavioral Analysis 2: Applications 3
SPED 5060 Consulting with Parents and Teachers 3
SPED 5710 Young Children with Disabilities: Characteristics and Services 3
SPED 5810 Seminar and Field Experiences with Infants and Families 4
HEP 2000 First Aid and Emergency Care 2

Senior Year (32 credits)
Fall Semester (17 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Depth course 3
Teaching Support course 4
Elective courses 7
Note: Apply for student teaching by the October 1 deadline.

Spring Semester (15 credits)
SPED 5200 (CI) Student Teaching in Special Education 15

Suggested Four-year Course of Study for Special Education Major, Mild/Moderate Disabilities *and* Early Childhood Special Education Emphasis

This is a model of the requirements and possible sequence of courses. However, students may progress through the program or have more flexibility if they have high ACT scores, CLEP credit, concurrent enrollment credit, AP credit, and/or transfer credit; or if they attend during summer semesters.

Freshman Year (31 credits)
Fall Semester (15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
FCHD 1500 (BSS) Human Development Across the Lifespan 3
STAT 1040 (QL) Introduction to Statistics 3
Breadth Life Sciences (BLS) course[4] 3
Breadth Humanities (BHU) course[4] 3

Spring Semester (16 credits)
PHYS 1200 (BPS) Introduction to Physics by Hands-on Exploration ... 4
Breadth American Institutions (BAI) course[4] 3
Breadth Creative Arts (BCA) course[4] 3
Teaching Support courses 6

Sophomore Year (33 credits)
Fall Semester (17 credits)
SPED 4000 Education of Exceptional Individuals 2
COMD 2500 Language, Speech, and Hearing Development 3

Depth courses 6
Teaching Support courses 6
Note: Apply to the program by the October 1 deadline.

Spring Semester (16 credits)
ELED 3000 (CI) Foundation Studies and Practicum in Teaching and Classroom Management Level II 4
FCHD 2600 Seminar in Early Childhood Education 2
FCHD 2630 Practicum in Early Childhood Education 2
PSY 3660 Educational Psychology for Teachers 2
SPED 5530 Technology for Teaching Exceptional Learners 3
SPED 5710 Young Children with Disabilities: Characteristics and Services 3

Junior Year (33 credits)
Fall Semester (17 credits)
SPED 5010 Applied Behavioral Analysis 1: Principles, Assessment, and Analysis 3
SPED 5040 Foundations of Effective Assessment and Instructional Practices 3
SPED 5070 Policies and Procedures in Special Education 3
SPED 5310 Teaching Reading and Language Arts to Students with Mild/Moderate Disabilities 4
SPED 5330 Eligibility Assessment for Students with Mild/Moderate Disabilities 1
SPED 5410 Practicum: Direct Instruction Reading and Language Arts for Students with Mild/Moderate Disabilities 3

Spring Semester (16 credits)
SPED 5050 Applied Behavioral Analysis 2: Applications 3
SPED 5060 Consulting with Parents and Teachers 3
SPED 5320 Teaching Content Areas and Transition to Students with Mild/Moderate Disabilities 3
SPED 5340 Teaching Math to Students with Mild/Moderate Disabilities 3
SPED 5420 Practicum: Teaching Mathematics to Students with Mild/Moderate Disabilities 4

Senior Year (31 credits)
Fall Semester (16 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
SPED 5730 Intervention Strategies for Young Children with Disabilities 3
SPED 5810 Seminar and Field Experiences with Infants and Families 4
SPED 5820 Preschool Practicum with Young Children with Disabilities in Community Environments 4
SPED 5840 Seminar: Preschool Practicum with Young Children with Disabilities 2
Note: Apply for student teaching by the October 1 deadline.

Spring Semester (15 credits)
SPED 5200 (CI) Student Teaching in Special Education 15

Suggested Four-year Course of Study for Special Education Major, Severe *and* Early Childhood Special Education Emphasis

This is a model of the requirements and possible sequence of courses. However, students may progress through the program or have more flexibility if they have high ACT scores, CLEP credit, concurrent enrollment credit, AP credit, and/or transfer credit; or if they attend during summer semesters.

Freshman Year (31 credits)
Fall Semester (15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
FCHD 1500 (BSS) Human Development Across the Lifespan 3
Breadth Humanities (BHU) course[4] 3
Breadth Life Sciences (BLS) course[4] 3
Teaching Support course (REH 1010 suggested) 3

Spring Semester (16 credits)
STAT 1040 (QL) Introduction to Statistics 3
PHYS 1200 (BPS) Introduction to Physics by Hands-on Exploration 4
Breadth American Institutions (BAI) course[4] 3
Breadth Creative Arts (BCA) course[4] 3
Teaching Support course (SPED 4910 suggested) 3

Sophomore Year (28 credits)
Fall Semester (15 credits)
SPED 4000 Education of Exceptional Individuals 2
COMD 2500 Language, Speech, and Hearing Development 3
COMD 2910 Sign Language 1 4
Depth courses 6
Note: Apply to the program by the October 1 deadline.

Spring Semester (13 credits)
ELED 3000 (CI) Foundation Studies and Practicum in Teaching and Classroom Management Level II 4
FCHD 2600 Seminar in Early Childhood Education 2
FCHD 2630 Practicum in Early Childhood Education 2
PSY 3660 Educational Psychology for Teachers 2
SPED 5530 Technology for Teaching Exceptional Learners 3

Junior Year (33 credits)
Fall Semester (16 credits)
SPED 5010 (QI) Applied Behavioral Analysis 1: Principles, Assessment, and Analysis 3
SPED 5040 Foundations of Effective Assessment and Instructional Practices 3
SPED 5070 Policies and Procedures in Special Education 3
SPED 5510 Curriculum for Students with Severe Disabilities 4
SPED 5600 Practicum: Introduction to Instruction of Students with Severe Disabilities 3

Spring Semester (17 credits)
SPED 5050 Applied Behavioral Analysis 2: Applications 3
SPED 5060 Consulting with Parents and Teachers 3
SPED 5520 Curriculum for Secondary-Level Students with Severe Disabilities 3
SPED 5540 Assessment of Persons with Severe Disabilities 1
SPED 5710 Young Children with Disabilities: Characteristics and Services 3
SPED 5810 Seminar and Field Experiences with Infants and Families 4

Senior Year (29 credits)
Fall Semester (14 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
SPED 5730 Intervention Strategies for Young Children with Disabilities 3
SPED 5820 Preschool Practicum with Young Children with Disabilities in Community Environments 4
SPED 5840 Seminar: Preschool Practicum with Young Children with Disabilities 2
HEP 2000 First Aid and Emergency Care 2
Note: Apply for student teaching by the October 1 deadline.

Spring Semester (15 credits)
SPED 5200 (CI) Student Teaching in Special Education 15

Suggested Four-year Course of Study for Elementary Education/Special Education Mild/Moderate Specialization

This is a model of the requirements and possible sequence of courses. However, students may progress through the program or have more flexibility if they have high ACT scores, CLEP credit, concurrent enrollment credit, AP credit, and/or transfer credit; or if they attend during summer semesters.

Freshman Year (32 credits)

Fall Semester (16 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MATH 1050 (QL)[5] College Algebra 4
Breadth American Institutions (BAI) course[4] 3
Breadth Humanities (BHU) course[4] 3
Breadth Life Sciences (BLS) course[4] 3

Spring Semester (16 credits)
PHYS 1200 (BPS) Introduction to Physics by Hands-on Exploration ... 4
STAT 1040 (QL) Introduction to Statistics 3
Breadth Creative Arts (BCA) course[4] 3

Level I courses:
FCHD 1500 (BSS) Human Development Across the Lifespan 3
ELED 1010 Orientation to Elementary Education 3

Sophomore Year (31 credits)

Fall Semester (16 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
MUSC 3260 Elementary School Music 2
PEP 3050 Physical Education in the Elementary School 3
SPED 4000 Education of Exceptional Individuals 2
Breadth Physical Sciences (BPS) course[4] 3
Breadth Social Sciences (BSS) course[4] 3
Note: Apply to the SPED program by the October 1 deadline.

Spring Semester (15 credits)
Level II courses:
Students must be admitted to the Teacher Education Program prior to enrolling in Level II courses
ELED 3000 (CI) Foundation Studies and Practicum in Teaching and Classroom Management Level II 6
ELED 3005 Beginning Classroom Management 1
PSY 3660 Educational Psychology for Teachers 2
SPED 5530 Technology for Teaching Exceptional Learners 3
ELED 3100 Teaching Reading I 3

Junior Year (33 credits)

Fall Semester (17 credits)
SPED 5010 (QI) Applied Behavioral Analysis I: Principles, Assessment, and Analysis 3
SPED 5040 Foundations of Effective Assessment and Instructional Practices 3
SPED 5070 Policies and Procedures in Special Education 3
SPED 5310 Teaching Reading and Language Arts to Students with Mild/Moderate Disabilities 4
SPED 5330 Eligibility Assessment for Students with Mild/Moderate Disabilities 1
SPED 5410 Practicum: Direct Instruction Reading and Language Arts for Students with Mild/Moderate Disbabilities 3

Spring Semester (16 credits)
SPED 5050 Applied Behavioral Analysis II: Applications 3
SPED 5060 Consulting with Parents and Teachers 3
SPED 5320 Teaching Content Areas and Transition to Students with Mild/Moderate Disabilities 3
SPED 5340 Teaching Math to Students with Mild/Moderate Disabilities 3
SPED 5420 Practicum: Teaching Mathematics to Students with Mild/Moderate Disabilities 4

Senior Year (30 credits)

Fall Semester (15 credits)
Level III courses:
ELED 4000 Teaching Science and Practicum Level III 3
ELED 4030 (CI) Teaching Language Arts and Practicum Level III 3
ELED 4040 (CI) Teaching Reading II and Practicum Level III 3
ELED 4050 Teaching Social Studies and Practicum Level III 3
ELED 4060 Teaching Mathematics and Practicum Level III 3

Spring Semester (15 credits)
Level IV courses:
ELED 5150 Student Teaching—Elementary (Grades 4-6) 6
ELED 5250 Student Teaching—Seminar 3
SPED 5210 (CI) Student Teaching in Special Education: Dual Majors 6

Additional Semester (9 credits)

MATH 2020 (QI) Introduction to Logic and Geometry 3
Depth courses 6

Suggested Four-year Course of Study for Special Education/Early Childhood Education/ Elementary Education Early Childhood Composite Major

This is a model of the requirements and possible sequence of courses. However, students may progress through the program or have more flexibility if they have high ACT scores, CLEP credit, concurrent enrollment credit, AP credit, and/or transfer credit; or if they attend during summer semesters.

Freshman Year (32 credits)

Fall Semester (16 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MATH 1050 (QL)[5] College Algebra 4
Breadth American Institutions (BAI) course[4] 3
Breadth Humanities (BHU) course[4] 3
Breadth Life Sciences (BLS) course[4] 3

Spring Semester (16 credits)
PHYS 1200 (BPS) Introduction to Physics by Hands-on Exploration ... 4
STAT 1040 (QL) Introduction to Statistics 3
Breadth Creative Arts (BCA) course[4] 3

Level I courses:
FCHD 1500 (BSS) Human Development Across the Lifespan 3
ELED 1010 Orientation to Elementary Education 3

Sophomore Year (31 credits)

Fall Semester (17 credits)
MATH 2020 Introduction to Logic and Geometry 3
SPED 4000 Education of Exceptional Individuals 2
COMD 2500 Language, Speech, and Hearing Development 3
Breadth Physical Sciences (BPS) course[4] 3
Breadth Social Sciences (BSS) course[4] 3
Depth course 3

Spring Semester (14 credits)
Level II courses:
Students must be admitted to the Teacher Education Program prior to enrolling in Level II courses.
ELED 3000 (CI) Foundation Studies and Practicum in Teaching and Classroom Management....4
ELED 3005 Beginning Classroom Management....1
FCHD 2600 Seminar in Early Childhood Education....2
FCHD 2630 Practicum in Early Childhood Education....2
PSY 3660 Educational Psychology for Teachers....2
SPED 5530 Technology for Teaching Exceptional Learners....3

Junior Year (34 credits)
Fall Semester (18 credits)
SPED 5010 (QI) Applied Behavioral Analysis 1: Principles, Assessment, and Analysis....3
SPED 5040 Foundations of Effective Assessment and Instructional Practices....3
SPED 5070 Policies and Procedures in Special Education....3
SPED 5730 Intervention Strategies for Young Children with Disabilities....3
SPED 5820 Preschool Practicum with Young Children with Disabilities in Community Environments....4
SPED 5840 Seminar: Preschool Practicum with Young Children with Disabilities....2

Spring Semester (16 credits)
FCHD 4960 Practice Teaching in Child Development Laboratories....3
SPED 5050 Applied Behavioral Analysis 2: Applications....3
SPED 5060 Consulting with Parents and Teachers....3
SPED 5710 Young Children with Disabilities: Characteristics and Services....3
SPED 5810 Seminar and Field Experiences with Infants and Families....4

Senior Year (30 credits)
Fall Semester (15 credits)
ELED 4480 Early Childhood Education Kindergarten through Grade 3....3
FCHD 4550 Preschool Methods and Curriculum....3
ELED 3100 Teaching Reading I....3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode....3
Depth course....3

Spring Semester (15 credits)
Level III courses:
ELED 4000 Teaching Science and Practicum Level III....3
ELED 4030 (CI) Teaching Language Arts and Practicum Level III....3
ELED 4040 (CI) Teaching Reading II and Practicum Level III....3
ELED 4050 Teaching Social Studies and Practicum Level III....3
ELED 4060 Teaching Mathematics and Practicum Level III....3

Additional Semesters (18 credits)
ELED 5250 Student Teaching—Seminar....3
ELED 5050 Student Teaching—Kindergarten....3
ELED 5100 Student Teaching—Primary Grades (1-3)....6
SPED 5210 (CI) Student Teaching in Special Education: Dual Majors....6

Suggested Four-year Course of Study for Elementary Education/Special Education Severe Specialization

This is a model of the requirements and possible sequence of courses. However, students may progress through the program or have more flexibility if they have high ACT scores, CLEP credit, concurrent enrollment credit, AP credit, and/or transfer credit; or if they attend during summer semesters.

Freshman Year (32 credits)
Fall Semester (16 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose....3
MATH 1050 (QL)[5] College Algebra....4
Breadth American Institutions (BAI) course[4]....3
Breadth Humanities (BHU) course[4]....3
Breadth Life Sciences (BLS) course[4]....3

Spring Semester (16 credits)
PHYS 1200 (BPS) Introduction to Physics by Hands-on Exploration....4
STAT 1040 (QL) Introduction to Statistics....3
Breadth Creative Arts (BCA) course[4]....3

Level I courses:
FCHD 1500 (BSS) Human Development Across the Lifespan....3
ELED 1010 Orientation to Elementary Education....3

Sophomore Year (31 credits)
Fall Semester (16 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode....3
MUSC 3260 Elementary School Music....2
PEP 3050 Physical Education in the Elementary School....3
SPED 4000 Education of Exceptional Individuals....2
Breadth Physical Sciences (BPS) course[4]....3
Breadth Social Sciences (BSS) course[4]....3

Spring Semester (15 credits)
Level II courses:
Students must be admitted to the Teacher Education Program prior to enrolling in Level II courses.
ELED 3000 (CI) Foundation Studies and Practicum in Teaching and Classroom Management....6
ELED 3005 Beginning Classroom Management....1
ELED 3100 Teaching Reading I....3
PSY 3660 Educational Psychology for Teachers....2
SPED 5530 Technology for Teaching Exceptional Learners....3

Junior Year (36 credits)
Fall Semester (18 credits)
SPED 5010 (QI) Applied Behavioral Analysis 1: Principles, Assessment, and Analysis....3
SPED 5040 Foundations of Effective Assessment and Instructional Practices....3
SPED 5070 Policies and Procedures in Special Education....3
SPED 5510 Curriculum for Students with Severe Disabilities....4
SPED 5600 Practicum: Introduction to Instruction of Students with Severe Disabilities....3
HEP 2000 First Aid and Emergency Care....2

Spring Semester (18 credits)
SPED 5050 Applied Behavioral Analysis 2: Applications....3
SPED 5060 Consulting with Parents and Teachers....3
SPED 5520 Curriculum for Secondary-Level Students with Severe Disabilities....3
SPED 5540 Assessment of Persons with Severe Disabilities....1
SPED 5610 Practicum: Advanced Systematic Instruction of Students with Severe Disabilities....4
COMD 2910 (CI) Sign Language I....4

Senior Year (30 credits)
Fall Semester (15 credits)
Level III courses:
ELED 4000 Teaching Science and Practicum Level III 3
ELED 4030 (CI) Teaching Language Arts and Practicum Level III 3
ELED 4040 (CI) Teaching Reading II and Practicum Level III 3
ELED 4050 Teaching Social Studies and Practicum Level III 3
ELED 4060 Teaching Mathematics and Practicum Level III 3

Spring Semester (15 credits)
Level IV courses:
ELED 5250 Student Teaching—Seminar 3
ELED 5150 Student Teaching—Elementary (Grades 4-6) 6
SPED 5210 (CI) Student Teaching in Special Education: Dual Majors 6

Additional Semester (9 credits)
MATH 2020 (QI) Introduction to Logic and Geometry 3
Depth courses 6

Suggested Four-year Course of Study for Dual Major: Secondary Education Content Major and Special Education Major, Mild/Moderate Disabilities Emphasis

This is a model of the requirements and possible sequence of courses. However, students may progress through the program or have more flexibility if they have high ACT scores, CLEP credit, concurrent enrollment credit, AP credit, and/or transfer credit; or if they attend during summer semesters.

Freshman Year (36 credits)
Fall Semester (18 credits)
ENGL 1010 (CL2) Introduction to Writing: Adademic Prose 3
FCHD 1500 (BSS) Human Development Across the Lifespan 3
Breadth Humanities (BHU) course[4] 3
Breadth Life Sciences (BLS) course[4] 3
Secondary Content major courses 6

Spring Semester (18 credits)
STAT 1040 (QL) Introduction to Statistics 3
PHYS 1200 (BPS) Introduction to Physics by Hands-on Exploration ... 4
Breadth American Institutions (BAI) course[4] 3
Breadth Creative Arts (BCA) course[4] 3
Secondary Content major courses 5

Sophomore Year (36 credits)
Fall Semester (18 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Secondary Content major courses 9
Depth courses 6
Note: Apply to the SPED program by the October 1 deadline.

Spring Semester (18 credits)
SPED 4000 Education of Exceptional Individuals 2
SPED 5530 Technology for Teaching Exceptional Learners 3
SPED 4910 Undergraduate Research and Creative Opportunities 1
SCED 3100 Motivation and Classroom Management 3
SCED 3210 (CI/DSS) Educational and Multicultural Foundations 3
Secondary Content major courses 6

Junior Year (33 credits)
Fall Semester (17 credits)
SPED 5010 (QI) Applied Behavioral Analysis 1: Principles, Assessment, and Analysis 3
SPED 5040 Foundations of Effective Assessment and Instructional Practices 3
SPED 5070 Policies and Procedures in Special Education 3
SPED 5310 Teaching Reading and Language Arts to Students with Mild/Moderate Disabilities 4
SPED 5330 Eligibility Assessment for Students with Mild/Moderate Disabilities 1
SPED 5410 Practicum: Direct Instruction Reading and Language Arts for Students with Mild/Moderate Disabilities 3

Spring Semester (16 credits)
SPED 5050 Applied Behavior Analysis 2: Applications 3
SPED 5060 Consulting with Parents and Teachers 3
SPED 5320 Teaching Content Areas and Transition to Students with Mild/Moderate Disabilities 3
SPED 5340 Teaching Math to Students with Mild/Moderate Disabilities 3
SPED 5420 Practicum: Teaching Mathematics to Students with Mild/Moderate Disabilities 4

Senior Year (30 credits)
Fall Semester (18 credits)
SCED 4200 (CI) Reading, Writing, and Technology 3
SCED 4210 Cognition and Evaluation of Student Learning 3
Content Clinical course 1
Content Methods course 3
Secondary Content major courses 8

Spring Semester (12 credits)
SPED 5210 (CI) Student Teaching in Special Education: Dual Majors 6
SCED 5500 Student Teaching Seminar 2
SCED 5700 Modified Student Teaching 4

Additional Semester
During this additional semester, students should finish their Secondary Content Major courses.

Suggested Four-year Course of Study for Dual Major: Secondary Education Content Major and Special Education Major, Severe Disabilities Emphasis

This is a model of the requirements and possible sequence of courses. However, students may progress through the program or have more flexibility if they have high ACT scores, CLEP credit, concurrent enrollment credit, AP credit, and/or transfer credit; or if they attend during summer semesters.

Freshman Year (36 credits)
Fall Semester (18 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
FCHD 1500 (BSS) Human Development Across the Lifespan 3
Breadth Humanities (BHU) course[4] 3
Breadth Life Sciences (BLS) course[4] 3
Secondary Content major courses 6

Spring Semester (18 credits)
STAT 1040 (QL) Introduction to Statistics 3
PHYS 1200 (BPS) Introduction to Physics by Hands-on Exploration ... 4
Breadth American Institutions (BAI) course[4] 3
Breadth Creative Arts (BCA) course[4] 3
Secondary Content major courses 5

Sophomore Year (36 credits)
Fall Semester (18 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
Depth courses 6
Secondary Content major courses 9
Note: Apply to the SPED program by the October 1 deadline.

Spring Semester (18 credits)
SPED 4000 Education of Exceptional Individuals 2
SPED 5530 Technology for Teaching Exceptional Learners 3
SPED 4910 Undergraduate Research and Creative Opportunities 1
SCED 3100 Motivation and Classroom Management 3
SCED 3210 (CI/DSS) Educational and Multicultural Foundations 3
Secondary Content major courses 6

Junior Year (36 credits)
Fall Semester (18 credits)
SPED 5010 (QI) Applied Behavioral Analysis 1: Principles, Assessment, and Analysis 3
SPED 5040 Foundations of Effective Assessment and Instructional Practices 3
SPED 5070 Policies and Procedures in Special Education 3
SPED 5510 Curriculum for Students with Severe Disabilities 4
SPED 5600 Practicum: Introduction to Instruction of Students with Severe Disabilities 3
Secondary Content major course 2

Spring Semester (18 credits)
SPED 5050 Applied Behavioral Analysis 2: Applications 3
SPED 5060 Consulting with Parents and Teachers 3
SPED 5520 Curriculum for Secondary-Level Students with Severe Disabilities 3
SPED 5540 Assessment of Persons with Severe Disabilities 1
SPED 5610 Practicum: Advanced Systematic Instruction of Students with Severe Disabilities 4
Secondary Content major courses 4

Senior Year (30 credits)
Fall Semester (18 credits)
SCED 4200 (CI) Reading, Writing, and Technology 3
SCED 4210 Cognition and Evaluation of Student Learning 3
Content Clinical course 1
Content Methods course 3
Secondary Content major courses 8

Spring Semester (12 credits)
SPED 5210 (CI) Student Teaching in Special Education: Dual Majors 6
SCED 5500 Student Teaching Seminar 2
SCED 5700 Modified Student Teaching 4

Additional Semester
During this additional semester, students should finish their Secondary Content Major courses.

[4] At least *two* of the *six* breadth courses *must* have a USU prefix.
[5] The MATH 1050 requirement (or its equivalent) must be completed prior to application to the Teacher Education Program.

Assessment and Accreditation

Information about assessment within the Department of Special Education and Rehabilitation, as well as information about NCATE and CORE accreditation, can be found at:
http://sped.usu.edu/accreditation/index.html

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. Minimum GPA requirements for participation in departmental honors vary by department, but usually fall within the range of 3.30-3.50. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level. The campus-wide Honors Program, which is open to all qualified students regardless of major, offers a rich array of cultural and social activities, special classes, and the benefit of Honors early registration. Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@cc.usu.edu. Additional information can be found online at: **http://www.usu.edu/honors/**

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). Requirement sheets can also be accessed online at: **http://www.usu.edu/majorsheets/**

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 101-102). In addition, the committee considers experience, academic record and curriculum, formal recommendations, and test scores. Master's and 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 program are screened throughout the year by the Graduate Program Committee. Deadlines for application to the Special Education Master's program are March 15, June 15, and October 15. The deadline for application to the Disabilities Disciplines Doctoral program is February 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.

Department of Special Education and Rehabilitation

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 individuals with a broad range of 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 personnel preparation in the areas of special education, rehabilitation, applied behavior analysis, and disabilities studies. The PhD program is designed to develop students' competence in (1) mastery of the theoretical and applied content underlying provision of appropriate educational and other services for persons with disabilities; (2) ability to conduct independent research; and (3) ability to conduct effective personnel preparation, including teaching audiences with varying levels of sophistication and expertise, and supervising the delivery of special education and rehabilitation 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 251-252 of this catalog.

Financial Assistance

Scholarships, teaching assistantships, and research assistantships are available for qualified doctoral students. Scholarships are also available to qualified students in the Master of Rehabilitation Counseling program.

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

Special Education and Rehabilitation Faculty

Professors

Benjamin Lignugaris/Kraft, personnel preparation, secondary special education, social/vocational skill training, behavioral analysis, instructional design and program development

Robert L. Morgan, behavior analysis/transition

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

Department of Special Education and Rehabilitation

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
Martell Menlove, special education administration

Professors Emeritus
Garth M. Eldredge, rehabilitation counseling
Marvin G. Fifield, evaluation of persons with emotional disturbances
Alan M. Hofmeister, technology, school reform, reading and math instruction

Associate Professors
Judith M. Holt, early childhood and visually impaired
Pamela J. Hudson, adolescents with mild disabilities, mathematics
Ronda Menlove, special education, educational leadership, special education law, distance education
Timothy A. Slocum, reading, mild/moderate disabilities, behavior analysis, research methods

Research Associate Professor
Marilyn Likins, paraeducators, mild and moderate disabilities, alternative teacher preparation

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
Nancy K. Glomb, mild/moderate disabilities, distance education
Thomas S. Higbee, early childhood, severe disabilities, autism
Jared Schultz, rehabilitation counseling

Research Assistant Professors
Michael J. Millington, rehabilitation counseling
Cynthia J. Rowland, distance education, speech and language development, naturalistic instructional methods, early literacy, assistive technology

Adjunct Assistant Professors
Catherine E. Chambless, disability policy, supported employment
Julie Landeen, legal issues in special education, special education administration
Randyl Schelble, mild and moderate disabilities

Clinical Instructors
Janice Neibaur Day, educational issues for children with visual impairments
including early literacy, family issues and needs, and assistive technology
*Marlene Deer***,** preschool special education, naturalistic instruction
Barbara J. Fiechtl, preschool and infant service delivery
Lowell K. Oswald, professional staff development, progress evaluation, school district administration, implementation of research-based programs in classrooms
Tami W. Pyfer, severe and preschool special education, development
Kimberly H. Snow, curriculum development
Tim Tansey, rehabilitation of persons with severe mental illness, assessment issues with persons with disabilities, and professional development of rehabilitation counselors/psychologists

Adjunct Clinical Instructors
Melina Alexander, mild moderate special education, math education, distance education
Kirk Allen, emotionally disturbed, special education administration
Deb Bowen, vocational rehabilitation and transition
Alma Brown, classroom/behavior management and emotional behavior disorders, effective classroom instruction
Jerry Christensen, personnel development, special education leadership
Norman Corson, job placement of persons with disabilities
Marilyn Hammond, violence, sexual assault, disabilities, curriculum, and assistive technology
AnnaLee Hansen, mild and moderate disabilities
Karen T. Kowalski, special education law, behavior, issues in social justice
Lois Naegele, American Sign language, deaf culture, rehabilitation counseling
Bruce Schroeder, collaboration, special education administration, special education personnel development
Patricia B. Willis, learning disabilities, early literacy

Adjunct Lecturers
Gayle Baker, severe disabilities
Glenn Dyke, behavior disorders, mild and moderate disabilities
Cindy Myers, moderate and severe disabilities, alternative teacher preparation
Jeri Rigby, mild/moderate disabilities

Clinical Instructor Emeritus
Joan F. Forsgren-White

Course Descriptions

Special Education (SPED), pages 718-722
Rehabilitation Counseling (REH), pages 707-708

Department of 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:
General Theatre Arts Studies Program:
Kevin Doyle, Fine Arts Center 139A, (435) 797-3022, kdoyle@hass.usu.edu

Theatre Design and Technology Emphasis:
Bruce L. Duerden, Fine Arts Center 148, (435) 797-3026, bruced@hass.usu.edu

Shawn Fisher, Fine Arts Center 139D, (435) 797-2120, sfisher@hass.usu.edu

Dennis Hassan (set design), Fine Arts Center 138, (435) 797-3024, dhassan@hass.usu.edu

Nancy E. Hills (costume design), Fine Arts Center 229A, (435) 797-3049, nhills@hass.usu.edu

Acting Emphasis:
Kevin Doyle, Fine Arts Center 139A, (435) 797-3022, kdoyle@hass.usu.edu

Lynda Linford, Fine Arts Center 226A, (435) 797-3050, llinford@hass.usu.edu

Adrianne Moore, Fine Arts Center 230, (435) 797-3023, amoore@hass.usu.edu

Artemis Preeshl, Fine Arts Center 139B, (435) 797-3025, apreeshl@hass.usu.edu

Theatre Education Emphasis:
Robbin C. Black, Fine Arts Center 139C, (435) 797-0087, robbinb@hass.usu.edu

Graduate Program Coordinator:
Shawn W. Fisher, Fine Arts Center 139D, (435) 797-2120, sfisher@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); and 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, and Utah State Children's Theatre. Facilities used for performances by these groups include the 660-seat thrust stage Morgan Theatre in the Chase Fine Arts Center, the 380-seat proscenium Caine Lyric Theatre in downtown Logan, and a 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 and Scholarship Requirements

Admission requirements are the same as those described for the University on pages 16-20. Students in good standing may apply for admission or transfer to the program. Students transferring into the department must have a minimum 2.75 GPA (on a scale of 4.0) regardless of credit amount transferred. Students are encouraged to declare a theatre arts major early and consult an advisor as soon as they arrive on campus, as the professional BFA degree requires a minimum of three full years to complete. 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 2.75 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.

Required Core Courses (15 credits)

All Theatre Arts majors are required to complete the following core courses:

THEA 1033 Beginning Acting (F,Sp) 3
THEA 1513 Stage and Costume Crafts (F,Sp) 3
THEA 1713 Introduction to Playscript Analysis (F,Sp) 3
THEA 2410 Directing (F,Sp) 3

THEA 3230 Survey of Western Theatre (F) 3
In addition, all students must complete a minimum of 6 credits of production practicum work:

Required Practicum Courses (6 credits)

Theatre Arts majors and minors should expect to work on Utah State Theatre and studio productions as a crew member nearly every semester. All Theatre Arts majors, **except** for the BFA with the Theatre Education emphasis, are required to complete the following production work requirements (6 credits). Only 1 credit of THEA 2555 or 2556 may be taken per assignment in a given semester (45 clock hours per credit or until assignment is completed).

THEA 2555/4750 Production Practicum: Scenery (F,Sp,Su) 1
THEA 2555/4750 Production Practicum: Lighting (F,Sp,Su) 1
THEA 2555/4750 Production Practicum: Properties (F,Sp,Su) 1
THEA 2555/4750 Production Practicum: Costumes (F,Sp,Su) 1
THEA 2555/4750 Production Practicum: Publicity (F,Sp,Su) 1
THEA 2556/4750 Production Run Crew (F,Sp,Su).....1

Transfer students' transcripts will be evaluated and a prorated production work requirement will be set at the time of admission to the program. Additional production work is required under some degree plans.

Bachelor of Arts Degree

A Bachelor of Arts degree in the **General Theatre Arts Studies Program** requires 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); and a university minor. To obtain a Bachelor of Arts degree, a student must fulfill the language requirement (see page 60). All students declaring a Theatre Arts major are enrolled in the BA program until they audition or interview for one of the BFA tracks. The BA degree is recommended for students interested in pursuing careers in stage directing, especially in a graduate program. In lieu of a senior project, students in this program must select a minor in consultation with their advisor, and fulfill all requirements for the minor selected.

General Theatre Arts Studies Program (THEA) BA Degree in Theatre Arts (48 credits) (2.75 GPA)

Language Requirement (see University graduation requirements)

Required Theatre Arts Department Core Courses (15 credits)

Required Practicum Courses (6 credits)

Required Performance Courses (select 9 credits minimum)

THEA 1113 Beginning Voice (F).....3
THEA 1430 Movement for Actors I (F,Sp) 3
THEA 2420 Intermediate Acting: Scene Study (F,Sp).....3
THEA 2430 Movement for Actors II (F,Sp) 3
THEA 2440 Introduction to Dance for Theatre: Jazz, Ballet, and Tap (F).....3
THEA 2470 Movement: Stage Combat (F,Sp) 3
THEA 2480 Intermediate Voice for Theatre (Sp).....3
THEA 2490 Intermediate Acting: Shakespeare (F,Sp) 3
THEA 2666 Performance Practicum I (F,Sp) (1cr, repeatable) **or**
THEA 2667 Performance Practicum II (F,Sp) (1cr, repeatable) **or**
THEA 4740 Advanced Performance Practicum I (F,Sp) (1-2 cr, repeatable) **or**
THEA 4840 Advanced Performance Practicum II (F,Sp) (1-2 cr, repeatable).....1-2
THEA 3400 (DHA) Mask Building and Performance (F,Sp).....3
THEA 3410 Dance for Theatre: Tap (F,Sp).....3
THEA 3420 Dance for Theatre: Jazz (F,Sp).....3
THEA 3440 Dance for Theatre: Ballet (F,Sp) 3
THEA 5410 Advanced Directing (F,Sp) 3

Required Design Courses (select 3 credits minimum)

THEA 2540 Lighting Design (F,Sp) 3
THEA 3050 (DHA) Period Styles/Historic Interiors (F,Sp).....3
THEA 3510 Scene Design (F,Sp).....3
THEA 3520 Stage Costume Design (F,Sp) 3
THEA 3570 (DHA) Historic Clothing (F,Su).....3

Required Dramatic Literature/History Courses (9 credits)

ENGL 2300 (BHU) Introduction to Shakespeare (F).....3
THEA 5240 (DHA/CI) Contemporary Theatre (F,Sp) 3
THEA 5290 Special Topics in Theatre History and Literature (F,Sp).....3

Elective Dramatic Literature/History Courses (select 6 credits minimum)

ENGL 4300 Shakespeare (F,Sp).....3
THEA 5250 Playwriting Company Workshop (F) 3
THEA 5270 Performance Theory and Criticism (Sp) 3
THEA 5290 Special Topics in Theatre History and Literature (a different topic than taken for required credit) (F,Sp).....3

Required Minor (12 credits minimum)

Since the study of theatre requires an understanding of many different fields of human endeavor, students majoring in Theatre Arts must select a minor in consultation with their advisor. Students are encouraged to select a minor that will broaden their knowledge of the world, as well as strengthen their practice of theatre.

Sample Four-year Plan for Theatre Arts Major, General Theatre Arts Studies Program (BA Degree)

Minimum GPA for Admission: 2.75, USU; 2.75, Career
Minimum GPA for Graduation: 2.75, major courses; 2.0, USU; 2.75, Career
Minimum Grade Accepted: *B-* in performance and design courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (30 credits)

Fall Semester (16 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
THEA 1033 Beginning Acting 3
THEA 1513 Stage and Costume Crafts 3
Foreign Language 1010-level course.....4
University Studies Breadth course 3

Spring Semester (14 credits)
THEA 1713 Introduction to Playscript Analysis 3
THEA 2410 Directing 3
THEA 2555 Production Practicum (1 cr) **or**
THEA 2556 Production Run Crew (1 cr) 1
Foreign Language 1020-level course 4
University Studies Quantitative Literacy (QL) course 3

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (31 credits)
Fall Semester (17 credits)
THEA 2555 Production Practicum (1 cr) **or**
THEA 2556 Production Run Crew (1 cr) 1
THEA 3230 Survey of Western Theatre 3
Required Performance course 3
Required Minor course 3
Foreign Language 2010-level course 4
University Studies Breadth course 3

Spring Semester (14 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
THEA 2555 Production Practicum (1 cr) **or**
THEA 2556 Production Run Crew (1 cr) 1
Required Design course 3
Foreign Language 2020-level course 4
University Studies Breadth course 3

Junior Year (32 credits)
Fall Semester (16 credits)
THEA 4750 Advanced Production Practicum (1 cr) **or**
THEA 4850 Advanced Production Projects (1 cr) 1
Required Literature/History course 3
Required Performance course 3
Required upper-division Minor course 3
University Studies Breadth courses 6

Spring Semester (16 credits)
THEA 4750 Advanced Production Practicum (1 cr) **or**
THEA 4850 Advanced Production Projects (1 cr) 1
THEA 5240 (CI) Contemporary Theatre 3
Required upper-division Literature/History course 3
Required upper-division Performance course 3
Required Minor courses 6

Senior Year (30 credits)
Fall Semester (16 credits)
THEA 4750 Advanced Production Practicum (1 cr) **or**
THEA 4850 Advanced Production Projects (1 cr) 1
Required upper-division Literature/History courses 6
Required upper-division Minor course 3
Communications Intensive (CI) course 3
Depth Social Sciences (DSS) course 3

Spring Semester (14 credits)
THEA 5910 Senior Project 2
Required upper-division Literature/History course 3
Required upper-division Minor course 3
Depth Life and Physical Sciences (DSC) course 3
Quantitative Intensive (QI) course 3

General Theatre Studies Minor (18 credits) (2.75 GPA)

Note: Transcripts will list this minor as Theatre Arts Minor.

The General Theatre Studies Minor is available to all students. Students enrolled in this minor must submit a resume and/or production history of their theatre work to date. Progress will be reviewed on an annual basis.

Required Theatre Arts Courses (15 credits)
THEA 1033 Beginning Acting (F,Sp) 3
THEA 1513 Stage and Costume Crafts (F,Sp) 3
THEA 1713 Introduction to Playscript Analysis (F,Sp) 3
THEA 2410 Directing (F,Sp) 3
THEA 3230 Survey of Western Theatre (F) 3

Elective Production Courses (3 credits)
Complete three performance or production practicum courses, to be determined in consultation with Theatre Arts advisor.
THEA 2666/4740 Performance Practicum I (F,Sp) (1-2 cr, repeatable) **or**
THEA 2667/4840 Performance Practicum II (F,Sp) (1-2 cr, repeatable) **or**
THEA 2555/4750 Production Practicum (F,Sp) (1-3 cr, repeatable) **or**
THEA 2556 Production Run Crew (F,Sp,Su) (1 cr) **or**
THEA 4850 Advanced Production Projects (F,Sp,Su) (1-3 cr, repeatable) 3

Bachelor of Fine Arts Degree

Program Entrance Requirements

Students seeking the BFA degree who choose the Acting Emphasis or the Theatre Design and Technology Emphasis 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 Emphasis (AE) (78 Credits) (2.75 GPA) BFA Degree in Theatre Arts

Candidates are accepted into this performance program through an audition and interview conducted by a BFA committee. Progress and retention in this emphasis is monitored through periodic recitals/auditions before the same body, and students must maintain *B* or better grades in all performance courses. All students in the Acting Emphasis must perform a recital during their senior year. 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.

Required Theatre Arts Department Core Courses (15 credits)

Required Practicum Courses (6 credits)

Required Performance Courses (23 credits)
THEA 1113 Beginning Voice (F).....3
THEA 1430 Movement for Actors I (F,Sp).....3
THEA 2420 Intermediate Acting: Scene Study (F,Sp).....3
THEA 2440 Introduction to Dance for Theatre: Jazz, Ballet, and Tap (F).....3
THEA 2480 Intermediate Voice for Theatre (Sp).....3
THEA 2490 Intermediate Acting: Shakespeare (F,Sp).....3
THEA 2666 Performance Practicum I (F,Sp) (1 cr, repeatable) **or**
THEA 2667 Performance Practicum II (F,Sp) (1 cr, repeatable) **or**
THEA 4740 Advanced Performance Practicum I (F,Sp) (1-2 cr, repeatable) **or**
THEA 4840 Advanced Performance Practicum II (F,Sp) (1-2 cr, repeatable).....5

Elective Advanced Acting Courses Group 1 (select 3 credits minimum)
THEA 5400 Advanced Acting: Turn of the Twentieth Century (F,Sp).....3
THEA 5450 Advanced Acting: Restoration and Greek (F,Sp).....3

Elective Advanced Acting Courses Group II (select 3 credits minimum)
THEA 5440 Advanced Acting: Musical Theatre Auditions (F,Sp).....3
THEA 5470 Advanced Acting: Modern Methods (F,Sp).....3

Elective Movement Courses (select 6 credits minimum)
THEA 2430 Movement for Actors II (F,Sp).....3
THEA 2470 Movement: Stage Combat (F,Sp).....3
THEA 3400 (DHA) Mask Building and Performance (F,Sp).....3
THEA 3410 Dance for Theatre: Tap (F,Sp).....3
THEA 3420 Dance for Theatre: Jazz (F,Sp).....3
THEA 3440 Dance for Theatre: Ballet (F,Sp).....3

Elective Advanced Performance Courses (select 6 credits minimum)
THEA 3450 (DHA) Dialects (F,Sp).....3
THEA 4400 Company Workshop (F,Sp).....3
THEA 4450 Advanced Voice for Theatre (Sp).....3
THEA 5410 Advanced Directing (F,Sp).....3
THEA 5420 Advanced Acting: Absurdists (F,Sp).....3
THEA 5430 Advanced Acting: Acting for the Camera (F,Sp).....3

Required Design/Technical Course (2 credits)
THEA 1223 Stage Makeup (F,Sp).....2

Elective Theatre History/Literature (select 12 credits minimum)
THEA 4250 Playwriting (Sp).....3
THEA 5240 (DHA/CI) Contemporary Theatre (F,Sp).....3
THEA 5250 Playwriting Company Workshop (F).....3
THEA 5270 Performance Theory and Criticism (Sp).....3
THEA 5290 Special Topics in Theatre History and Literature (repeatable for credit, if different topics) (F,Sp).....3
ENGL 2300 (BHU) Introduction to Shakespeare (F).....3

BFA Acting Recital/Capstone (2 credits)
All BFA Acting Emphasis majors must perform a recital during their senior year. Recital material is to be selected and approved during the spring semester of the junior year, including submission of a written proposal. Students must be enrolled in THEA 5910 for 2 credits during the semester in which the recital is to be presented. Recitals should be 45-60 minutes in duration and may be individual or combined efforts on the part of not more than two candidates (combined efforts must be approved by the BFA committee). Upon approval of the advisor, an individual performer may recruit no more than two additional performers. All BFA candidates are required to attend recitals.

Required Acting Recital
THEA 5910 Senior Project (BFA Performance Recital) (F,Sp).....2

Theatre Performance Minor (18 credits) (2.75 GPA)

Note: Transcripts will list this minor as Theatre Arts Minor.

The Theatre Performance Minor is available to all students. Students must interview with a member of the BFA Performance Committee and submit a resume and/or production history of their theatre work to date. Progress will be reviewed on an annual basis.

Required Theatre Arts Courses (9 credits)
THEA 1033 Beginning Acting (F,Sp).....3
THEA 1713 Introduction to Playscript Analysis (F,Sp).....3
THEA 2666/4740 Performance Practicum I (F,Sp) (1-2 cr, repeatable) **or**
THEA 2667/4840 Performance Practicum II (F,Sp) (1-2 cr, repeatable).....3

Elective Performance Courses (9 credits)
Complete three or more classes from the BFA Acting Emphasis (AE) course of study, to be determined in consultation with Theatre Arts advisor.

Theatre Design and Technology Emphasis (TDE) (74-78 credits) (2.75 GPA) BFA Degree in Theatre Arts

Candidates are accepted into the design and technology emphasis by interview and review of a portfolio by a BFA committee. Progress and retention in this emphasis is monitored by an annual review/interview with the BFA Design Committee. Students must maintain *B* or better grades in all design/technical courses. All students in the Design/Technical Emphasis must complete a final project during their senior year.

Required Theatre Arts Department Core Courses (15 credits)

Required Practicum Courses (6 credits)

Required Design/Technical Courses (17 credits)
THEA 1223 Stage Makeup (F,Sp).....2
THEA 2540 Lighting Design (F,Sp).....3
THEA 3050 (DHA) Period Styles/Historic Interiors (Sp,Su).....3
THEA 3510 Scene Design (F,Sp).....3
THEA 3520 Stage Costume Design (F,Sp).....3
THEA 3570 (DHA) Historic Clothing (F,Su).....3

Required Performance Courses (select 3 credits minimum)
THEA 2420 Intermediate Acting: Scene Study (F,Sp).....3
THEA 2490 Intermediate Acting: Shakespeare (F,Sp).....3

Required Dramatic Literature/History Courses (select 6 credits minimum)
THEA 4250 Playwriting (F)....3
THEA 5240 (DHA/CI) Contemporary Theatre (F,Sp)....3
THEA 5250 Playwriting Company Workshop (Sp)....3
THEA 5270 Performance Theory and Criticism (Sp)....3
THEA 5290 Special Topics in Theatre History and Literature (repeatable for credit, if different topics) (F,Sp)....3
ENGL 2300 (BHU) Introduction to Shakespeare (F)....3

BFA Design and Technology Senior Project/Capstone Requirements (2 credits)
All BFA majors in the Theatre Design and Technology emphasis must complete a project during their senior year. The project is to be selected and approved spring semester of the junior year, including submission of a written proposal.

Students must be enrolled in THEA 5910 for 2 credits during the semester in which the project is presented. The project will be to design the settings, costumes, lights, or technical direction for a Studio Stage or Mainstage production.
THEA 5910 Senior Project (F,Sp)....2

Specialized Area Requirements (25-28 credits)
Note: Student transcripts will show Theatre Design and Technology Emphasis (TDE) *not* one of the specialized areas listed below.

Costume Design
Required Theatre Design/Technical Courses (13 credits)
THEA 4520 Advanced Costume Design (F,Sp)....3
THEA 4750/4850 Advanced Production Practicum: Costumes (F,Sp,Su)....1
THEA 5750 Repertory Theatre Production (Su) (2-8 cr, repeatable) **or**
THEA 5900 Special Projects I: Project in Theatre/Internship (F,Sp,Su) (1-4 cr, repeatable)....3
THEA 5950 Rendering and Painting for the Theatre (F,Sp)....3
ARTH 2720 (BHU) Survey of Western Art: Renaissance to Post-Modern (Sp)....3

Elective Art Courses (select 12 credits minimum)
ART 1010 (BCA) Exploring Art (F)....3
ART 1020 Drawing I (F,Sp)....3
ART 2110 Drawing II (F,Sp)....3
ART 2200 Painting I (F)....3
ART 3260 Anatomy for Artists (F)....3
FCSE 2040 Clothing Production Principles (F,Sp)....3
FCSE 3040 Advanced Clothing Production Principles (F,Sp)....3
THEA 5590 Design Studies for Theatre (F,Sp)....2

Lighting Design
Required Theatre Design/Technical Courses (19 credits)
THEA 2510 Scene Painting/Properties (F,Sp)....3
THEA 4540 Advanced Lighting Design (Sp)....3
THEA 4750/4850 Advanced Production Practicum: Lighting (F,Sp,Su)....4
THEA 5510 Computer-Aided Design for Theatre (F)....3
THEA 5750 Repertory Theatre Production (Su) (2-8 cr, repeatable) **or**
THEA 5900 Special Projects I: Project in Theatre/Internship (F,Sp,Su) (1-4 cr, repeatable)....3
THEA 5950 Rendering and Painting for the Theatre (F,Sp)....3

Elective Technology Courses (select 3 credits minimum)
ART 1050 Introduction to Photography (F)....3
ART 2810 Photography I (F,Sp)....3
ETE 2240 Analog Devices and Circuits (F)....3
ETE 2300 (QI) Electronic Fundamentals (F,Su)....4
ETE 2310 AC/DC Circuits (Sp)....2
ETE 2360 Digital Circuits (Sp)....3
THEA 2560 Theatre and Studio Sound (F,Sp)....3
THEA 4480 Theatre Leadership and Management (Sp)....3
THEA 5590 Design Studies for Theatre (F,Sp)....2
THEA 5930 Special Projects III (F,Sp) (1-4 cr, repeatable)....3

Elective Art Courses (select 3 credits minimum)
ART 1010 (BCA) Exploring Art (F)....3
ART 1020 Drawing I (F,Sp)....3
ART 1120 Two-dimensional Design (F,Sp)....3
ART 1130 Three-dimensional Design (F,Sp)....3
ART 2200 Painting I (F)....3
ART 2400 Computers and Art (Sp)....3

Scenic Design
Required Theatre Design/Technical Courses (16 credits)
THEA 2510 Scene Painting/Properties (F,Sp)....3
THEA 4510 Advanced Scene Design (F,Sp)....3
THEA 4750/4850 Advanced Production Practicum (additional) (F,Sp,Su)....1
THEA 5510 Computer-Aided Design for Theatre (F)....3
THEA 5750 Repertory Theatre Production (Su) (2-8 cr, repeatable) **or**
THEA 5900 Special Projects I: Project in Theatre/Internship (F,Sp,Su) (1-4 cr, repeatable)....3
THEA 5950 Rendering and Painting for the Theatre (F,Sp)....3

Elective Art Courses (select 9 credits minimum)
ART 1010 (BCA) Exploring Art (F)....3
ART 1020 Drawing I (F,Sp)....3
ART 2110 Drawing II (F,Sp)....3
ART 2200 Painting I (F)....3
ART 2400 Computers and Art (Sp)....3
THEA 5590 Design Studies for Theatre (F,Sp)....2

Stage Management/Technician
Required Theatre Design/Technical Courses (16 credits)
THEA 2510 Scene Painting/Properties (F,Sp)....3
THEA 2550 Stage Management (F,Sp)....3
THEA 2560 Theatre and Studio Sound (F,Sp)....3
THEA 4750/4850 Advanced Production Practicum (F,Sp,Su)....4
THEA 5750 Repertory Theatre Production (Su) (2-8 cr, repeatable) **or**
THEA 5900 Special Projects I: Project in Theatre/Internship (F,Sp,Su) (1-4 cr, repeatable)....3

Elective Courses (select 10 credits minimum)
BUS 3110 (DSS) Management Fundamentals....3
ECE 1000 Introduction to Electrical and Computer Engineering (F)....2
ECE 2270 Electrical Circuits (F,Sp)....4
ECE 3260 (DSC/QI) Science of Sound (F)....3
HEP 2000 First Aid and Emergency Care (F,Sp,Su)....2
MHR 1160 Developing Self-Management Skills (F,Sp,Su)....1
MHR 2350 Small Business Management (Sp)....3
MHR 3110 (DSS) Managing Organizations and People (F,Sp)....3
MHR 3710 Developing Team and Interpersonal Skills (F,Sp)....3
MUSC 1010 (BCA) Introduction to Music (F,Sp,Su)....3
MUSC 1100 (BCA) Fundamentals of Music (F,Sp)....3
THEA 4480 Theatre Leadership and Management (Sp)....3
THEA 5510 Computer-Aided Design for Theatre (F)....3
THEA 5590 Design Studies for Theatre (F,Sp)....2
THEA 5930 Special Projects III (F,Sp) (1-4 cr, repeatable)....3

Elective Technology Courses (select 6 credits minimum)
ETE 1040 Construction and Estimating (Sp)....3
ETE 1200 Computer-Aided Drafting and Design (F,Sp,Su)....3
ETE 1640 Introduction to Welding (F)....3
ETE 2850 Statics and Strength of Materials (F)....3

Sample Four-year Plan for Theatre Arts Major, Acting Emphasis *or* Theatre Design and Technology Emphasis

Minimum GPA for Admission: 2.75, USU; 2.75, Career
Minimum GPA for Graduation: 2.75, major courses; 2.75, USU; 2.75, Career
Minimum Grade Accepted: *B-* in major courses; *B* in performance and design courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (31 credits)
Fall Semester (15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
THEA 1033 Beginning Acting 3
THEA 1513 Stage and Costume Crafts 3
Required Beginning Performance *or* Design course 3
University Studies Breadth course(s) 3

Spring Semester (16 credits)
THEA 1713 Introduction to Playscript Analysis 3
THEA 2410 Directing 3
THEA 2555 Production Practicum (1 cr) **or**
THEA 2556 Production Run Crew (1 cr) 1
Required Beginning Performance *or* Design course 3
University Studies Quantitative Literacy (QL) course 3
University Studies Breadth course 3

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (32 credits)
Fall Semester (16 credits)
THEA 2555 Production Practicum (1 cr) **or**
THEA 2556 Production Run Crew (1 cr) 1
THEA 3230 Survey of Western Theatre 3
Required Performance *or* Design courses 6
University Studies Breadth courses 6

Spring Semester (16 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
THEA 2555 Production Practicum (1 cr) **or**
THEA 2556 Production Run Crew (1 cr) 1
Required Performance *or* Design courses 6
University Studies Breadth courses 6

Junior Year (32 credits)
Fall Semester (16 credits)
THEA 4750 Advanced Production Practicum (1 cr) **or**
THEA 4850 Advanced Production Projects (1 cr) 1
Required Performance *or* Design courses 9
Communications Intensive (CI) course 3
Depth Social Sciences (DSS) course 3

Spring Semester (16 credits)
THEA 4750 Advanced Production Practicum (1 cr) **or**
THEA 4850 Advanced Production Projects (1 cr) 1
THEA 5240 (CI) Contemporary Theatre 3
Required upper-division Performance *or* Design courses 9
Depth Life and Physical Sciences (DSC) course 3

Senior Year (27 credits)
Fall Semester (16 credits)
THEA 4750 Advanced Production Practicum (1 cr) **or**
THEA 4850 Advanced Production Projects (1 cr) 1
Required upper-division Performance *or* Design courses 12
Quantitative Intensive (QI) course 3

Spring Semester (11 credits)
THEA 5910 Senior Project 2
Required upper-division Performance *or* Design courses 9

Theatre Production Minor (18 credits) (2.75 GPA)

Note: Transcripts will list this minor as Theatre Arts Minor.

The Theatre Production Minor is available to all students. Students must interview with a member of the BFA Design Committee and submit a resume and/or production history of their theatre work to date. Progress will be reviewed on an annual basis.

Required Theatre Arts Courses (9 credits)
THEA 1713 Introduction to Playscript Analysis (F,Sp) 3
THEA 2410 Directing (F,Sp) 3

THEA 2555/4750 Production Practicum (F,Sp,Su) (1-3 cr, repeatable) 3
Or
THEA 2556 Production Run Crew (F,Sp,Su) (1 cr) **and**
THEA 4850 Advanced Production Projects (F,Sp,Su) (1-3 cr, repeatable) 3

Elective Production Courses (9 credits)
Complete three or more classes from the BFA Theatre Design and Technology Emphasis (TDE) course of study, to be determined in consultation with Theatre Arts advisor.

Theatre Education Emphasis (79 credits)

Candidates are accepted into the theatre education emphasis by interview and a review of a portfolio by the theatre education committee. Students earning a secondary education license must complete 35 additional credits in the Secondary Teacher Education Program (STEP), as well as an academic teaching minor approved by the College of Education and Human Services. All majors desiring a teaching license must apply for admission to teacher education. Progress and retention in this emphasis requires a minimum 2.75 GPA for admission to the STEP. All students in the Theatre Education Emphasis must complete a senior project.

Required Theatre Arts Department Core Courses (15 credits)

Theatre Education Courses (6 credits)
THEA 5340 Theatre Production Methods for Educators (Sp) 3
THEA 5360 Drama in the Secondary Education Classroom: Grades 7-12 (Sp) 3

Theatre History Courses (select 3 credits)
THEA 4250 Playwriting (Sp) 3
THEA 5240 (DHA/CI) Contemporary Theatre (F,Sp) 3
THEA 5270 Performance Theory and Criticism (Sp) 3
THEA 5290 Special Topics in Theatre History and Literature (F,Sp) 3
ENGL 2300 (BHU) Introduction to Shakespeare (F) 3
ENGL 4300 Shakespeare (F,Sp) 3

Department of Theatre Arts

Theatre Performance Courses (select 6 credits minimum)
THEA 1030 (BHU) Exploring Performance Through Aesthetic Texts (F,Sp,Su) 3
THEA 1430 Movement for Actors I (F,Sp) 3
THEA 2420 Intermediate Acting: Scene Study (F,Sp) 3
THEA 2430 Movement for Actors II (F,Sp) 3
THEA 2440 Introduction to Dance for Theatre: Jazz, Ballet, and Tap (F) 3
THEA 2490 Intermediate Acting: Shakespeare (F,Sp) 3
THEA 3410 Dance for Theatre: Tap (F,Sp) 3
THEA 3420 Dance for Theatre: Jazz (F,Sp) 3
THEA 3440 Dance for Theatre: Ballet (F,Sp) 3
THEA 4030 Storytelling (F,Sp,Su) 3
THEA 4400 Company Workshop (F,Sp) 3
THEA 5410 Advanced Directing (F,Sp) 3
THEA 5470 Advanced Acting: Modern Methods (F,Sp) 3

Theatre Performance Practicum Courses (select 2 credits)
THEA 4740 Advanced Performance Practicum I (F,Sp) (1-2 cr, repeatable) **or**
THEA 4840 Advanced Performance Practicum II (F,Sp) (1-2 cr, repeatable) 1-2
THEA 5310 Theatre Mentorship and Service (F,Sp,Su) (1-3 cr, repeatable) 1-3

Theatre Design/Technical Courses (select 6 credits minimum)
THEA 1223 Stage Makeup (F,Sp) 2
THEA 2540 Lighting Design **(Required)** (F,Sp) 3
THEA 2550 Stage Management (F,Sp) 3
THEA 3510 Scene Design (F,Sp) 3
THEA 3520 Stage Costume Design (F,Sp) 3
THEA 4480 Theatre Leadership and Management (Sp) 3

Theatre Production Practicum Courses (select 6 credits minimum; 3 credits *must* be upper division)
THEA 2555 Production Practicum (F,Sp,Su) (1 cr, repeatable) **or**
THEA 2556 Production Run Crew (F,Sp,Su) (1 cr) 1-2
THEA 4750/4850 Advanced Production Practicum (F,Sp,Su) (1-3 cr, repeatable) 1-3

BFA Theatre Education Senior Project/ Capstone Requirements
During their senior year, students in the Theatre Education emphasis must complete a project chosen from among the following options, as approved by their advisor and one additional faculty member. The project may be developed in conjunction with student teaching to be assessed through THEA 5390, Student Teaching Seminar; or must be chosen from one of the following options: (1) a BFA design or technical Senior Project, subject to the same guidelines; (2) a BFA Performance Recital, subject to the same guidelines; or (3) directing a studio one-act play or independent production. Project material must be selected and approved during the spring semester of the junior year, including submission of a written proposal. If the project is *not part of student teaching*, students must be enrolled in THEA 5910 for 2 credits during the semester in which the recital is to be presented. These credits will be ***in addition*** to the 44 credits required for the Theatre Education emphasis.

Required Senior Courses
THEA 5390 Student Teaching Seminar (taken in conjunction with STEP Program) (F,Sp) 2
THEA 5910 Senior Project (F,Sp) 2

Secondary Teacher Education Program (STEP) (35 credits) (2.75 GPA)
The Secondary Teacher Education Program (STEP) prepares and licenses students to teach in public secondary schools. The program consists of three successive semesters of education courses, including THEA 3300 or 4300, THEA 5370, and THEA 5390, culminating in supervised student teaching in both the major and minor subject areas.

The STEP requires admission to the Secondary Education Department, College of Education and Human Services. Information about the program, including admission requirements, approved minor subject areas, and the three-semester course sequence, can be found at the Secondary Education website: **http://www.coe.usu.edu/seced**

Minor Teaching Subject Area (Required) (approximately 20-30 credits, depending on subject)
Students must complete a University-approved teaching minor.

Sample Four-year Plan for Theatre Arts Major, Theatre Education Emphasis

Minimum GPA for Admission: 2.75, USU; 2.75, Career
Minimum GPA for Graduation: 2.75, major courses; 2.75, USU; 2.75, Career
Minimum Grade Accepted: *B-* in major courses

This is a sample plan. It outlines University and major requirements in very general terms. While there are requirements that are sequential, many are flexible and do not need to be completed exactly in the order listed. Students should always check with their faculty and professional advisors to be sure they are meeting the requirements appropriately. To make an appointment with a professional advisor, call (435) 797-3883.

Freshman Year (31 credits)
Fall Semester (15 credits)
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
THEA 1033 Beginning Acting 3
THEA 1513 Stage and Costume Crafts 3
University Studies Breadth courses 6

Begin crafting and assembling portfolio for Theatre Education.

Spring Semester (16 credits)
THEA 2555 Production Practicum (1 cr) **or**
THEA 2556 Production Run Crew (1 cr) 1
THEA 1713 Introduction to Playscript Analysis 3
Required Design/Technical course 3
University Studies Quantitative Literacy (QL) course 3
University Studies Breadth courses 6

Complete the CIL exams by the end of the Freshman Year.

Sophomore Year (32 credits)
Fall Semester (16 credits)
THEA 2410 Directing 3
THEA 2555 Production Practicum (1 cr) **or**
THEA 2556 Production Run Crew (1 cr) 1
THEA 3230 Survey of Western Theatre 3
Required Performance course 3
Teaching Minor course 3
University Studies Breadth course 3

Review portfolio with faculty advisor.

Spring Semester (16 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
THEA 2555 Production Practicum (1 cr) **or**
THEA 2556 Production Run Crew (1 cr) 1
THEA 5340 Theatre Production Methods for Educators 3
Required Technical course 3
Teaching Minor course 3
Quantitative Intensive (QI) course 3

Complete Speech and Hearing Screening and Background Check.
Complete Teacher Education Writing Exam.

Junior Year (32 credits)
Fall Semester (16 credits)
THEA 4750 Advanced Production Practicum (1 cr) **or**
THEA 4850 Advanced Production Projects (1 cr) 1
Required Theatre History course 3
Required Design/Technical course 3
Required Performance course 3
University Studies Breadth course 3
Teaching Minor course 3

Review portfolio with faculty advisor.

Spring Semester (16 credits)
THEA 4750 Advanced Production Practicum (1 cr) **or**
THEA 4850 Advanced Production Projects (1 cr) 1
THEA 5240 (CI) Contemporary Theatre 3
THEA 5360 Drama in the Secondary Education Classroom: Grades 7-12 3
Teaching Minor courses 6
Depth Life and Physical Sciences (DSC) course 3

Senior Year (25 credits)
Fall Semester (13 credits)
THEA 4740 Advanced Performance Practicum I (1 cr) **or**
THEA 4840 Advanced Performance Practicum II (1 cr) 1
THEA 4750 Advanced Production Practicum (1 cr) **or**
THEA 4850 Advanced Production Projects (1 cr) 1
Required Performance course 3
Teaching Minor courses 6
Senior Project 2

Apply for admission to the STEP Program.
Review portfolio with faculty advisor.

Spring Semester (12 credits)
THEA 4750 Advanced Production Practicum (1 cr) **or**
THEA 4850 Advanced Production Projects (1 cr) 1
SCED 3210 (CI/DSS) Educational and Multicultural Foundations 3
STEP Level I courses 8

Certification Year (24-26 credits)
Fall Semester (12 credits)
STEP Level II courses 12

Spring Semester (12-14 credits)
THEA 5910 Senior Project (if not doing Senior Project in context of Student Teaching) 2
STEP Level III (Student Teaching) courses 12

Theatre Arts Teaching Minor (29 credits) (2.75 GPA)

The Theatre Arts Teaching Minor is an approved teaching minor for Secondary Education students majoring in other subject areas. Students enrolled in this minor must interview with the Theatre Arts Department and submit a portfolio that includes their diverse theatre experiences to date. This portfolio is used for advising purposes, as well as for scholarship consideration. **The portfolio is required for entrance into the STEP Program**, and USOE currently requires a portfolio in lieu of a praxis exam, in order for the student to be considered "highly qualified," according to the "No Child Left Behind" regulations.

Required Theatre Arts Department Core Courses (15 credits)

Theatre Education Courses (select 3 credits minimum)
THEA 5340 Theatre Production Methods for Educators (Sp) 3
THEA 5360 Drama in the Secondary Education Classroom: Grades 7-12 (Sp) 3

Theatre Performance Practicum Courses (select 2 credits)
THEA 4740/4840 Advanced Performance Practicum (F,Sp) (1-2 cr, repeatable) 1-2
THEA 5310 Theatre Mentorship and Service (F,Sp,Su) (1-3 cr, repeatable) 1-3

Theatre Production Practicum Courses (select 6 credits minimum; 3 credits must be upper division)
THEA 2555 Production Practicum (F,Sp,Su) (1 cr, repeatable) **or**
THEA 2556 Production Run Crew (F,Sp,Su) (1 cr) 1-2
THEA 4750 Advanced Production Practicum (F,Sp,Su) (1-3 cr, repeatable) 1-3

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 Arts Studies BA program.

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.

Department of Theatre Arts

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. Minimum GPA requirements for participation in departmental honors vary by department, but usually fall within the range of 3.30-3.50. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level. The campus-wide Honors Program, which is open to all qualified students regardless of major, offers a rich array of cultural and social activities, special classes, and the benefit of Honors early registration. Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@cc.usu.edu. Additional information can be found online at: **http://www.usu.edu/honors/**

Additional Information

Major requirement sheets, which provide detailed information about requirements for undergraduate programs within the Theatre Arts Department, can be obtained from the department, or accessed online at: **http://www.usu.edu/majorsheets/**

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 1033 Beginning Acting (F,Sp) 3
THEA 1513 Stage and Costume Crafts (F,Sp) 3
THEA 2410 Directing (F,Sp) 3
THEA 3230 Survey of Western Theatre (F) 3
THEA 4750 Advanced Production Practicum (F,Sp,Su) 3
Elective Theatre Arts courses in one program area 6

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 Introduction to Graduate Study in Theatre (F) 3
THEA 6240 Contemporary Theatre (F,Sp) 3
THEA 6790 Seminar in Drama (Sp) 3
THEA 6800 Graduate Studies in Theatre: Dramaturgy Project 2

Two advanced theatre history or dramatic literature courses selected from the Theatre Arts, English, or Languages, Philosophy, and Speech Communication departments are also required (6 credits).

Students must also complete two 5000- or 6000-level THEA courses, two of which must be in a single area.

Generally, students complete up to 8 thesis credits in THEA 6970. However, under special circumstances, a Plan B option in this program is available, requiring 12 credits of special project work and no more than 3 thesis credits in 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 pages 106-107).

Master of Fine Arts (60 credits minimum)

The candidate for the 60 (minimum) credit MFA must complete the Plan B program, and will undertake from three to four 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 student may specialize in one of the following areas. It is recommended that *both* a primary *and* a secondary emphasis be elected.

Scenery Design
Costume Design
Lighting Design
Advanced Technical Practice

The minimum residency is four semesters, including one or two summers in an established repertory or stock company, or equivalent experience. Participation in the department's summer Old Lyric Repertory Company will satisfy this requirement. A *minimum* total of 60 semester credits is required. The nature of the discipline, as well as the resources of the department, discourage credit by extension, large amounts of transfer credit (i.e., in excess of 12 credits), or numerous off-campus projects.

Students who have already earned an MA degree in theatre from an accredited institution will generally be given approximately one academic year of credit toward the MFA degree. To finish the MFA degree, they will then be required to complete a specialized program of approximately 40 credits.

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.

I. Entry Phase (approximately two semesters) (19 credits)

A. Required Course (3 credits)
THEA 6010 Introduction to Graduate Study in Theatre (F) 3

B. Advanced Literature Component (select two courses) (6 credits)
THEA 6030 Storytelling (F,Sp,Su) 3
THEA 6240 Contemporary Theatre (F,Sp) 3
THEA 6250 Playwriting (Sp) 3
THEA 6270 Performance Theory and Criticism (Sp) 3
THEA 6290 Special Topics in Theatre History and Literature (F,Sp) 3

C. Advanced Design Coursework (in areas of specialization) (select 6 credits)
THEA 5510 Computer-Aided Design for Theatre (F) 3
THEA 5950 Rendering and Painting for the Theatre (F,Sp) 3
THEA 6480 Theatre Leadership and Management (Sp) 3
THEA 6510 Advanced Scene Design (F,Sp) 3
THEA 6540 Advanced Lighting Design (Sp) 3
THEA 6790 Seminar in Drama *(Topics include: Drafting for Theatre, Tailoring, Pattern Drafting, Structural Design for the Stage, Costume Crafts)* (F,Sp) 1-4
THEA 6900 Research Studies (F,Sp,Su) 1-4

D. Design Studies (complete 2 credits each semester) (4 credits)
THEA 5590 Design Studies for Theatre (F,Sp) 4

During (or upon the completion of) the first semester of this phase, the student will:

1. Submit a petition to advance to the next phase.
2. Nominate an MFA Supervisory Committee of at least three members and submit the list of members to the department head.
3. Identify three projects for the next phase, after consultation with the graduate committee and department head of Utah State Theatre regarding program scheduling for the following season.
4. Develop a study list with the help of the committee, outlining the course of study for the project and cuminating phases.

II. Project Phase (approximately three semesters) (35 credits)

A. Design Studies (complete 2 credits each semester) (6 credits)
THEA 5590 Design Studies for Theatre (F,Sp) 6

B. Cognate Skill Coursework (6 credits)
A minimum of two courses is required to develop skills or increase knowledge in a field related to the area of specialization. Courses are subject to approval by the Graduate Study Committee. Students in any of the Design or Advanced Technical Practice specializations will take courses in: art, engineering and technology education, welding, furniture construction or cabinetry, or landscape architecture. Students may petition to take coursework in other disciplines, upon justification of relevance to the course of study.

C. Advanced Design Coursework (in areas of specialization) (9 credits)
THEA 5510 Computer-Aided Design for Theatre (F) 3
THEA 5950 Rendering and Painting for the Theatre (F,Sp) 3
THEA 6480 Theatre Leadership and Management (Sp) 3
THEA 6510 Advanced Scene Design (F,Sp) 3
THEA 6520 Advanced Costume Design (F,Sp) 3
THEA 6540 Advanced Lighting Design (Sp) 3
THEA 6790 Seminar in Drama *(Topics include: Drafting for Theatre, Tailoring, Pattern Drafting, Structural Design for the Stage, Costume Crafts)* (F,Sp) 1-4
THEA 6900 Research Studies (F,Sp,Su) 1-4

D. Graduate Projects in Theatre (9 credits)
THEA 6920 Project in Theatre A 3
THEA 6920 Project in Theatre B 3
THEA 6920 Project in Theatre C 3

E. Repertory Theatre Performance or Production (4-8 credits)
THEA 6740 or 6750 Old Lyric Repertory Company or its equivalent in a recognized stock or repertory program; a letter of satisfactory performance from the company director should be submitted to the department (repeatable) 4-8

Notes:

1. Students may also begin projects while they are still in the Entry Phase, but credit given for projects should include time for assembling and writing up the report, which is **due the following semester**; the supervising instructor will notify the major professor or advisor when this is completed.
2. Planning of the major projects should begin as early as possible in this phase.
3. Qualified major and minor projects should be identified by the faculty each spring, based upon the plays selected for the following season. Graduate students will meet with the faculty or department head to discuss directing, design, or technical assignments; or request a list of such projects by mid-April each year.
4. During (or upon completion of) this phase, the student will:
   a. Submit a petition to advance to the final phase. The date of this petition will depend upon individual progress.
   b. Submit proof that projects A, B, and C, as well as the written reports for them, have been completed.
   c. Submit a propasal and/or preliminary work for the major culminating project: renderings, preliminary working drawings, etc.

Culminating Phase (one semester minimum)
Required Courses (7 credits)
THEA 6180 Theatre Production Portfolio (Sp) 3
THEA 6970 Thesis (F,Sp) 4
(Assemble Plan B reports and complete major report in thesis format.)

Department of Theatre Arts

Note:

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 department's 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 priorities of the department and the integrity of its productions.

During (or upon completion of) this phase, the student will:

1. Assemble the Supervisory Committee for a final review (defense) of the student's graduate work.

2. File a complete copy of all Plan B reports with the department, in accordance with procedures of the School of Graduate Studies. Copyrighted material, such as published scripts, will be filed separately in the Theatre Arts Office.

3. Be awarded the appropriate degree.

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. Fellowships may supplement assistantships when funding is available.

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. Some 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 instructors, 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

Professors
Mark L. Damen, playwriting, history; (part time)
Kevin Doyle, acting, directing
Colin B. Johnson, theatre history and criticism, film

Professor Emeritus
Sidney G. Perkes, scene and costume design

Associate Professors
Bruce L. Duerden, technical theatre, lighting
Dennis Hassan, scene design
Nancy E. Hills, costume design
Lynda Linford, acting
Adrianne Moore, voice, acting, directing

Associate Professor Emeritus
Arthur Y. Smith, interpretation, theatre education

Assistant Professors
Shawn W. Fisher, design, technical generalist
Artemis Preeshl, movement, dance, acting

Lecturer
Robbin C. Black, theatre appreciation, theatre education

Course Descriptions

Theatre Arts (THEA), pages 725-729

Interdepartmental Program in 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 toxicants on macromolecular syntheses, 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)
Steven D. Aust, 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
Kevin Welch, molecular toxicology

Department of Watershed Sciences

Department Head: Chris Luecke
Location: Natural Resources 210
Phone: (435) 797-2459
FAX: (435) 797-1871
E-mail: watershed@cc.usu.edu
WWW: http://www.cnr.usu.edu/departments/wats

Undergraduate Advisor: Maureen A. Wagner, Natural Resources 120, (435) 797-2448, maureen@cc.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; *MS, PhD in Fisheries Biology*—Aquatic Ecology, Conservation Biology, Fisheries Management

Undergraduate Programs

Objectives

Watershed science is the study of the physical, chemical, and biological processes associated with the movement of water across the landscape. Clean and adequate water supplies are essential elements of human societies. Understanding the interaction among water, earth materials, plants, and animals is essential to the management of wildland, agricultural, and urban ecosystems. The Department of Watershed Sciences offers comprehensive educational opportunities for undergraduate and graduate students interested in fisheries science, aquatic ecology, and the understanding of watershed ecosystems. Departmental faculty provide expertise in fish biology, the management and conservation of aquatic ecosystems, and the analysis of the water cycle. Degree programs within the Watershed Sciences Department help students learn how water links the physical, biological, and geographic aspects of watersheds. Knowledge of this linkage process is necessary for understanding and managing water supply, water quality, and ecosystem health.

Career Opportunities

Watershed scientists work throughout the United States, as well as in the developed and developing world, performing the tasks of understanding, managing, and restoring water supplies, water quality, and ecosystem health. Graduates of programs within the Watershed Sciences Department become scientists and managers for natural resources agencies, professionals with consulting and nonprofit environmental firms, and teachers and researchers at major universities. 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, graduates of programs within the Watershed Sciences Department 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 Department of Watershed Sciences academic programs. Graduates also find employment with state natural resource agencies, nongovernmental conservation organizations, and private consulting firms.

Requirements

Departmental Admission Requirements

Admission requirements for the department are the same as those described for the College of Natural Resources (see pages 128-129).

Academic Advisement

First-year students are assigned to the department head for initial advising. After students have completed 20 credits in the program, they are assigned a faculty advisor. Students are encouraged to meet with their advisor each semester prior to enrolling for courses. If they do not know who their advisor is, students should contact the Department of Watershed Sciences (NR 210) or the College of Natural Resources Academic Service Center (NR 120).

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 WATS 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.

In addition to completing the University Studies course requirements, all students earning an undergraduate degree in the Department of Watershed Sciences must complete the Common Departmental Core, 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.

Common Departmental Core (19 credits)

ENVS 4000 (DSS) Human Dimensions of Natural Resource Manangement (F) 3
WATS 1020 Watershed Sciences Professional Orientation (F) 1
WATS 3700 (CI) Fundamentals of Watershed Science (Sp) 3
WATS 4490 Small Watershed Hydrology (F) 4
WATS 4500 Limnology: Ecology of Inland Waters (Sp) 3
WATS 4930 Geographic Information Systems (F) 4
WATS 4980 Watershed Sciences Departmental Seminar (F,Sp) 1

Bachelor of Science in Fisheries and Aquatic Sciences

Students in the Fisheries and Aquatic Sciences major must meet the course requirements for University Studies, as well as complete the Common Departmental Core listed above. They must also complete the requirements listed below in sections *A* through *E*.

A. Scientific Foundation (35 credits)

BIOL 1610 Biology I (F) 4
BIOL 1620 (BLS) Biology II (Sp) 4
CHEM 1210 Principles of Chemistry I (F,Sp) 4
CHEM 1215 Chemical Principles Laboratory I (F,Sp) 1
CHEM 1220 (BPS) Principles of Chemistry II (F,Sp,Su) 4
CHEM 1225 Chemical Principles Laboratory II (F,Sp) 1
MATH 1050 (QL) College Algebra (F,Sp,Su) 4
MATH 1100 (QL) Calculus Techniques (F,Sp,Su) 3
NR 2220 General Ecology (F,Sp) 3
PHYS 2110 The Physics of Living Systems I (F) 4
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su) 3

B. Fisheries Courses (13 credits)
WATS 3100 (CI) Fish Diversity and Conservation (F) 3
WATS 3110 Fish Diversity Laboratory (F) 1
WATS 4650 Principles in Fishery Management (Sp) 3
WATS 5200 Fish Habitat Relationships in Managed Forests (F) 3
WATS 5550 Freshwater Invertebrates (Sp) 3

C. Capstone Courses (6 credits minimum)
WATS 4510 Aquatic Ecology Practicum (F) 3
WATS 4530 Water Quality and Pollution (F) 3
WATS 5330 Large River Management (F) 3
WATS 6200 Watershed Analysis (Sp) 2
Or
Approved Natural Resources Capstone Experience 3

D. Directed Elective Courses (23 credits)
Students must choose a minimum of 23 elective credits to complete the Fisheries and Aquatic Sciences degree requirements. 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 is a list of recommended courses that could be used to satisfy this requirement. Courses listed in *Section C* that were not used to meet the Capstone Course requirement may be taken as part of the suggested electives.

ENVS 5320 Water Law and Policy in the United States (Sp) 3
HIST 3950 (DHA/CI) Environmental History 3
PHIL 3510 (DHA) Environmental Ethics (F,Sp) 3
POLS 4820 (DSS) Natural Resources and Environmental Policy: Political Economy of Environmental Quality (Sp) 3
WATS 3000 Oceanography (Sp) 3
WATS 3820 (QI) Climate Change (Sp) 3
WATS 5150 Fluvial Geomorphology (F) 3
WATS 5640 Riparian Ecology and Management (Sp) 3
WILD 3810 Plant and Animal Populations (Sp) 3
WILD 4880 Genetics in Conservation and Management (F) 3

Note: Students wanting to pursue federal employment should check the following U.S. Office of Personnel Management website for a listing of required coursework:
http://www.opm.gov/qualifications/SEC-IV/B/GS0400/0482.HTM

E. General Electives
Students may take the remainder of the 120 credits from any department. The guidelines described under *General Education Requirements* and *University Studies Depth Education Requirements* (see pages 49-59) should be consulted to ensure meeting University Studies Requirements.

Fisheries and Aquatic Sciences Major Recommended Four-Year Plan of Study

Students should meet regularly with their faculty advisor and carefully plan their academic program, keeping in mind that many upper-division courses have prerequisites and must be taken in sequence.

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.

Students following the recommended schedule listed below should be able to complete degree requirements in four years (eight semesters).

Freshman Year (29 credits)
Fall Semester (15 credits)
BIOL 1610 Biology I 4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
MATH 1050 (QL) College Algebra 4
WATS 1020 Watershed Sciences Professional Orientation 1
Breadth American Institutions (BAI) course 3

Spring Semester (14 credits)
BIOL 1620 (BLS) Biology II 4
MATH 1100 (QL) Calculus Techniques 3
WATS 4980 Watershed Sciences Departmental Seminar 1
Breadth Creative Arts (BCA) course 3
Breadth Humanities (BHU) course 3

Sophomore Year (29 credits)
Fall Semester (15 credits)
CHEM 1210 Principles of Chemistry I 4
CHEM 1215 Chemical Principles Laboratory I 1
STAT 3000 (QI) Statistics for Scientists 3
WATS 3100 (CI) Fish Diversity and Conservation 3
WATS 3110 Fish Diversity Laboratory 1
Breadth Social Sciences (BSS) course 3

Spring Semester (14 credits)
CHEM 1220 (BPS) Principles of Chemistry II 4
CHEM 1225 Chemical Principles Laboratory II 1
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
NR 2220 General Ecology 3
WATS 3700 (CI) Fundamentals of Watershed Science 3

Junior Year (30 credits)
Fall Semester (15 credits)
PHYS 2110 The Physics of Living Systems I 4
WATS 4490 Small Watershed Hydrology 4
WATS 4930 Geographic Information Systems 4
Directed Elective or General Elective course 3

Spring Semester (15 credits)
WATS 4500 Limnology: Ecology of Inland Waters 3
WATS 5550 Freshwater Invertebrates 3
Depth Humanities and Creative Arts (DHA) course 3
Directed Elective or General Elective courses 6

Senior Year (32 credits)
Fall Semester (15 credits)
ENVS 4000 (DSS) Human Dimensions of Natural Resource Management 3
WATS 5200 Fish Habitat Relationships in Managed Forests 3
Capstone Courses (WATS 4510 and 4530 recommended) 6
Directed Elective or General Elective course(s) 3

Spring Semester (17 credits)
WATS 4650 Principles in Fishery Management 3
Directed Elective or General Elective courses 14

Fisheries Science Minor Requirements (18 credits)

All courses required for the Fisheries Science minor must be taken on an *A-B-C-D-F* basis. A grade of *C-* or better is required for all WATS courses used to meet requirements for this minor.

Department of Watershed Sciences

A. Fisheries Science Core Courses (9 credits)
NR 2220 General Ecology (F,Sp) 3
WATS 3100 (CI) Fish Diversity and Conservation (F) 3
WATS 3700 (CI) Fundamentals of Watershed Science (Sp) 3

B. Electives (9 credits)
Select three courses from the following:
WATS 4500 Limnology: Ecology of Inland Waters (Sp) 3
WATS 4650 Principles in Fishery Management (Sp) 3
WATS 5200 Fish Habitat Relationships in Managed Forests (F) 3
WATS 5550 Freshwater Invertebrates (Sp) 3
WILD 3810 Plant and Animal Populations (Sp) 3

Bachelor of Science in Watershed and Earth Systems

Students in the Watershed and Earth Systems major must meet the course requirements for University Studies, as well as complete the Common Departmental Core listed on page 540. They must also complete the requirements listed below in sections *A* through *E*.

A. Science Foundation (19 credits)
CHEM 1210 Principles of Chemistry I (F,Sp) 4
GEO 1110 (BPS) The Dynamic Earth: Physical Geology (F,Sp) 4
MATH 1210 (QL) Calculus I (F,Sp,Su) 4
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su) 3
PHYS 2210 (QI) General Physics—Science and Engineering I 4

B. Watershed and Earth Systems Courses (15 credits)
SOIL 3000 Fundamentals of Soil Science (F,Sp) 4
WATS 3820 (QI) Climate Change (Sp) 3
WATS 5150 Fluvial Geomorphology (F) 3
WATS 5170 Fluvial Geomorphology Lab (F) 2
WILD 5750 Applied Remote Sensing (F) 3

C. Capstone Courses (6 credits minimum)
WATS 4510 Aquatic Ecology Practicum (F) 3
WATS 4530 Water Quality and Pollution (F) 3
WATS 5330 Large River Management (F) 3
WATS 6200 Watershed Analysis (Sp) 2
Or
Approved Natural Resources Capstone Experience 3

D. Directed Elective Courses (31 credits)
Students must choose a minimum of 31 elective credits to complete the Watershed and Earth Systems degree requirements. 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 is a list of recommended courses that could be used to satisfy this requirement. Courses listed in *Section C* that were not used to meet the Capstone Course requirement may be taken as part of the suggested electives.

CHEM 1220 (BPS) Principles of Chemistry II (F,Sp,Su) 4
ENVS 5320 Water Law and Policy in the United States (Sp) 3
MATH 1220 (QL) Calculus II (F,Sp,Su) 4
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II 4
STAT 6810 Topics in Statistics (Spatial Statistics) (F) 3
WATS 5200 Fish Habitat Relationships in Managed Forests (F) 3
WATS 5250 Remote Sensing of Land Surfaces (Sp) 4
WATS 5640 Riparian Ecology and Management (Sp) 3
WATS 5760 Remote Sensing: Modeling and Analysis (Sp) 3
WILD 5350 Wildland Soils (Sp) 3

E. General Electives
Students may take the remainder of the 120 credits from any department. The guidelines described under *General Education Requirements* and *University Studies Depth Education Requirements* (see pages 49-59) should be consulted to ensure meeting University Studies Requirements.

Note: Students wanting to pursue federal employment should check the following U.S. Office of Personnel Management website for a listing of required coursework:
http://www.opm.gov/qualifications/SEC-IV/B/GS1300/1315.HTM

Watershed and Earth Systems Major Recommended Four-Year Plan of Study
Students should meet regularly with their faculty advisor and carefully plan their academic program, keeping in mind that many upper-division courses have prerequisites and must be taken in sequence. Students following the recommended schedule listed below should be able to complete degree requirements in four years (eight semesters).

Freshman Year (31-32 credits)
Fall Semester (15 credits)
CHEM 1210 Principles of Chemistry I 4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
GEO 1110 (BPS) The Dynamic Earth: Physical Geology 4
WATS 1020 Watershed Sciences Professional Orientation 1
Breadth Social Sciences (BSS) course 3

Spring Semester (16-17 credits)
CHEM 1220 (BPS) Principles of Chemistry II (4 cr) **or**
Other approved elective course (3-4 cr) ..... 3 or 4
MATH 1210 (QL) Calculus I 4
WATS 3700 (CI) Fundamentals of Watershed Science 3
Breadth Creative Arts (BCA) course 3
Breadth Humanities (BHU) course 3

Sophomore Year (29-31 credits)
Fall Semester (16-17 credits)
MATH 1220 (QL) Calculus II (4 cr) **or**
Other approved elective course (3-4 cr) ..... 3 or 4
PHYS 2210 (QI) General Physics—Science and Engineering I 4
STAT 3000 (QI) Statistics for Scientists 3
Breadth American Institutions (BAI) course 3
Breadth Life Sciences (BLS) course 3

Spring Semester (13-14 credits)
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II (4 cr) **or**
Other approved elective course (3-4 cr) ..... 3 or 4
SOIL 3000 Fundamentals of Soil Science 4
WATS 3820 (QI) Climate Change 3

Junior Year (30 credits)
Fall Semester (17 credits)
ENVS 4000 (DSS) Human Dimensions of Natural Resource Management (F) 3
WATS 4490 Small Watershed Hydrology 4
WATS 4930 Geographic Information Systems 4
Communications Intensive (CI) course 3
Directed Elective or General Elective course 3

Spring Semester (13 credits)
WATS 4500 Limnology: Ecology of Inland Waters 3
Depth Humanities and Creative Arts (DHA) course 3
Directed Elective or General Elective courses 7

Senior Year (30 credits)
Fall Semester (15 credits)
WATS 4980 Watershed Sciences Departmental Seminar 1
WATS 5150 Fluvial Geomorphology 3
WATS 5170 Fluvial Geomorphology Lab 2
WILD 5750 Applied Remote Sensing 3
Directed Elective or General Elective course(s) 3
Capstone course (WATS 4530 recommended) 3

Spring Semester (15 credits)
Capstone Course (WATS 5330 recommended) 3
Directed Elective or General Elective courses 12

Geographic Information Science Minor Requirements (17-19 credits)

All courses required for the Geographic Information Science minor must be taken on an *A-B-C-D-F* basis. A grade of *C-* or better is required for all WATS courses used to meet requirements for this minor.

A. Watershed and Earth Resources Core Courses (8 credits)
CS 1400 Introduction to Computer Science—CS 1 (F,Sp,Su) 3
CS 1405 Introduction to Computer Science—CS 1 Lab (F,Sp,Su) 1
WATS 4930 Geographic Information Systems (F) 4

B. Electives (9-11 credits)
Select three courses from the following:
CEE 6440 Geographic Information Systems in Water Resources (F)... 3
WATS 4750 Fundamentals of Remote Sensing Science (F)..... 3
WATS 5250 Remote Sensing of Land Surfaces (Sp)..... 4
WATS 5760 Remote Sensing: Modeling and Analysis (Sp) 3
WILD 5750 Applied Remote Sensing (F) 3

Watershed Science Minor Requirements (16 credits)

All courses required for the Watershed Science minor must be taken on an *A-B-C-D-F* basis. A grade of *C-* or better is required for all WATS courses used to meet requirements for this minor.

A. Required Courses (10 credits)
WATS 3700 (CI) Fundamentals of Watershed Science (Sp)..... 3
WATS 4490 Small Watershed Hydrology (F) 4
WATS 4530 Water Quality and Pollution (F) 3

B. Electives (6 credits)
Select two courses from the following:
WATS 3820 (DSC/QI) Climate Change (Sp)..... 3
WATS 4500 Limnology: Ecology of Inland Waters (Sp) 3
WATS 5150 Fluvial Geomorphology (F)..... 3
WATS 5640 Riparian Ecology and Management (Sp) 3

Financial Assistance

The main sources of undergraduate financial assistance include University scholarships, grants-in-aid, work-study, and loans. In addition, more than 65 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.

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. The minimum GPA requirement for admission into departmental honors in any department within the College of Natural Resources is 3.30. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level.

For information about the campus-wide Honors Program, see page 338.

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 Watershed Sciences, visit the Watershed Sciences main office, Natural Resources 210, or visit **http://www.cnr.usu.edu/departments/wats**. Major requirement sheets may be obtained at the departmental office, or online at: **http://www.usu.edu/majorsheets/**

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 60 credits 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.

Department of Watershed Sciences

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, Ecology, 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.

Specializations

The MS and PhD degrees in Fisheries Biology allow students to specialize in Aquatic Ecology, Conservation Biology, or Fisheries Management. The MS and PhD degrees in Ecology allow students to specialize in Aquatic Ecology.

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 438.

Financial Assistance

General aspects of financial support for graduate students at Utah State University are listed on pages 100-101 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 100.

Watershed Sciences Faculty

Professors
Todd A. Crowl, aquatic ecology, conservation biology, tropical biology
Charles P. Hawkins, aquatic ecology, stream and riparian ecosystems
Chris Luecke, aquatic ecology, fisheries management
John C. Schmidt, fluvial geomorphology and water policy
Wayne A. Wurtsbaugh, limnology, fish ecology, and watershed biogeochemistry

Adjunct Professors
Jeffrey L. Kershner, stream ecology and fish-habitat relationships
Christopher Neale, remote sensing
David G. Tarboton, geomorphology, hydrology
Peter R. Wilcock, sediment transport and geomorphology

Professors Emeritus
John A. Kadlec, wetland ecology and biogeochemistry
John M. Neuhold, fisheries biology

Associate Professors
Nancy O. Mesner, water quality, water policy, and modeling
Helga Van Miegroet, wildland soils and biogeochemistry
Michael A. White, global change ecology

Adjunct Associate Professors
Michelle A. Baker, ecology, hydrology
Joanna L. Endter-Wada, cultural anthropology, natural resource policy and sociology
Robert R. Gillies, remote sensing and meteorology
Joel L. Pederson, geomorphology, paleoclimatology, and sedimentology
Bruce E. Rieman, fisheries management

Assistant Professors
Matthew E. Baker, riparian ecology, watershed hydrology, GIS, and spatial analysis
Phaedra E. Budy, assistant leader, fisheries, Utah Cooperative Fisheries and Wildlife Research Unit, fisheries management and conservation
Tamao Kasahara, riparian hydrology, biogeochemistry

Research Assistant Professor
Mark R. Vinson, aquatic invertebrate ecology and biomonitoring

Adjunct Assistant Professors
Nicolaas W. Bouwes, Jr., fisheries management, aquatic ecology
Jayne Brim-Box, population genetics and conservation biology
Robert E. Gresswell, aquatic ecology and fish biology
Simon J. McKirdy, plant biosecurity
David Naftz, geochemist
Michael J. Paul, bioassessment and stream ecosystem function
Brett Roper, USDA Forest Service Aquatic Monitoring Center Program Leader, aquatic ecologist
Michael L. Scott, riparian plant ecology
John Van Sickle, environmental statistics
J. Christopher Wilson, director, State of Utah Division of Wildlife Resources Fisheries Experiment Station, fish pathologist/nutritionist

Course Descriptions

Watershed Sciences (WATS), pages 730-733

Department of Wildland Resources

Department Head: Johan du Toit
Location: Natural Resources 206
Phone: (435) 797-3219
FAX: (435) 797-3796
E-mail: lbarr@cc.usu.edu
WWW: http://www.cnr.usu.edu/departments/wild

Undergraduate Advisor:
Maureen A. Wagner, Natural Resources 120, (435) 797-2448, maureen@cc.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 Wildland Resources 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.

The first two years of study in the Department of Wildland Resources 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. To maintain correct course sequencing and to stay on track for graduation, students are encouraged to enroll for 15 or more credits of coursework per semester.

Career Opportunities

Graduates in Wildland Resources programs qualify for a broad range of career opportunities with state and federal land management agencies, environmental consulting firms, private industries with environmental divisions, private land owners, and nonprofit environmental organizations. 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 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.

Requirements

Admission Requirements

Admission requirements for the Department of Wildland Resources are the same as those described for the College of Natural Resources on pages 128-129.

Graduation Requirements

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 WILD 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 (see pages 49-59), all students earning an undergraduate degree in the Department of Wildland Resources 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.

A. General Science Foundation Courses (34 credits)

BIOL 1610 Biology I (F) 4
BIOL 1620 (BLS) Biology II (Sp) 4
MATH 1050 (QL) College Algebra (F,Sp,Su) 4
MATH 1100 (QL) Calculus Techniques (F,Sp,Su) 3
SOIL 3000 Fundamentals of Soil Science (F,Sp) 4
STAT 2000 (QI) Statistical Methods (F,Sp) (3 cr) **or**
STAT 3000 (QI) Statistics for Scientists (F,Sp) (3 cr) 3
NR 2220 General Ecology (F,Sp) 3

Select one of the following chemistry series (9 credits):

CHEM 1110 (BPS) General Chemistry I (F,Sp) 4
CHEM 1115 General Chemistry Laboratory (Sp) 1
CHEM 1120 (BPS) General Chemistry II (Sp) 4
OR
CHEM 1210 Principles of Chemistry I (F,Sp) 4
CHEM 1215 Chemical Principles Laboratory I (F,Sp) 1
CHEM 1220 (BPS) Principles of Chemistry II (F,Sp,Su) 4

B. Departmental Common Courses (27 credits)

WILD 2000 Introduction to Forest, Range, and Wildlife Sciences (F,Sp) 1
WILD 3600 Wildland Plant Ecology and Identification (F) 4
WILD 3610 Wildland Animal Ecology and Identification (F) 4
WILD 3700 (CI) Inventory and Assessment in Natural Resource and Environmental Management (F) 3
WILD 3710 Monitoring and Assessment in Natural Resource and Environmental Management (Sp) 3
WILD 3800 Wildland Ecosystems (Sp) 3
WILD 3810 Plant and Animal Populations (Sp) 3
WILD 3850 Vegetation and Habitat Management (F) 3
WILD 3900 Managing Dynamic Ecological Systems (Sp) 3

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 13 credits of Degree Program Courses, as follows:

A. Degree Program Courses (13 credits)
ENVS 3000 Natural Resources Policy and Economics (F) 4
ENVS 4000 (DSS) Human Dimensions of Natural Resource Management (F) 3
WILD 4600 Conservation Biology (Sp) 3
WILD 4700 Ecological Foundations of Restoration (Sp) 3

B. Degree Program Electives (21 credits)
Students in the Conservation and Restoration Ecology major must meet with their advisor and plan a program of study for their 21 credits of degree program electives. Students must identify an organizing theme or comprehensive plan to guide the selection of their degree program electives, and all courses counted toward this requirement must be approved in advance by the student's advisor and department head. Courses taken to complete a dual major with another major within the College of Natural Resources may *not* be counted toward fulfillment of this requirement.

C. Free Elective Credits
Students may take the remainder of the 120 credits from any department. Courses which meet General Education "Breadth Requirements" and University Studies "Depth Education Requirements" should be included to ensure meeting General Education and University Studies Requirements.

Note: Students wanting to pursue federal employment should check the following U.S. Office of Personnel Management website for a listing of required coursework:
http://www.opm.gov/qualifications/SEC-IV/B/GS0400/0408.HTM

Conservation and Restoration Ecology Major Recommended Four-Year Plan of Study
Students should meet regularly with their faculty advisor and carefully plan their academic program, keeping in mind that many upper-division courses have prerequisites and must be taken in sequence. Students following the recommended schedule listed below should be able to complete degree requirements in four years (eight semesters).

A. First Year (28 credits)
Fall Semester (14 credits)
BIOL 1610 Biology I 4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
USU 1300 (BAI) U.S. Institutions (or other approved Breadth American Institutions course) 3
USU 1330 (BCA) Civilization: Creative Arts (or other approved Breadth Creative Arts course) 3
WILD 2000 Introduction to Forest, Range, and Wildlife Sciences 1

Spring Semester (14 credits)
BIOL 1620 (BLS) Biology II 4
ENVS 2340 (BSS) Natural Resources and Society (recommended) 3
MATH 1050 (QL) College Algebra 4
USU 1320 (BHU) Civilization: Humanities (or other approved Breadth Humanities course) 3

B. Second Year (31 credits)
Fall Semester (16 credits)
CHEM 1110 (BPS) General Chemistry I (4 cr) **or**
CHEM 1210 Principles of Chemistry I (4 cr) 4
MATH 1100 (QL) Calculus Techniques 3
NR 2220 General Ecology 3
Approved Depth Humanities and Creative Arts (DHA) course 3
Elective course(s) 3

Spring Semester (15 credits)
CHEM 1115 General Chemistry Laboratory (1 cr) **or**
CHEM 1215 Chemical Principles Laboratory I (1 cr) 1
CHEM 1120 (BPS) General Chemistry II (4 cr) **or**
CHEM 1220 (BPS)[1] Principles of Chemistry II (4 cr) 4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
SOIL 3000 Fundamentals of Soil Science 4
STAT 2000 (QI) Statistical Methods (3 cr) **or**
STAT 3000 (QI) Statistics for Scientists (3 cr) 3

C. Third Year (29 credits)
Fall Semester (14 credits)

Note: These courses have multiple prerequisites and are designed to be taken as a block during fall semester of the junior year. Extended lab sessions and a multi-day field trip make it difficult to schedule additional courses during this semester.

WILD 3600 Wildland Plant Ecology and Identification 4
WILD 3610 Wildland Animal Ecology and Identification 4
WILD 3700 (CI) Inventory and Assessment in Natural Resource and Environmental Management 3
WILD 3850 Vegetation and Habitat Management 3

Spring Semester (15 credits)
WILD 3710 Monitoring and Assessment in Natural Resource and Environmental Management 3
WILD 3800 Wildland Ecosystems 3
WILD 3810 Plant and Animal Populations 3
WILD 3900 Managing Dynamic Ecological Systems 3
Elective course(s) 3

D. Fourth Year (32 credits)
Fall Semester (16 credits)
ENVS 3000 Natural Resources Policy and Economics 4
ENVS 4000 (DSS) Human Dimensions of Natural Resource Management 3
Elective courses 9

Spring Semester (16 credits)
WILD 4600 Conservation Biology 3
WILD 4700 Ecological Foundations of Restoration 3
Elective courses 10

[1]CHEM 1220 may conflict with other courses taught this semester. This course could be taken during spring semester of the senior year.

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 32 credits of *Professional Coursework*, including the following:

A. Professional Coursework (32 credits)
ENVS 3300 Fundamentals of Recreation Resources Management (F) 3
ENVS 4000 (DSS) Human Dimensions of Natural Resource Management (F) 3
ENVS 4400 Economic Applications in Natural Resource Management (Sp) 4
WATS 3700 (CI) Fundamentals of Watershed Science (Sp) 3
WATS 4930 Geographic Information Systems (F) 4
WILD 5350 Wildland Soils (Sp) 3
WILD 5420 (CI) Forest and Shade Tree Pathology (Sp) 3
WILD 5700 Forest Assessment and Management (Sp) 3
WILD 5710 Wildland Disturbance: Ecology and Management (F) 3
WILD 5750 Applied Remote Sensing (F) 3

B. Electives
Students may take the remainder of the 120 credits from any department. Courses which meet General Education "Breadth Requirements" and University Studies "Depth Education Requirements" should be included to ensure meeting University Studies Requirements.

Note: Students wanting to pursue federal employment should check the following U.S. Office of Personnel Management website for a listing of required coursework:
http://www.opm.gov/qualifications/SEC-IV/B/GS0400/0460.HTM

Forestry Major Recommended Four-Year Plan of Study
Students should meet regularly with their faculty advisor and carefully plan their academic program, keeping in mind that many upper-division courses have prerequisites and must be taken in sequence. Students following the recommended schedule listed below should be able to complete degree requirements in four years (eight semesters).

A. First Year (28 credits)
Fall Semester (14 credits)
BIOL 1610 Biology I 4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
USU 1300 (BAI) U.S. Institutions (or other approved Breadth American Institutions course) 3
USU 1330 (BCA) Civilization: Creative Arts (or other approved Breadth Creative Arts course) 3
WILD 2000 Introduction to Forest, Range, and Wildlife Sciences 1

Spring Semester (14 credits)
BIOL 1620 (BLS) Biology II 4
ENVS 2340 (BSS) Natural Resources and Society (recommended) 3
MATH 1050 (QL) College Algebra 4
USU 1320 (BHU) Civilization: Humanities (or other approved Breadth Humanities course) 3

B. Second Year (31 credits)
Fall Semester (16 credits)
CHEM 1110 (BPS) General Chemistry I (4 cr) **or**
CHEM 1210 Principles of Chemistry I (4 cr) 4
MATH 1100 (QL) Calculus Techniques 3
NR 2220 General Ecology 3
Approved Depth Humanities and Creative Arts (DHA) course 3
Elective course(s) 3

Spring Semester (15 credits)
CHEM 1115 General Chemistry Laboratory (1 cr) **or**
CHEM 1215 Chemical Principles Laboratory I (1 cr) 1
CHEM 1120 (BPS) General Chemistry II (4 cr) **or**
CHEM 1220 (BPS)[1] Principles of Chemistry II (4 cr) 4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
SOIL 3000 Fundamentals of Soil Science 4
STAT 2000 (QI) Statistical Methods (3 cr) **or**
STAT 3000 (QI) Statistics for Scientists (3 cr) 3

[1]CHEM 1220 may conflict with other courses taught this semester. This course could be taken during spring semester of the senior year.

C. Third Year (29 credits)
Fall Semester (14 credits)

Note: These courses have multiple prerequisites and are designed to be taken as a block during fall semester of the junior year. Extended lab sessions and a multi-day field trip make it difficult to schedule additional courses during this semester.

WILD 3600 Wildland Plant Ecology and Identification 4
WILD 3610 Wildland Animal Ecology and Identification 4
WILD 3700 (CI) Inventory and Assessment in Natural Resource and Environmental Management 3
WILD 3850 Vegetation and Habitat Management 3

Spring Semester (15 credits)
WILD 3710 Monitoring and Assessment in Natural Resource and Environmental Management 3
WILD 3800 Wildland Ecosystems 3
WILD 3810 Plant and Animal Populations 3
WILD 3900 Managing Dynamic Ecological Systems 3
WILD 5350 Wildland Soils 3

D. Fourth Year (32 credits)
Fall Semester (16 credits)
ENVS 3300 Fundamentals of Recreation Resources Management 3
ENVS 4000 (DSS) Human Dimensions of Natural Resource Management 3
WATS 4930 Geographic Information Systems 4
WILD 5710 Wildland Disturbance: Ecology and Management 3
WILD 5750 Applied Remote Sensing 3

Spring Semester (16 credits)
ENVS 4400 Economic Applications in Natural Resource Management 4
WATS 3700 (CI) Fundamentals of Watershed Science 3
WILD 5420 (CI) Forest and Shade Tree Pathology 3
WILD 5700 Forest Assessment and Management 3
Elective course(s) 3

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 29 credits of *Professional Coursework*, including the following:

A. Professional Coursework (29 credits)
ADVS 2080 Beef Production Practices (Sp) (2 cr) **or**
ADVS 2090 Sheep Production Practices (Sp) (2 cr) 2
BIOL 4400 (QI) Plant Physiology (F) 4
BIOL 4420 Plant Taxonomy (Sp) 3
ENVS 3000 Natural Resources Policy and Economics (F) 4
ENVS 4000 (DSS) Human Dimensions of Natural Resource Management (F) 3
ENVS 5000 Collaborative Problem-Solving for Environment and Natural Resources (Sp) 3
SOIL 5130 Soil Genesis, Morphology, and Classification (F) 4
WATS 3700 (CI) Fundamentals of Watershed Science (Sp) 3
WILD 4000 Principles of Rangeland Management (Sp) 3

B. Electives
Students may take the remainder of the 120 credits from any department. Courses which meet General Education "Breadth Requirements" and University Studies "Depth Education Requirements" should be included to ensure meeting University Studies Requirements.

Note: Students wanting to pursue federal employment should check the following U.S. Office of Personnel Management website for a listing of required coursework:
http://www.opm.gov/qualifications/SEC-IV/B/GS0400/0454.HTM

Rangeland Resources Major
Recommended Four-Year Plan of Study
Students should meet regularly with their faculty advisor and carefully plan their academic program, keeping in mind that many upper-division courses have prerequisites and must be taken in sequence. Students following the recommended schedule listed below should be able to complete degree requirements in four years (eight semesters).

A. First Year (28 credits)
Fall Semester (14 credits)
BIOL 1610 Biology I 4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3
USU 1300 (BAI) U.S. Institutions (or other approved Breadth American Institutions course) 3
USU 1330 (BCA) Civilization: Creative Arts (or other approved Breadth Creative Arts course) 3
WILD 2000 Introduction to Forest, Range, and Wildlife Sciences 1

Spring Semester (14 credits)
BIOL 1620 (BLS) Biology II 4
ENVS 2340 (BSS) Natural Resources and Society (recommended) 3
MATH 1050 (QL) College Algebra 4
USU 1320 (BHU) Civilization: Humanities (or other approved Breadth Humanities course) 3

B. Second Year (33 credits)
Fall Semester (16 credits)
CHEM 1110 (BPS) General Chemistry I (4 cr) **or**
CHEM 1210 Principles of Chemistry I (4 cr) 4
MATH 1100 (QL) Calculus Techniques 3
NR 2220 General Ecology 3
Approved Depth Humanities and Creative Arts (DHA) course 3
Elective course(s) 3

Spring Semester (17 credits)
ADVS 2080 Beef Production Practices (2 cr) **or**
ADVS 2090 Sheep Production Practices (2 cr) 2
CHEM 1115 General Chemistry Laboratory (1 cr) **or**
CHEM 1215 Chemical Principles Laboratory I (1 cr) 1
CHEM 1120 (BPS) General Chemistry II (4 cr) **or**
CHEM 1220 (BPS)[1] Principles of Chemistry II (4 cr) 4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
SOIL 3000 Fundamentals of Soil Science 4
STAT 2000 (QI) Statistical Methods (3 cr) **or**
STAT 3000 (QI) Statistics for Scientists (3 cr) 3

C. Third Year (29 credits)
Fall Semester (14 credits)

Note: These courses have multiple prerequisites and are designed to be taken as a block during fall semester of the junior year. Extended lab sessions and a multi-day field trip make it difficult to schedule additional courses during this semester.

WILD 3600 Wildland Plant Ecology and Identification 4
WILD 3610 Wildland Animal Ecology and Identification 4
WILD 3700 (CI) Inventory and Assessment in Natural Resource and Environmental Management 3
WILD 3850 Vegetation and Habitat Management 3

Spring Semester (15 credits)
WATS 3700 (CI) Fundamentals of Watershed Science 3
WILD 3710 Monitoring and Assessment in Natural Resource and Environmental Management 3
WILD 3800 Wildland Ecosystems 3
WILD 3810 Plant and Animal Populations 3
WILD 3900 Managing Dynamic Ecological Systems 3

D. Fourth Year (30 credits)
Fall Semester (15 credits)
BIOL 4400 (QI) Plant Physiology 4
ENVS 3000 Natural Resources Policy and Economics 4
ENVS 4000 (DSS) Human Dimensions of Natural Resource Management 3
SOIL 5130 Soil Genesis, Morphology, and Classification 4

Spring Semester (15 credits)
BIOL 4420 Plant Taxonomy 3
ENVS 5000 Collaborative Problem-Solving for Environment and Natural Resources 3
WILD 4000 Principles of Rangeland Management 3
Elective courses 6

[1]CHEM 1220 may conflict with other courses taught this semester. This course could be taken during spring semester of the senior year.

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 25 credits of Degree Program Courses, including the following:

A. Degree Program Courses (25 credits)
BIOL 5250 (CI) Evolutionary Biology (F) 3
BIOL 5560 Ornithology (Sp) (3 cr) **or**
BIOL 5570 Herpetology (Sp) (3 cr) 3
BIOL 5580 Mammalogy (F) 3
ENVS 3000 Natural Resources Policy and Economics (F) 4
ENVS 4000 (DSS) Human Dimensions of Natural Resource Management (F) 3
WILD 3300 Management Aspects of Wildlife Behavior (Sp) 3
WILD 4500 Principles of Wildlife Management (Sp) 3
WILD 4880 Genetics in Conservation and Management (F) 3

B. Electives
Students may take the remainder of the 120 credits from any department. Courses which meet General Education "Breadth Requirements" and University Studies "Depth Education Requirements" should be included to ensure meeting University Studies Requirements.

Note: Students wanting to pursue federal employment should check the following U.S. Office of Personnel Management website for a listing of required coursework:
http://www.opm.gov/qualifications/SEC-IV/B/GS0400/0486.HTM

Wildlife Science Major Recommended Four-Year Plan of Study
Students should meet regularly with their faculty advisor and carefully plan their academic program, keeping in mind that many upper-division courses have prerequisites and must be taken in sequence. Students following the recommended schedule listed below should be able to complete degree requirements in four years (eight semesters).

A. First Year (28 credits)
Fall Semester (14 credits)
BIOL 1610 Biology I 4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose 3

USU 1300 (BAI) U.S. Institutions (or other approved Breadth American Institutions course) 3
USU 1330 (BCA) Civilization: Creative Arts (or other approved Breadth Creative Arts course) 3
WILD 2000 Introduction to Forest, Range, and Wildlife Sciences 1

Spring Semester (14 credits)
BIOL 1620 (BLS) Biology II 4
ENVS 2340 (BSS) Natural Resources and Society (recommended) 3
MATH 1050 (QL) College Algebra 4
USU 1320 (BHU) Civilization: Humanities (or other approved Breadth Humanities course) 3

B. Second Year (31 credits)

Fall Semester (16 credits)
CHEM 1110 (BPS) General Chemistry I (4 cr) **or**
CHEM 1210 Principles of Chemistry I (4 cr) 4
MATH 1100 (QL) Calculus Techniques 3
NR 2220 General Ecology 3
Approved Depth Humanities and Creative Arts (DHA) course 3
Elective course(s) 3

Spring Semester (15 credits)
CHEM 1115 General Chemistry Laboratory (1 cr) **or**
CHEM 1215 Chemical Principles Laboratory I (1 cr) 1
CHEM 1120 (BPS) General Chemistry II (4 cr) **or**
CHEM 1220 (BPS)[1] Principles of Chemistry II (4 cr) 4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode 3
SOIL 3000 Fundamentals of Soil Science 4
STAT 2000 (QI) Statistical Methods (3 cr) **or**
STAT 3000 (QI) Statistics for Scientists (3 cr) 3

C. Third Year (29 credits)

Fall Semester (14 credits)

Note: These courses have multiple prerequisites and are designed to be taken as a block during fall semester of the junior year. Extended lab sessions and a multi-day field trip make it difficult to schedule additional courses during this semester.

WILD 3600 Wildland Plant Ecology and Identification 4
WILD 3610 Wildland Animal Ecology and Identification 4
WILD 3700 (CI) Inventory and Assessment in Natural Resource and Environmental Management 3
WILD 3850 Vegetation and Habitat Management 3

Spring Semester (15 credits)
WILD 3300 Management Aspects of Wildlife Behavior 3
WILD 3710 Monitoring and Assessment in Natural Resource and Environmental Management 3
WILD 3800 Wildland Ecosystems 3
WILD 3810 Plant and Animal Populations 3
WILD 3900 Managing Dynamic Ecological Systems 3

[1] CHEM 1220 may conflict with other courses taught this semester. This course could be taken during spring semester of the senior year.

D. Fourth Year (32 credits)

Fall Semester (16 credits)
BIOL 5580 Mammalogy 3
ENVS 3000 Natural Resources Policy and Economics 4
ENVS 4000 (DSS) Human Dimensions of Natural Resource Management 3
WILD 4880 Genetics in Conservation and Management 3
Elective course(s) 3

Spring Semester (16 credits)
BIOL 5250 (CI) Evolutionary Biology 3
BIOL 5560 Ornithology (3 cr) **or**
BIOL 5570 Herpetology (3 cr) 3
WILD 4500 Principles of Wildlife Management 3
Elective courses 7

Financial Assistance

The main opportunities for undergraduates to find financial support through grants, work-study, and loans are listed on pages 23-28 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.

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. The minimum GPA requirement for admission into departmental honors in any department within the College of Natural Resources is 3.30. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level.

For information about the campus-wide Honors Program, see page 338.

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 Wildland Resources, visit the Wildland Resources main office, Natural Resources 206, or visit:
http://www.cnr.usu.edu/departments/wild

Major requirement sheets, which outline career opportunities and required courses for departmental majors, can be obtained from the department, or online at: **http://www.usu.edu/majorsheets/**

Graduate Programs

Admission Requirements

The Department of Wildland Resources offers opportunities for graduate study through MS and PhD degree programs in Ecology, Forestry, Range 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 438.

Department of Wildland Resources

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 101-102. 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. The MS may be obtained through either a Plan A (research thesis) or Plan B (nonthesis) program, as described on page 106. 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 Wildland Resources 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 100-101 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 Wildland Resources, visit the Wildland Resources main office, Natural Resources 206, or visit:
http://www.cnr.usu.edu/departments/wild

Wildland Resources Faculty

Professors

John A. Bissonette, Leader, Utah Cooperative Fish and Wildlife Research Unit, landscape ecology, terrestrial vertebrate ecology
F. E. "Fee" Busby, effects of livestock grazing
Martyn M. Caldwell, plant physiological ecology
Michael R. Conover, Berryman Institute, animal behavior, wildlife damage management
Raymond D. Dueser, conservation ecology
Johan du Toit, ecology and conservation of large mammals in terrestrial ecosystems
Thomas C. Edwards, Jr., Utah Cooperative Fish and Wildlife Research Unit, spatial ecology, habitat modeling, biostatistics
Michael M. Jaeger, National Wildlife Research Center, behavioral ecology
Frederick F. Knowlton, National Wildlife Research Center, predator ecology, behavior and management
Michael R. Kuhns, forestry extension specialist, urban forestry, tree physiology
James N. Long, forest ecology, silviculture
John C. Malechek, rangeland management

Department of Wildland Resources

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
Michael L. Wolfe, wildlife ecology and management

Adjunct Professors
Cheryl S. Asa, endocrinology, reproductive physiology
James E. Bowns, range ecology
Mark W. Brunson, social and psychological aspects of forest and rangeland management
John W. Connelly, game bird ecology and management, avian ecology
Noel H. Holmgren, vascular plants
Patricia K. Holmgren, vascular plants
Douglas A. Johnson, plant ecophysiology
Karel Klinka, forest ecology
Jesse A. Logan, forest insect ecology, disturbance ecology, dynamical systems analysis
E. Durrant McArthur, cytogenetics of sagebrush
Bret Olson, range ecology
G. Allen Rasmussen, rangeland fire ecology and prescribed burning, rangeland management
David W. Roberts, forest ecology, forest modeling, vegetation ecology
Frederick Smith, silviculture, forest ecology

Professors Emeritus
Thadis W. Box, range management
John A. Kadlec, wetlands ecology, wildlife management
Ronald M. Lanner, forest genetics, dendrology
Frederic H. Wagner, wildlife ecology, natural resources policy
Neil E. West, rangeland desertification/condition/trend
John P. Workman, range economics

Research Professor Emeritus
Leila McReynolds Shultz, plant taxonomy and geography

Associate Professors
Frederick A. Baker, forest pathology, computer applications
Roger E. Banner, range extension specialist
Christopher A. Call, vegetation manipulation/management
Eric M. Gese, National Wildlife Research Center, predator behavior and ecology
Michael J. Jenkins, disturbance ecology and management, insects, fire, snow avalanches
R. Douglas Ramsey, remote sensing, geographic information systems, landscape ecology, spatial analysis
Eugene W. Schupp, plant population ecology and restoration ecology
John A. Shivik, National Wildlife Research Center, predator ecology
Helga Van Miegroet, forest soils and biogeochemistry

Adjunct Associate Professors
Derek Bailey, large herbivore animal behavior
Dale L. Bartos, forest ecology, aspen conservation
Barbara J. Bentz, forest entomology
D. Layne Coppock, animal production systems/technology transfer and international pastoral development
John L. Crane Jr., environmental resource management
Ellen S. Dierenfeld, zoo and wildlife nutrition, conservation biology
Richard C. Etchberger, wildlife-habitat interactions, natural resource education
Thomas A. Jones, native grass breeding
William J. McShea, ungulate ecology, conservation of Asian mammals, small mammal ecology
Patricia D. Moehlman, behavioral ecology of large mammals
Niki S. Nicholas, biogeochemistry
Kenneth C. Olson, grazing livestock nutrition
James A. Pfister, poisonous range plants
Howard B. Quigley, carnivore conservation biology
Michael H. Ralphs, poisonous plants/grazing management
Roger Rosentreter, lichenology
Robert H. Schmidt, wildlife policy, wildlife damage management

Associate Professors Emeritus
Brien E. (Ben) Norton, grazing ecology, international range management
Gar W. Workman, wildlife ecology and management

Assistant Professors
Peter B. Adler, plant community ecology
Karen H. Beard, community ecology, ecosystem ecology, conservation biology
Frank P. Howe, avian ecology and management, riparian and shrubsteppe ecology
Karen E. Mock, conservation genetics and applied molecular ecology
Ronald J. Ryel, plant physiological ecology

Research Assistant Professors
Mary M. Conner, wildlife population ecology
Shandra Nicole Frey, Berryman Institute, resolution of human-wildlife conflict
Juan J. Villalba, foraging behavior

Adjunct Assistant Professors
Larry M. Conner, wildlife ecologist, wildlife damage management, mammalogist
Jeanne M. Fair, epidemiology, avian biology
Jennifer A. Gervais, ecotoxicology, population dynamics
Tim B. Graham, entomology, ecology
Jeannette K. Howard, stream ecology, biogeography, fluvial geomorphology
Kyran E. Kunkel, carnivores, predator/prey ecology, mammal restoration ecology
Tamsin C. McCormick, desert ecology
Nicole L. McCoy, natural resource economics
Gretchen G. Moisen, forest management and ecology
Thomas A. Monaco, research ecologist
Nancy D. Moncrief, systematics, genetics
William C. Pitt, predator ecology and behavior
Daniel K. Rosenberg, population, conservation, and landscape ecology
John D. Shaw, forest inventory, quantitative silviculture
John Squires, lynx and snowshoe hare ecology
Ben C. West, wildlife damage management

Assistant Professor Emeritus
Barrie K. Gilbert, wildlife ethology, behavioral ecology

Course Descriptions

Wildland Resources (WILD), pages 733-736

Women and Gender Studies

Director: Brenda Cooper
Location: Animal Science 319C
Phone: (435) 797-3253
E-mail: bcooper@cc.usu.edu

Interim Director (January-December 2007): Frances B. Titchener, Main 321I, (435) 797-1298, f.b.titchener@usu.edu

WWW: http://www.usu.edu/womenstu/

Women and Gender Studies (WGS) 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 social construction of gender.

Each semester, WGS courses are taught by faculty members from a variety of disciplines, including Anthropology, Biology, Journalism and Communication, English, Fine Arts, Health and Physical Education, History, Languages, Political Science, Psychology, Special Education, and Sociology. Throughout the year, several special topics courses are offered, and new courses are continually being developed. Two WGS scholarships are awarded to undergraduates.

Students may enroll in individual courses or apply coursework toward either a minor in WGS or an Area Studies certificate. At least 50 percent of the WGS coursework must be taken at USU.

Area Studies Certificate in Women and Gender Studies (3.0 GPA)

Students desiring to explore WGS in depth may want an area studies certificate. To receive the certificate, students must complete 24 credits of courses from the list below or from the course list published each semester and earn a minimum grade point average of 3.0 in these courses. With preapproval of the WGS director, as well as a signed contract with a WGS faculty member, other courses may be applied toward the certificate if at least 50 percent of the class material is directly related to gender issues or if students complete a gender-related project in order to earn 50 percent of their grade in that course. Courses must be taken from at least three different academic areas; no more than 12 credits can be counted from a single discipline. Courses may come from major, minor, or University Studies programs. Area studies certificates may be earned by undergraduate and graduate students. Forms for the area studies certificate may be obtained in Taggart Student Center 302 or at the Center for Gender Programs, Taggart Student Center 315.

Women and Gender Studies Minor (2.5 GPA)

To complete the minor, students must select 18 credits from the list below or from the course list published each semester and must earn a minimum grade point average of 2.5 in these courses.

Courses for the Area Studies Certificate and Minor in Women and Gender Studies: (Area Studies, 24 credits; Minor, 18 credits)

Required Course (3 credits)

WGS 1010 Introduction to Women and Gender Studies (Sp).....3

Electives

(Minor, 15 credits; Area Studies, 21 credits)
For the minor, select 15 credits from the following list. For the area studies certificate, select 21 credits.

ANTH 5100 (DSS)/6100 Anthropology of Sex and Gender (Sp).....3
ART 4790 Art History Seminar: Gender Issues in Art (F,Sp,Su) 3
BIOL 4750/6750 ST: Women in Science (Sp) 3
ENGL 3030 (DHA) Perspectives in Literature: Gender Focus (F,Sp,Su).....3
ENGL 3300 Period Studies in American Literature: Gender Focus (F,Sp) 3
ENGL 3510 Young Adult Literature: Reading and Writing Gender (F,Sp).....3
ENGL 3520 Multicultural American Literature: Gender Focus (F,Sp)....3
ENGL 3620 Native American Studies: Contemporary Native American Literature: Gender Focus (F,Sp).....3
ENGL 3710 (CI) Folklore Colloquium: Folklore of the American Family and/or Folklore and Gender (Sp) 3
ENGL 4320 British Writers: Gender Focus (F,Sp).....3
ENGL 4350 Studies in Poetry: Women Poets 1950 to the Present (F).....3
ENGL 4360 Studies in Film: Genre and Gender in Hollywood (Sp).....3
ENGL 4370 Studies in Nonfiction Prose: Gender Focus (F).....3
ENGL 4610 Western American Literature: Utah Women Writers and/or Western Women Writers (F).....3
ENGL 5300 (CI) Literature and Gender (F,Sp).....3
ENGL 5320 (CI) Literature and Cultural Difference: Gender Focus (Sp).....3
ENGL 5340 (CI) Studies in Literary Theory: Feminist Theory (F) 3
ENGL 6330 Topics in Literary Studies: Women's Literature of the American West and/or Politics and the American Woman Writer (1776-1886) (F,Sp) 3
FCHD 3110 Human Sexuality (F,Su).....3
FCHD 3280 Economic Issues: Gender, Family, and Work Roles (Sp)..3
FREN 3500 (DHA) ST: The Modern French Novel: Women, Gender, Text, and Context (Sp).....3
HEP 5000 (CI) Race, Culture, Class, and Gender Issues in Health (Arr) 3
HEP 5700/6700 ST: Workshop on Women's Health Issues (Su) 3
HIST/WGS 4550 (DHA/CI) Women and Gender in America (F) 3
HIST 4730 (CI) History of Black America (Sp) 3
JCOM 3410 (DSS) Film as Cultural Communication: Women, Feminism, and Film (F,Sp) 3
JCOM 4410/6410 Gender and the Mass Media (F).....3
POLS 3190 (DSS) Gender, Power, and Politics (F).....3
POLS 5440 (DSS) Gender and World Politics (Sp) 3
SOC 2370 Sociology of Gender (F) 3
SOC 3010 Race, Class, and Gender (F,Sp).....3
SOC 4730 Women in International Development (Sp).....3
SOC 6420 Gender and Social Inequality (Sp).....3
SOC 6730 Gender and International Development (Sp).....3
SPAN 4900 ST: Women Writers in the Spanish World (F,Sp) 3
SPAN 4910 ST: Latin American Women Writers and/or Latin American Women Playwrights (F,Sp).....3
WGS 2010 Women and Leadership (Sp).....3
WGS 4900 Directed Study: Women and Gender Studies (F,Sp,Su)..1-3

For additional course offerings, please consult the Women and Gender Studies website: **http://www.usu.edu/womenstu/**

Further information may be obtained from the director or from the College of HASS Advising Center (Taggart Student Center 302) or at the Center for Gender Programs (Taggart Student Center 315).

Course Descriptions

Women and Gender Studies (WGS), page 733