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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 Huntsman School 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 preparation for professional accounting 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 active 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, management information systems, business communications, business administration, accounting, 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 Huntsman School of Business section of this catalog (page 124).

Learning Objectives and Assessment

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

Requirements

Huntsman School of Business Admission Requirements

All students majoring in accounting must satisfy the Huntsman School admission requirements, provided on pages 124-125. Academic advising about these requirements is available in the Huntsman School of Business Programs and Advising 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 67-75 of this catalog.

Matriculation Requirement and Transfer Limitation

No more than 15 USU Huntsman School of Business credits (ACCT, BUS, FIN, MGT, MIS), numbered 2000 and above, earned as a nonbusiness major (before acceptance into the Huntsman School) can be applied to a Huntsman School degree. More than 15 business credits can be transferred from other accredited institutions. However, additional USU Huntsman School 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 Huntsman School major, at least 50 percent of the required Huntsman School credits must be earned from coursework taken from the Utah State University Huntsman School 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 Huntsman School credits required for a Huntsman School degree must be taken from the Utah State University Huntsman School or its departments, which include: School of Accountancy, Economics and

School of Accountancy

Finance, Management, and Management Information Systems. At least 12 credits of 3000-level or above accounting courses must be completed through the USU School of Accountancy.

Accounting Admission Requirements

In addition to meeting the Huntsman School 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. 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 67-75), the Pre-Business course requirements, the Huntsman School of Business Core, and the Required Accounting Courses.

Pre-Business Course Requirements (13 credits)

ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su).....	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

Huntsman School 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
BUS 3250 Discussions With Business Leaders (F,Sp).....	1
ECN 2010 (BSS) Introduction to Microeconomics (F,Sp,Su).....	3
ECN 3400 International Economics for Business (F,Sp,Su).....	3
FIN 3400 (QI) Corporate Finance (F,Sp,Su).....	3
MGT 2050 Legal and Ethical Environment of Business (F,Sp,Su).....	3
MGT 3110 Managing Organizations and People (F,Sp,Su).....	3
MGT 3500 Fundamentals of Marketing (F,Sp,Su).....	3
MGT 3700 Operations Management (F,Sp,Su).....	3
MGT 4880 (CI) Business Strategy in an Entrepreneurial Context (F,Sp,Su) (3 cr) or	
MGT 4890 (CI) Business Strategy in a Global Context (F,Sp,Su) (3 cr).....	3
MIS 2100 Principles of Management Information Systems (F,Sp,Su).....	3
MIS 2200 (CI) Business Communication (F,Sp,Su).....	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 at: <http://www.usu.edu/degreeplans/>

Accounting Minor (18 credits)

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*.

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

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 3460 Fundamentals of Personal Investing (3 cr) or	
FIN 4460 Investments (F,Sp) (3 cr).....	3
PFP 5060 Personal Financial Planning and Advising (F).....	3
PFP 5070 Retirement Planning (Sp).....	3
PFP 5080 Estate Planning (Sp).....	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:

ECN 3010 Managerial Economics (F,Sp) (3 cr) or	
ECN 4010 Intermediate Microeconomics (Sp) (3 cr).....	3
ECN 4020 Intermediate Macroeconomics (F,Sp) (3 cr) or	
ECN 5000 Advanced Macroeconomic Topics (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 79.

Beta Alpha Psi

The objective of Beta Alpha Psi is to encourage and recognize scholastic and professional excellence in the accounting profession. Membership includes opportunities for self-development, service, and association among members, faculty, and practicing professionals. Beta Alpha Psi recognizes academic excellence, complements members' formal education, and encourages lifelong growth, service, and ethical conduct. The organization has strict entry requirements, but its members are the most eagerly sought-out by recruiters for the best jobs in accounting. It is appropriate to include the Beta Alpha Psi honor as a resume item for the entire span of one's professional career. For further information, see: <http://www.usu.edu/bap/>

Institute of Management Accountants

The Institute of Management Accountants (IMA) is a worldwide organization comprised of management accounting and finance professionals. USU's student chapter of the IMA provides networking and leadership opportunities for students pursuing accounting careers in business entrepreneurship and industry. The local chapter organizes professional meetings, social events, and service events to assist students in developing and advancing their careers through certification, education, networking, and the advocacy of the highest ethical and professional practices. For further information see: <http://www.usu.edu/ima/>

Financial Planning Association

The Financial Planning Association (FPA) is a national association of financial planning professionals. The FPA student chapter allows students to enjoy all of the benefits of FPA membership at a significantly reduced cost. In addition, student members have opportunities to develop leadership skills, attend informative educational sessions, network with professionals, participate in service activities, and serve as volunteer staff members at state and national meetings of financial planning professionals. For further information, see: <http://www.usu.edu/fpsa/>

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/>

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

Admission Requirements

See general admission requirements, pages 36-37. 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 194. 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 113.)

Students with the equivalent of a USU undergraduate degree in Accounting 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.

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 completed all of the preparatory work for graduate study

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. 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 6250, 6310, 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

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complete, or have previously completed, the equivalent of PFP 3460 or FIN 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, pages 194-195.) 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 194-195), and the following: PFP 6060, 6070, 6080; ACCT 3410; and PFP 3460 or FIN 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

Professors

Larry M. Walther, department head, School of Accountancy; financial
Richard L. Jenson, ATK Thiokol Professor, information systems, systems audit
I. Richard Johnson, Larzette G. Hale Professor, financial
Jay H. Price, Jr., Arthur Andersen Executive Professor, financial, governmental, public utilities
Clifford R. Skousen, Ernst & Young Professor, international, managerial, financial

Associate Professors

Jeffrey T. Doyle, George S. Eccles Chair in Capital Markets Research, financial, capital markets
Rosemary R. Fullerton, managerial, cost
E. Vance Grange, tax, financial planning

Assistant Professors

Garth F. Novack, financial, tax
Christopher J. Skousen, financial, managerial, cost
Nate M. Stephens, auditing, corporate governance and internal controls

Principal Lecturer

Franklin D. Shuman, financial, managerial

Lecturers

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

Adjunct Professor

M. Kay Jeppesen, government contract accounting and administration

Professors Emeritus

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

Course Descriptions

Accounting (ACCT), pages 490-491

Personal Financial Planning (PFP), pages 630-631

Department of Aerospace Studies

Department Head: Lieutenant Colonel Robert E. Herndon, Jr.

Location: Military Science Building, Room 107

Phone: (435) 797-8723

FAX: (435) 797-8733

E-mail: afrotc.det860@usu.edu

WWW: <http://www.usu.edu/afrotc/>

Undergraduate Programs

Objectives

Air Force ROTC provides educational experiences that develop skills and attitudes vital to the career of an Air Force officer. The purpose of the course is to give an understanding of the mission and the global responsibilities of the United States Air Force. The academic phase develops background in national and international affairs to help understand and evaluate world events.

In addition, the curriculum includes experiences designed to stimulate and develop an interest in the Air Force (e.g., orientation flights and visits to Air Force bases); opportunities to apply the principles of leadership, human relations, management, and staff work in practical situations; and other related experiences.

Requirements

Physical Fitness and Medical

All students must meet the physical fitness and medical standards for general military service.

Age Limitations

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.** Other 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-, or two-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 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 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

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.

Department of Aerospace Studies

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-, or two-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 High School Scholarship Program (HSSP) 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 procedures, 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 \$300-500 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 Robert E. Herndon, Jr.

Assistant Professors

Major Kirstin L. Plagge, Commandant of Cadets
Captain Gregg A. Smith, Unit Admissions Officer

Information Manager

Technical Sergeant Holly A. Unger

Personnel Specialist

Technical Sergeant Allan L. Arcia

Course Descriptions

Aerospace Studies (AS), pages 505-506

Department of Agricultural Systems Technology and Education

Department Head: Bruce E. Miller
Location: Agricultural Systems Technology and Education 101C
Phone: (435) 797-2230
FAX: (435) 797-4002
E-mail: bruce.miller@usu.edu
WWW: http://www.usu.edu/aste/

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:
 Luella Oaks, Family Life 303A, (435) 797-1565,
 luella.oaks@usu.edu
 fcseadvising@aggiemail.usu.edu

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 education, 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 30-35. 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 Emma Eccles Jones College of Education and Human Services requirements, page 128). 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 67-75). 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).....	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.

Department of Agricultural Systems Technology and Education

Emphasis Areas (52-57 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 (52-53 credits)

ADVS 1110 Introduction to Animal Science (F,Sp)	4
ADVS 4560 (QI) Principles of Animal Breeding (F)	3
ADVS course	2-3
APEC 3010 Introduction to Agricultural Economics and Agribusiness (Sp) (3 cr) or	
APEC 3020 Firm Finance and Records Analysis (Sp) (3 cr)	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
PLSC 3050 Greenhouse Management and Crop Production (Sp)	4
PLSC 3700 Plant Propagation (F)	4
PLSC course	3
SOIL 3000 Fundamentals of Soil Science (F,Sp)	4

Horticulture (55 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)	3
PLSC 2620 Woody Plant Materials: Trees and Shrubs for the Landscape (F)	3
PLSC 3010 Basic Flower Arranging (F) (offered through Distance Education <i>only</i>)	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)	3
SOIL 3000 Fundamentals of Soil Science (F,Sp)	4

Agricultural Systems (54 credits)

ADVS 1110 Introduction to Animal Science (F,Sp)	4
APEC 3010 Introduction to Agricultural Economics and Agribusiness (Sp) (3 cr) or	
APEC 3020 Firm Finance and Records Analysis (Sp) (3 cr)	3
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 5260 (CI) Environmental Impacts of Agricultural Systems (F)	3
CHEM 1110 (BPS) General Chemistry I (F,Sp)	4
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 (54 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 4000 Principles of Rangeland Management (Sp)	3
WILD 4900 Managing Dynamic Ecological Systems (Sp)	3

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
APEC 3010 Introduction to Agricultural Economics and Agribusiness (Sp)	3
APEC 3020 Firm Finance and Records Analysis (Sp)	3
CHEM 1110 (BPS) General Chemistry I (F,Sp)	4
ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su)	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

Department of Agricultural Systems Technology and Education

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).....	3
ASTE 1615 Agricultural Machinery Engine Laboratory (F).....	3
ASTE 1620 Agricultural Machinery Power Trains (Sp).....	3
ASTE 1625 Agricultural Machinery Power Trains Laboratory (Sp).....	3
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 3670 Agricultural Equipment Business Management, Marketing, and Communications (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
APEC courses	6-12
FIN and MGT courses	12-24
MIS 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 67-75). Students must complete elective credits to meet the University's requirement of at least 120 credits.

Agricultural Systems Technology and Agribusiness Composite Major

Applied Economics and Economics Courses (21 credits)

APEC/ECN 2010 (BSS) Introduction to Microeconomics (F,Sp,Su)	3
APEC 3010 Introduction to Agricultural Economics and Agribusiness (Sp)	3
APEC 3020 Firm Finance and Records Analysis (Sp)	3
APEC 5010 (QI) Firm Marketing and Price Analysis (F)	3
APEC 5015 Firm Management, Planning, and Optimization (F).....	3
ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su).....	3
ECN 3010 (DSS) Managerial Economics (F,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
MGT 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
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Bachelor of Science in Agricultural Communication and Journalism

To develop a well-rounded agricultural communication professional, the BS degree in Agricultural Communication 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 67 for further information.)	
MATH 1050 (QL) College Algebra (F,Sp,Su).....	4

Department of Agricultural Systems Technology and Education

University Studies—Breadth

Students must complete a minimum of 18 credits in breadth courses, including one course from each of the six categories (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
ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su).....	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). 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
APEC 3010 Introduction to Agricultural Economics and Agribusiness (Sp)	3
FCSE 3030 (QI) Textile Science.....	4
NFS 2040 Introduction to Biotechnology (Sp).....	1
PLSC 4300 World Food Crops and Cropping Systems: The Plants That Feed Us (F).....	3
Upper-division College of Agriculture elective course	3

Agricultural Communication Courses (23 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 3090 Computer Applications in Agriculture (F).....	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).....	3
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 communication), 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.

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).....	3
ASTE 1615 Agricultural Machinery Engine Laboratory (F).....	3
ASTE 1620 Agricultural Machinery Power Trains (Sp).....	3
ASTE 1625 Agricultural Machinery Power Trains Laboratory (Sp).....	3
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 3670 Agricultural Equipment Business Management, Marketing, and Communications (Sp)	3
ASTE 3710 Agricultural Machinery Hydraulic Systems and Diagnosis (F)	3
ASTE 3720 Agricultural DC Electrical Systems and Diagnosis (F).....	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

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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 1050 (QL) College Algebra (F,Sp,Su).....	4
NR 1010 (BSS) Humans and the Changing Global Environment.....	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 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 and Sustainability (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.....	3
ASTE 1615 Agricultural Machinery Engine Laboratory	3
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.....	3
ASTE 1625 Agricultural Machinery Power Trains Laboratory	3
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.

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,Sp).....	4
CHEM 1120 (BPS) General Chemistry II (Sp).....	4

Major Required Courses (90 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 2100 Family Resource Management (F,Sp)	3
FCHD 2610 Child Guidance (F,Sp)	3
FCHD 3350 (DSS) Family Finance (F,Sp,Su)	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/QI) Textile Science (Sp)	4
FCSE 3040 Advanced Clothing Production Principles (F).....	3
FCSE 3080 (DHA) Dress and Humanity (F,Sp).....	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).....	2
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 1750 (BCA) Design in Everyday Living (Su).....	3
INST 3500 Technology Tools for Secondary Teachers (F,Sp,Su).....	1
NFS 1020 (BLS) Science and Application of Human Nutrition (F,Sp,Su)	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

Department of Agricultural Systems Technology and Education

Suggested Four-year Plans

Suggested semester-by-semester four-year plans for students working toward a Bachelor of Science degree in majors within the Department of Agricultural Systems Technology and Education can be found at: <http://www.usu.edu/degreeplans/>

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests.

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@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 36-37. 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; Applied Economics; Animal, Dairy and Veterinary Sciences; Economics and Finance; Biology; Plants, Soils, and Climate; Wildland Resources; and Instructional Technology and Learning Sciences.

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; Applied Economics; Economics and Finance; Biology; Plants, Soils, and Climate; and Instructional Technology and Learning Sciences.

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.

Department of Agricultural Systems Technology and Education

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 Professors

Brian K. Warnick, agricultural education, teacher preparation
Lindsey Shirley, family and consumer sciences education,
teacher preparation

Lecturers

Royce Hatch, agricultural machinery technology
Luella Oaks, apparel and textiles
Afifa Sabir, education and outreach, Biotechnology Center
Eric B. Worthen, agricultural systems
Julie P. Wheeler, family and consumer sciences education

Academic Advisors

Luella Oaks, Family and Consumer Sciences Education
Eric B. Worthen, Agricultural Systems Technology and Education

Course Descriptions

Agricultural Systems Technology and Education (ASTE),
pages 506-508

Family and Consumer Sciences Education (FCSE), pages 564-565

Department of Animal, Dairy and Veterinary Sciences

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Degrees offered: Bachelor of Science (BS) in Animal, Dairy and Veterinary Sciences; 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 and Dairy Science, Biotechnology, Bioveterinary Science, and Equine Science and Management

Graduate Specializations: *Animal/Dairy Science*—Animal Nutrition, Breeding and Genetics, Molecular Biology, Reproductive Biology, Animal or Dairy Management (MS only)

Certificate Program: Dairy Herdsman

Undergraduate Programs

Objectives

Bachelor's degree students majoring in Animal, Dairy and Veterinary Sciences may choose a program from four career emphasis areas: **Animal and Dairy Science, Biotechnology, Bioveterinary Science, and Equine Science and Management.**

The curricula in the **Animal and Dairy Science Emphasis** is designed to prepare students for a variety of rewarding careers in the dynamic disciplines of animal and dairy agriculture. Teaching and research facilities, as well as the USU livestock herds and flocks, are available for hands-on practical laboratory experiences, along with faculty-mentored research projects. Graduates from this emphasis may seek careers in animal or dairy production and 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, commodity trading, animal product processing, agricultural cooperatives, and producer/commodity associations. This emphasis may also prepare students for advanced degrees in areas such as animal research in genetics, reproductive biology, nutrition, and management. An especially close student-advisor relationship is required to help students develop, schedule, and accelerate their personal undergraduate degree program and is essential for professional success in these areas.

The **Biotechnology 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. 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.

The ADVS Department offers a strong program in preveterinary study leading to the BS degree in the **Bioveterinary Science Emphasis**. This is not a college of veterinary medicine, but a preveterinary program. The degree is a nonterminal program designed primarily for those students who intend to apply to veterinary school. This program consists of three to four years of study, after which the student is eligible to apply to several veterinary schools. The preveterinary program can be individually tailored to maximize a student's chances of gaining acceptance into a school of veterinary medicine. If a student is uncertain of his or her interests and aptitudes for veterinary medicine, the program is an excellent opportunity to gain experience and make career choices. The student who wants to test his or her potential in a veterinary career should first enroll in the preveterinary program and then later can simultaneously develop a major in another field. Students should consult with the ADVS academic advisor and the preveterinary program coordinator to develop a program of study which best meets their needs and requirements.

There are many exciting career paths in the equine industry, and the ADVS Department has the resources and courses to prepare students to determine their path. The **Equine Science and Management Emphasis** provides an education that will place students among the most sought-after graduates in the equine industry. The program offers courses, internships, volunteer activities, and clubs that prepare students specifically for careers in various aspects of the equine industry. Students will be able to obtain hands-on experiences in the classroom, arena, and stabling facilities. Opportunities will be available in horsemanship, training, managing horses of all ages, stallion handling and breeding, and mare and foal care.

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.

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.

Department of Animal, Dairy and Veterinary Sciences

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 and Dairy Science, Biotechnology, and Equine Science and Management emphases 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 emphasis. 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 emphasis. All students with 60 or more semester credits need a 2.75 total GPA to be admitted to advanced standing in Bioveterinary Science.

Departmental Standards

The following minimum requirements apply to all students working toward a bachelor's degree in Animal, Dairy and Veterinary Sciences. 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, candidates must attain a grade point average of at least 2.50 in the ADVS courses specified as requirements in their emphasis curricula to graduate. Animal and Dairy Science, Biotechnology, and Equine Science and Management emphases candidates must attain an overall GPA of at least 2.25 to graduate. Bioveterinary Science emphasis candidates must attain an overall GPA of at least 3.0 to graduate.

Academic Advising

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 a student's acceptance into the department can keep academic problems to a minimum.

Graduation Requirements

Courses required and recommended for meeting BS degree graduation requirements in the various emphases available in the department are as follows.

Animal and Dairy Science Emphasis

Freshman Year

Fall Semester

ADVS 1110 Introduction to Animal Science.....	4
ADVS 1910 Orientation to Animal and Dairy Science.....	0.5
ADVS 2120 ¹ Swine Production Practices (2 cr) or	
ADVS 2130 ¹ Dairy Production Practices (3 cr) or	
ADVS 2190 ¹ Horse Production Practices (2 cr)	2 or 3
MATH 1050 (QL) College Algebra.....	4
University Studies Breadth Course.....	3

Spring Semester

ADVS 2200 Anatomy and Physiology of Animals.....	4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose	3
ADVS 2080 ¹ Beef Production Practices (2 cr) or	
ADVS 2090 ¹ Sheep Production Practices (2 cr).....	2
STAT 1040 (QL) Introduction to Statistics (3 cr) or	
STAT 2000 (QI) Statistical Methods (3 cr).....	3
University Studies Breadth Course.....	3

Sophomore Year

Fall Semester

CHEM 1210 Principles of Chemistry I.....	4
CHEM 1215 Chemical Principles Laboratory I	1
Two University Studies Breadth Courses	6
Directed Elective Course	3

Spring Semester

CHEM 1220 (BPS) Principles of Chemistry II	4
CHEM 1225 Chemical Principles Laboratory II	1
ADVS 3000 Animal Health and Hygiene	3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode	3
Directed Elective Course	3

Junior Year

Fall Semester

BIOL 1610 Biology I	4
ADVS 3500 Principles of Animal Nutrition	3
ADVS 4910 Preprofessional Orientation	0.5
Two Directed Elective Courses.....	6
University Studies Depth Course.....	3

Spring Semester

BIOL 1620 (BLS) Biology II.....	4
ADVS 3510 (QI) Applied Animal Nutrition	3
ADVS 4200 (CI) Physiology of Reproduction and Lactation	4
Directed Elective Course	3

Senior Year

Fall Semester

ADVS 4560 (QI) Principles of Animal Breeding.....	3
ADVS 4920 (CI) Undergraduate Seminar	2
ADVS 5120 ² Swine Management.....	3
ADVS 4250 Internship in Animal Industry (3 cr) or	
ADVS 4800 Undergraduate Research or Creative Opportunity (3 cr)	3
Directed Elective Course	3

Department of Animal, Dairy and Veterinary Sciences

Spring Semester

ADVS 5080² Beef Management (3 cr) or	
ADVS 5090² Sheep Management and Wool Technology (4 cr) or	
ADVS 5130² Dairy Cattle Management (3 cr) or	
ADVS 5190² Horse Management (3 cr)	3-4
Two Directed Elective Courses.....	6
University Studies Depth Course.....	3

Directed Electives

Students must choose eight courses from the following:

ACCT 2010³ Survey of Accounting I (F,Sp,Su)	3
ADVS 3650 Live Animal and Carcass Evaluation (F).....	3
ADVS 5030 Sustainable Agricultural Production Systems with Animals (F).....	3
ADVS 5530 Nutritional Management of Farm Animals (Sp).....	3
ADVS 5860 Poisonous Range Plants Affecting Livestock (Sp).....	3
One additional management course (ADVS 5080, 5090, 5120, 5130, or 5190)	3-4
APEC/ECN 2010 (BSS) Introduction to Microeconomics (F,Sp,Su)	3
APEC 3010³ Introduction to Agricultural Economics and Agribusiness (Sp)	3
APEC 3020³ Firm Finance and Records Analysis (Sp).....	3
APEC 5010 (QI) Firm Marketing and Price Analysis (F)	3
BIOL 3060 (QI) Principles of Genetics (F,Sp,Su)	4
BIOL 3300 General Microbiology (F,Sp)	4
BUS 3400 (QI) Finance Fundamentals	3
BUS 3500 Marketing Principles.....	3
BUS 3700 Operations Management Fundamentals.....	3
CHEM 2310⁴ Organic Chemistry I (F)	4
CHEM 2315⁴ Organic Chemistry Laboratory I (F)	1
CHEM 2320⁴ Organic Chemistry II (Sp)	4
CHEM 3700⁴ Introductory Biochemistry (Sp)	3
ECN 3010 (DSS) Managerial Economics (F,Sp)	3
MATH 1100 (QL) Calculus Techniques (F,Sp,Su) (3 cr) or	
MATH 1210 (QL) Calculus I (F,Sp,Su) (4 cr)	3-4
MGT 2050 Legal and Ethical Environment of Business (F,Sp,Su)	3
MGT 3110 (DSS) Managing Organizations and People (F,Sp,Su).....	3
NFS 4900 Special Problems: Dairy Processing	4
NFS 5020 Meat Technology and Processing (F).....	4
PLSC 4320 Forage Production and Pasture Ecology (F).....	3
SOIL 2000 (BPS) Soils, Waters, and the Environment (Sp) (3 cr) or	
SOIL 3000 Fundamentals of Soil Science (F,Sp) (4 cr)	3-4
WILD 2200 (BLS) Ecology of our Changing World (F,Sp)	3
WILD 3600 Wildland Plant Ecology and Identification (F).....	4
WILD 4000 Principles of Rangeland Management (Sp).....	3
WILD 4850 Vegetation and Habitat Management (F)	3

¹Students must take two courses selected from: ADVS 2080, 2090, 2120, 2130, and 2190.

²Students must take one course selected from: ADVS 5080, 5090, 5120, 5130, and 5190.

³Students may obtain an Agribusiness Management Minor by taking APEC 3010, 3020; ECN 1500 (BAI); and ACCT 2010.

⁴Students may obtain a Chemistry Minor by taking CHEM 2310, 2315, 2320, and 3700.

Biotechnology Emphasis

Freshman Year

Fall Semester

ADVS 1110 Introduction to Animal Science.....	4
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

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 2000 (QI) Statistical Methods	3
University Studies Breadth Course.....	3

Sophomore Year

Fall Semester

BIOL 1610 Biology I	4
CHEM 2310 Organic Chemistry I	4
CHEM 2315 Organic Chemistry Laboratory I	1
Two University Studies Breadth Courses	6

Spring Semester

BIOL 1620 (BLS) Biology II.....	4
CHEM 2320 Organic Chemistry II	4
ADVS 3000 Animal Health and Hygiene	3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode	3
University Studies Breadth Course.....	3

Junior and Senior Years

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) (2-12 cr) or	
ADVS 4800 Undergraduate Research or Creative Opportunity (F,Sp,Su) (1-6 cr)	3-12
ADVS 4910 Preprofessional Orientation (F)	0.5
ADVS 4920 (CI) Undergraduate Seminar (F).....	2
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	6

Directed Electives

Students must select at least 18 credits from the following. At least one course with a Communications Intensive (CI) designation must be included.

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 5150 Immunology (Sp).....	3
BIOL 5210 Cell Biology (F)	3
BIOL 5230 Developmental Biology (Sp)	3
MATH 1100 (QL) Calculus Techniques (F,Sp,Su)	3
PHYS 2110 The Physics of Living Systems I	4
PHYS 2120 (BPS) The Physics of Living Systems II	4

Department of Animal, Dairy and Veterinary Sciences

Bioveterinary Science Emphasis Curriculum (3.0 minimum total GPA required)

This is a four-year program, preparing students for application and admittance to veterinary school or graduate school. 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.

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.

Freshman Year

Fall Semester

ADVS 1110 Introduction to Animal Science.....	4
ADVS 1920 Orientation to Bioveterinary Science	1
CHEM 1210 Principles of Chemistry I	4
CHEM 1215 Chemical Principles Laboratory I	1
MATH 1100 (QL) Calculus Techniques	3
University Studies Breadth Course.....	3

Spring Semester

ADVS 2200 Anatomy and Physiology of Animals.....	4
CHEM 1220 (BPS) Principles of Chemistry II	4
CHEM 1225 Chemical Principles Laboratory II	1
ENGL 1010 (CL1) Introduction to Writing: Academic Prose	3
STAT 2000 (QI) Statistical Methods	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

Fall Semester

BIOL 1610 Biology I	4
CHEM 2310 Organic Chemistry I	4
CHEM 2315 Organic Chemistry Laboratory I	1
Two University Studies Breadth Courses	6

Spring Semester

BIOL 1620 (BLS) Biology II.....	4
CHEM 2320 Organic Chemistry II	4
BIOL 3060 (QI) Principles of Genetics	4
University Studies Breadth Course.....	3

Junior Year

Fall Semester

ADVS 3500 Principles of Animal Nutrition.....	3
ADVS 4930 Undergraduate Seminar in Veterinary Medicine.....	2
BIOL 3300 General Microbiology	4
PHYS 2110 The Physics of Living Systems I	4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode.....	3

Spring Semester

ADVS 3000 Animal Health and Hygiene	3
PHYS 2120 (BPS) The Physics of Living Systems II	4
CHEM 3700 Introductory Biochemistry	3
Two Upper-division University Studies Depth and Communications Intensive (CI) Courses.....	6

Senior Year

Students must complete at least 120 semester credits for the BS degree, of which at least 40 credits must be in upper-division courses. The student must complete two courses which are designated Communications Intensive (CI), and one course which is designated Quantitative Intensive (QI). Students must include at least 15 credits from the following list. An additional 10 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 the ADVS academic 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

Equine Science and Management Emphasis

Freshman Year

Fall Semester

ADVS 1110 Introduction to Animal Science.....	4
ADVS 1910 Orientation to Animal and Dairy Science	0.5
ADVS 2190 Horse Production Practices	2
ENGL 1010 (CL1) Introduction to Writing: Academic Prose	3
MATH 1050 (QL) College Algebra.....	4
University Studies Breadth Course.....	3

Spring Semester

ADVS 1600 Riding Fundamentals I.....	2
ADVS 2200 Anatomy and Physiology of Animals.....	4
STAT 1040 (QL) Introduction to Statistics	3
Two University Studies Breadth Courses	6

Sophomore Year

Fall Semester

ADVS 2300 Stable Management I	3
ADVS 2650 ⁵ Riding Fundamentals II—Hunter	2
BIOL 1010 (BLS) ⁶ Biology and the Citizen	3
CHEM 1110 (BPS) ⁷ General Chemistry I	4
University Studies Breadth Course.....	3

Spring Semester

ADVS 2310 Stable Management II	3
ADVS 2600 ⁶ Riding Fundamentals II—Western	2
CHEM 1120 (BPS) ⁷ General Chemistry II	4
ADVS 3000 Animal Health and Hygiene	3
Directed Elective Course	3

Junior Year

Fall Semester

ADVS 3100 Equine Evaluation I.....	2
ADVS 3500 Principles of Animal Nutrition	3
ADVS 3600 Equine Behavior and Training I	2
ADVS 4910 Preprofessional Orientation	0.5
Three Directed Elective Courses.....	9

Spring Semester

ADVS 3520 Equine Nutrition	1
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode.....	3
Two Directed Elective Courses.....	6
Depth Course	3

Department of Animal, Dairy and Veterinary Sciences

Senior Year

Fall Semester

ADVS 4270 Internship in Equine Industry	3
ADVS 4300 Stable Management III	3
ADVS 4560 (QI) Principles of Animal Breeding.....	3
ADVS 4920 (CI) Undergraduate Seminar	2
Directed Elective Course	3
Depth Course	3

Spring Semester

ADVS 4200 (CI) Physiology of Reproduction and Lactation	4
ADVS 4310 Stable Management IV	3
ADVS 5190 Horse Management.....	3
Two Directed Elective Courses.....	6

Directed Electives

Students must choose five courses from the following list:

ADVS 3150 Equine Evaluation II (Sp).....	2
ADVS 3690 Equine Behavior and Training II (Sp).....	2
ADVS 3910 ST: Horseshoeing	3
ADVS 5030 Sustainable Agricultural Production Systems with Animals (F)	3
ADVS 5530 Nutritional Management of Farm Animals (Sp).....	3
ADVS 5860 Poisonous Range Plants Affecting Livestock (Sp)	3
PLSC 4320 Forage Production and Pasture Ecology (F).....	3
SOIL 2000 (BPS) Soils, Waters, and the Environment (Sp)	3
WILD 4000 Principles of Rangeland Management (Sp)	3

Students must choose four courses from the following list:

ACCT 2010 ⁸ Survey of Accounting I (F,Sp,Su)	3
APEC/ECN 2010 (BSS) Introduction to Microeconomics (F,Sp,Su)	3
APEC 3010 ⁸ Introduction to Agricultural Economics and Agribusiness (Sp)	3
APEC 3020 ⁸ Firm Finance and Records Analysis (Sp).....	3
APEC 5010 (QI) Firm Marketing and Price Analysis (F)	3
BUS 3400 (QI) Finance Fundamentals	3
BUS 3500 Marketing Principles.....	3
BUS 3700 Operations Management Fundamentals.....	3
ECN 3010 (DSS) Managerial Economics (F,Sp)	3
MGT 2050 Legal and Ethical Environment of Business (F,Sp,Su)	3
MGT 3110 (DSS) Managing Organizations and People (F,Sp,Su).....	3

⁸Students must choose one course from the following: ADVS 2600 or 2650.

⁹Students may take BIOL 1610 and 1620 if they desire to pursue a postbaccalaureate degree.

⁷Students may take CHEM 1210, 1215, 1220, and 1225 if they desire to pursue a postbaccalaureate degree.

⁸Students may obtain an Agribusiness Management Minor by taking APEC 3010, 3020; ECN 1500 (BAI); and ACCT 2010.

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 herdsman, 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 and Veterinary Sciences. 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 the Animal, Dairy and Veterinary Sciences major also apply to all minors (see page 157).

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.

Animal and Dairy Science

ADVS 1110; choose one or more courses from ADVS 2080, 2090, 2120, 2130, and 2190; 10 elective ADVS credits with approval of the ADVS academic advisor.

Department of Animal, Dairy and Veterinary Sciences

Bioveterinary Science

ADVS 2200, 3000; 7 elective ADVS credits with approval of the ADVS academic advisor. A minimum grade of C is required in all courses applied toward this minor.

Equine

ADVS 1110, 1600, 2190, 2300, 3100, 3600; ADVS 2600 or 2650; one other ADVS course with approval of the ADVS academic advisor.

Dairy Herdsman

ADVS 1020, 1030, 1040, 1050, 1060.

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

Undergraduate Program Assessment

The ADVS Department assessment plan defines learning objectives for each of its undergraduate emphases. These learning objectives are mapped to each of the required courses in each emphasis, so that they may be evaluated for their contribution to emphasis goals. Outcome measures have also been defined for each emphasis, and a process has been implemented to conduct exit interviews with all graduating students in Animal, Dairy and Veterinary Sciences. Rate of admission to a professional veterinary medical program has been identified as the critical outcome measure for the Bioveterinary Science emphasis. 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 emphases.

Learning Objectives

Animal and Dairy 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 and dairy science.
3. Attain depth in two subfields of animal and dairy 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.

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 Emphasis

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.

Equine Science and Management 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 equine science and management.

Department of Animal, Dairy and Veterinary Sciences

3. Attain depth in two subfields of equine science and management.
4. Achieve understanding in the disciplines of equine behavior, health, nutrition, and reproduction of horses.
5. Integrate knowledge from the various disciplines to effectively conduct equine 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 equine science and 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. 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 4800, Thesis/Project Seminar; 3 to 6 credits of HONR 4900, 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@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/>

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

Graduate Programs Coordinator: Thomas D. Bunch
Location: Agricultural Science 228
Phone: (435) 797-2148
FAX: (435) 797-2118
E-mail: tom.bunch@usu.edu

Admission Requirements

In addition to the general admission requirements (see pages 36-37), applicants should have satisfactory (3.0 GPA or better) grades in completion of previous degree programs. The GRE exam, as well as verbal and quantitative test scores at or above the 40th percentile, is required.

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.

Department of Animal, Dairy and Veterinary Sciences

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 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.

Course Requirements

Course requirements are determined by the student in consultation with and upon agreement by his or her supervisory committee. Depending on the research emphasis selected and the student's background, these requirements may be different for each student. Students working toward an MS or PhD degree must complete appropriate graduate-level statistics courses, as well as participate in the Animal, Dairy and Veterinary Sciences departmental seminar.

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.

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.

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.

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.

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.

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.

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 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 or download the form at: <http://www.advs.usu.edu/academics/grad/> 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.

Department of Animal, Dairy and Veterinary Sciences

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
Jeffery O. Hall, veterinary pathology, toxicology
Lyle G. McNeal, sheep production, wool science
Kenneth L. White, reproductive physiology, developmental biology
Dale R. ZoBell, beef cattle production, management

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
Amrit K. Judd, medicinal chemistry as applied to treatment of viral diseases
Kip E. Panter, animal science/toxicology
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
David D. Frame, poultry extension
Lee S. Rickords, molecular genetics, developmental biology
Kerry A. Rood, extension veterinarian
Allen J. Young, dairy management, reproduction

Adjunct Associate Professors

Dale R. Gardner, chemistry/toxicology
Stephen T. Lee, analytical chemistry
Bryan L. Stegelmeier, pathology
Shiquan Wang, cytogenetics, reproductive physiology
J. Christopher Wilson, veterinary medicine, fisheries

Associate Professors Emeritus

Larry M. Slade, equine nutrition, management
Randall D. Wiedmeier, beef cattle nutrition, management

Research Associate Professors

Dale L. Barnard, virology
Christopher J. Davies, immunogenetics

Assistant Professors

Jong-Su Eun, ruminant nutrition
Patricia A. Evans, equine management
Jessie D. Trujillo, infectious disease, diagnoses and vaccine
David J. Wilson, dairy cattle, mastitis

Adjunct Assistant Professors

Benedict Green, animal physiology
Breck D. Hunsaker, veterinary immunology
Kevin Welch, toxicology

Research Assistant Professors

Brian B. Gowen, immunology, virology
Justin G. Julander, virology, microbiology
Bart E. Tarbet, virology, microbiology

Department of Animal, Dairy and Veterinary Sciences

Clinical Assistant Professors

E. Jane Kelly, veterinary diagnostics

Ramona T. Skirpstunas, bacterial diseases of fish, veterinary pathology, veterinary laboratory diagnostic medicine

Rusty D. Stott, clinical veterinarian, animal health

Research Assistant Professor Emeritus

Robert E. Warnick, turkey nutrition

Extension Associate Professor

Scott S. McKendrick, animal science production

Lecturers

Brett R. Bowman, animal science/nutrition

Colette F. Floyd, equine science and management

Parl Galloway, animal science, manager of Animal Science Farm

Justin A. Jenson, dairy herdsman coordinator, dairy youth specialist

Rebecca A. Lewis, equine science and management

Course Descriptions

Animal, Dairy and Veterinary Sciences (ADVS), pages 491-496

Department of Applied Economics

Department Head: Paul M. Jakus

Location: Business 615

Phone: (435) 797-2310

FAX: (435) 797-2701

WWW: <http://apec.usu.edu/>

Graduate Program Director:

Arthur J. Caplan, Business 620, (435) 797-0775,

arthur.caplan@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; Doctor of Philosophy (PhD) in Economics; the department also participates in the International MBA in Food and Agribusiness (offered through the Royal Agricultural College in Cirencester, England). The Agribusiness major is structured to facilitate a dual major with companion majors with the Huntsman School of Business.

Graduate specializations: *MS in Applied Economics*—Agricultural Economics, Natural Resource Economics, and Regional Economic Development

Undergraduate Programs

Objectives

Economics is the study of allocating our scarce resources among humankind's seemingly endless variety of needs and wants. This places economists and economic analysis at the center of virtually every important discussion and debate about how nations, firms, and people should organize resources to address these needs and wants. As a result, economics offers an exciting and dynamic field of study and research for students, preparing them well to become tomorrow's decision makers.

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 Department of Applied Economics. All transfer students, whether transferring from within Utah State University or from other colleges and universities, must have an overall minimum GPA of 2.5 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 Applied 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 Department of Applied Economics.

Graduation Requirements

To receive a bachelor's degree in Agribusiness, Agricultural 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 ECN 1500, MATH 1100, and STAT 2300 and an overall GPA of 2.67 or higher is required for admission into some required FIN and MGT 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
APEC/ECN 2010 (BSS) Introduction to Microeconomics (F,Sp,Su)	3
APEC 3010 Introduction to Agricultural Economics and Agribusiness (Sp)	3
APEC 3012 Introduction to Natural Resource and Regional Economics (F)	3
APEC 3020 Firm Finance and Records Analysis (Sp)	3
APEC 3310 Mathematics in Agricultural and Resource Economics (F)	3
APEC 4020 Macroeconomics and Trade (Sp)	3
APEC 5010 (QI) Firm Marketing and Price Analysis (F)	3
APEC 5015 Firm Management, Planning, and Optimization (F).....	3
APEC 5020 Strategic Firm Management (Sp)	3
ASTE 3090 Computer Applications in Agriculture (F) (3 cr) or MIS 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 MIS 2200 (CI) Business Communication (F,Sp,Su) (3 cr)	3
ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su).....	3
APEC/ECN 4010 Intermediate Microeconomics (Sp) (3 cr) or ECN 3010 (DSS) Managerial Economics (F,Sp) (3 cr).....	3
MATH 1050 (QL) College Algebra (F,Sp,Su).....	4
MATH 1100 (QL) Calculus Techniques (F,Sp,Su)	3
MGT 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

Department of Applied Economics

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
APEC/ECN 2010 (BSS) Introduction to Microeconomics (F,Sp,Su).....	3
APEC 3010 Introduction to Agricultural Economics and Agribusiness (Sp).....	3
APEC 3012 Introduction to Natural Resource and Regional Economics (F).....	3
APEC 3020 Firm Finance and Records Analysis (Sp).....	3
APEC 3310 Mathematics in Agricultural and Resource Economics (F).....	3
APEC 4020 Macroeconomics and Trade (Sp).....	3
APEC 5010 (QI) Firm Marketing and Price Analysis (F).....	3
APEC 5015 Firm Management, Planning, and Optimization (F).....	3
APEC 5020 Strategic Firm Management (Sp).....	3
ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su).....	3
APEC/ECN 4010 Intermediate Microeconomics (Sp) (3 cr) or	
ECN 3010 (DSS) Managerial Economics (F,Sp) (3 cr).....	3
ECN 3400 (DSS) International Economics for Business (F,Sp,Su).....	3
FIN 3400 (QI) Corporate Finance (F,Sp,Su).....	3
MATH 1050 (QL) College Algebra (F,Sp,Su).....	4
MATH 1100 (QL) Calculus Techniques (F,Sp,Su).....	3
MGT 2050 Legal and Ethical Environment of Business (F,Sp,Su).....	3
MGT 3110 (DSS) Managing Organizations and People (F,Sp,Su).....	3
MGT 3500 Fundamentals of Marketing (F,Sp,Su).....	3
MGT 3700 Operations Management (F,Sp,Su).....	3
MIS 2100 Principles of Management Information Systems (F,Sp,Su).....	3
MIS 2200 (CI) Business Communication (F,Sp,Su).....	3
STAT 2300 (QL) Business Statistics (F,Sp,Su).....	4

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
APEC/ECN 2010 (BSS) Introduction to Microeconomics (F,Sp,Su).....	3
APEC 3010 Introduction to Agricultural Economics and Agribusiness (Sp).....	3
APEC 3012 Introduction to Natural Resource and Regional Economics (F).....	3
APEC 3020 Firm Finance and Records Analysis (Sp).....	3
APEC 3310 Mathematics in Agricultural and Resource Economics (F).....	3
APEC 4020 Macroeconomics and Trade (Sp).....	3
APEC 5010 (QI) Firm Marketing and Price Analysis (F).....	3
APEC 5015 Firm Management, Planning, and Optimization (F).....	3
APEC 5020 Strategic Firm Management (Sp).....	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
ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su).....	3
APEC/ECN 4010 Intermediate Microeconomics (Sp) (3 cr) or	
ECN 3010 (DSS) Managerial Economics (F,Sp) (3 cr).....	3
MATH 1050 (QL) College Algebra (F,Sp,Su).....	4
MATH 1100 (QL) Calculus Techniques (F,Sp,Su).....	3
MGT 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

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
APEC/ECN 2010 (BSS) Introduction to Microeconomics (F,Sp,Su).....	3
APEC 3010 Introduction to Agricultural Economics and Agribusiness (Sp).....	3
APEC 3012 Introduction to Natural Resource and Regional Economics (F).....	3
APEC 3310 Mathematics in Agricultural and Resource Economics (F).....	3
APEC/ECN 4010 Intermediate Microeconomics (Sp).....	3
APEC 4020 Macroeconomics and Trade (Sp).....	3
APEC 5015 Firm Management, Planning, and Optimization (F).....	3
APEC/ECN 5330 (QI) Applied Econometrics (Sp).....	3
APEC 5560 Natural Resource and Environmental Economics (Sp).....	3
ASTE 3090 Computer Applications in Agriculture (F) (3 cr) or	
MIS 2100 Principles of Management Information Systems (F,Sp,Su) (3 cr).....	3

Department of Applied Economics

ASTE 3050 (CI) Technical and Professional Communication Principles in Agriculture (F,Sp) (3 cr) or	
MIS 2200 (CI) Business Communication (F,Sp,Su) (3 cr)	3
ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su)	3
ECN 3400 (DSS) International Economics for Business (F,Sp,Su)	3
APEC 5950 Senior Project (F, 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

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 Accounting I (F,Sp,Su)	3
APEC/ECN 2010 (BSS) Introduction to Microeconomics (F,Sp,Su)	3
APEC 3010 Introduction to Agricultural Economics and Agribusiness (Sp)	3
APEC 3012 Introduction to Natural Resource and Regional Economics (F)	3
APEC 3310 Mathematics in Agricultural and Resource Economics (F)	3
APEC 4020 Macroeconomics and Trade (Sp)	3
ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su)	3
APEC/ECN 4010 Intermediate Microeconomics (Sp) (3 cr) or	
ECN 3010 (DSS) Managerial Economics (F,Sp) (3 cr)	3
ECN 3400 (DSS) International Economics for Business (F,Sp,Su)	3
ECN 4020 Intermediate Macroeconomics (F,Sp)	3
ECN 5400 International Trade Theory (F)	3
ECN 5950 (CI) Senior Project (Sp)	3
MATH 1050 (QL) College Algebra (F,Sp,Su)	4
MATH 1100 (QL) Calculus Techniques (F,Sp,Su)	3
MIS 2100 Principles of Management Information Systems (F,Sp,Su)	3
NFS 5510 Food Laws and Regulations (Sp)	2
POLS 5120 Economics of Russia and Eastern Europe, 9th Century to 21st Century (F)	3
STAT 2300 (QL) Business Statistics (F,Sp,Su)	4

Minor Requirements

Agribusiness Management Minor:

ACCT 2010 Survey of Accounting I (F,Sp,Su)	3
APEC 3010 Introduction to Agricultural Economics and Agribusiness (Sp)	3
APEC 3020 Firm Finance and Records Analysis (Sp)	3
APEC 3310 Mathematics in Agricultural and Resource Economics (F)	3
ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su)	3

Agricultural Economics Minor:

APEC/ECN 2010 (BSS) Introduction to Microeconomics (F,Sp,Su)	3
APEC 3310 Mathematics in Agricultural and Resource Economics (F)	3
APEC 4020 Macroeconomics and Trade (Sp)	3
APEC 5010 (QI) Firm Marketing and Price Analysis (F)	3
ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su)	3
APEC/ECN 4010 Intermediate Microeconomics (Sp)	3

¹These 12 credits must be selected from courses offered by departments within the College of Agriculture, excluding courses offered by the Department of Applied Economics. Six of the 12 credits must be chosen from upper-division courses (i.e., courses numbered 3000 or above).

²The regular calculus series (MATH 1210 and 1220) is recommended for students contemplating graduate studies in economics. MATH 1210 will fulfill the MATH 1100 requirement.

Four-year Degree Plans (8 semesters)

Four-year degree plans for majors offered by the Department of Applied Economics can be found at:

<http://www.usu.edu/degreeplans/>

Students will need to meet with their advisor periodically to ensure all requirements are being met.

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@usu.edu. Additional information can be found online at: <http://honors.usu.edu/>

Financial Support

The Department of Applied Economics 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 college or departmental offices.

Additional Information

For more information about undergraduate programs in the Department of Applied Economics, see the major requirement sheet, available from the department, or accessed online at: <http://www.usu.edu/majorsheets/>

Graduate Programs

The MS in Applied Economics and the PhD in Economics are offered by the Department of Applied Economics. The International MBA in Food and Agribusiness is offered through the Royal Agricultural College (RAC), Cirencester, England.

Objectives

Graduate training in the Department of Applied Economics 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 **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

Master of Science in Applied Economics

To complete an MS degree in Applied Economics, students are required to: (1) complete the applied core (APEC 6000, 6100, 6300, 6330); (2) complete a specialization in: (a) agricultural economics (ACCT 6350; APEC 6030, 6040, 6250; ECN 5300; MGT 5640, 6520), (b) natural resource economics (APEC 6500 and 6510), or (c) regional economic development (APEC 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.)

Doctor of Philosophy in Economics

PhD students are required to: (1) complete the first-year core (APEC 7130, 7140, 7230, 7240, 7310, 7320, 7350, 7360); (2) perform successfully on a written qualifying examination based on the first-year core; (3) complete the advanced core (APEC 7150, 7330); (4) complete the International Trade and Development and Natural Resource and Environmental Economics field sequences (APEC 7400, 7500, 7510); (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.

International MBA in Food and Agribusiness

The Department of Applied Economics participates with the Royal Agricultural College (RAC) in Cirencester, England to offer this degree. The degree is awarded by the RAC. Students study at USU during fall semester, and then study spring semester at the RAC. Students complete a team project and a thesis. The degree is designed to prepare students to be agribusiness managers in an international environment. Applicants for admission to the International MBA are expected to have completed a common body of knowledge core at an AACSB accredited program. The common body of knowledge includes: ACCT 2010, 2020; ECN 1500, 2010; FIN 3400; MGT 2050, 3110, 3500; MGT 3080 or 3700; MATH 1100; MIS 2100; and STAT 2300. Required courses to be completed at USU include: ACCT 6350; APEC 6030, 6040, 6330; and MGT 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 of Applied Economics 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 College of Agriculture, 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 of Applied Economics 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.

Department of Applied Economics

Applied Economics Faculty

Professors

DeeVon Bailey, agricultural economics
Dillon M. Feuz, production and finance, marketing and price analysis
Paul M. Jakus, Department Head; natural resource and environmental economics, nonmarket valuation
Kenneth S. Lyon, economic theory
Donald L. Snyder, agricultural and resource economics

Associate Professors

Arthur J. Caplan, environmental economics and applied microeconomic theory
Gholamreza Oladi, international economics, econometrics
Ruby A. Ward, agribusiness management and operations research

Adjunct Associate Professor

John P. Gilbert, international trade theory and policy, applied general equilibrium modeling, development economics

Human Resources Specialist

Marion T. Bentley, manpower economics

Professors Emeritus

Roice H. Anderson
Larry K. Bond
Rondo A. Christensen
Lynn H. Davis
Reed R. Durtschi
Herbert H. Fullerton
E. Bruce Godfrey
Gary B. Hansen
John E. Keith
Allen D. LeBaron
Darwin B. Nielsen
Morris D. Whitaker

Associate Professor Emeritus

Glenn F. Marston

Course Descriptions

Applied Economics (APEC), pages 499-501

Department Head: Carolyn Cárdenas

Location: Fine Arts Visual 122

Phone: (435) 797-3460

FAX: (435) 797-3412

E-mail: carolyn.cardenas@usu.edu

WWW: <http://www.art.usu.edu/>

Assistant Head and Graduate Program Director:

Alan Hashimoto, Fine Arts Visual 116 (435) 764-1913,
alan.hashimoto@gmail.com

Assistant Head and Undergraduate Program Director:

Christopher T. Terry, Fine Arts Visual 216, (435) 797-3409,
chris.terry@usu.edu

Art Department Advisor:

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

Art Education Undergraduate Advisor:

Dennise Gackstetter, University Reserve 110, (435) 797-1542,
denniseg@gmail.com.

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 the emphasis areas 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 emphasis area 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 receive 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

Minimum GPA for Admission: 2.75, USU; 2.75 Career

Additional Admission Requirement: admission granted by art education instructor

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

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

Art History (52 total credits)

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

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 ARTH 4790, Art History Seminar and Special Problems (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.

Ceramics

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

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) Introduction to Geology: Geology of National Parks (F,Su) (3 cr) or	
GEO 1110 (BPS) The Dynamic Earth: Physical Geology (F,Sp) (4 cr)	3 or 4

¹ART 4640 is repeatable for credit, and must be taken during at least two semesters.

²ART 4650 is repeatable for credit, and must be taken during at least four semesters.

Drawing and Painting

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

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.

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

Graphic Design

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

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

Department of Art

Additional Art courses.....	9
Two upper-division Art History courses (3000- or 4000-level).....	6

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

Photography

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

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 enables 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 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 Senior BFA Exhibition (Sp).....	2
ARTH 3820 History of Early Photography (Sp).....	3
ARTH 3830 History of Contemporary Photography (Sp)	3

Printmaking

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

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 3230⁵ Lithography (F)	3
ART 3240⁵ Intaglio (Sp)	3
ART 3250^{5,6} Relief Prints (F).....	3
ART 4250 Advanced Printmaking Studio (F,Sp).....	9
ART 4910 Senior BFA Exhibition (Sp).....	2
Two additional upper-division Art History courses, 3000-level and above (required)	6

⁵A total of 12 credits must be taken in a combination of ART 3230, 3240, and 3250.

⁶ART 3250 may be repeated for credit.

Sculpture

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

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, while developing 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 1050 Introduction to Photography (F) (3 cr) or	
ART 2810 Photography I (F,Sp) (3 cr).....	3
ART 2600 Basic Sculpture (F,Sp).....	3
ART 2650 Introduction to Ceramics (F,Sp,Su)	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 Plans

Sample semester-by-semester four-year plans for students working toward a bachelor's degree within the Art Department can be found at: <http://www.usu.edu/degreeplans/>

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests.

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 (ARTH 3820, 3830, 4720, 4740, 4750, 4790).

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 Secondary Education Program of the School of Teacher Education and Leadership (TEAL).

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 the departmental honors advisor to complete an honors program of study contract form. Contact the Art Department at: Fine Arts Visual 122, (435) 797-3460.

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 4900 (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/>

Additional information may also be found on the Art Department website at: <http://www.art.usu.edu/>

Graduate Programs

The Department of Art offers two graduate degrees and cooperates with the Emma Eccles Jones 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 Emma Eccles Jones 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.

Department of Art

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

Carolyn Cárdenas, drawing, painting
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 501-504

Art History (ARTH), pages 504-505

Asian Studies Major and Minor

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

Major

Requirements for Asian Studies Major (27 credits)

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

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

ECN 5400 International Trade Theory (F)	3
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/ARTH 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 (DHA) World War II in Asia (Sp)	3
HIST 4890 (DHA) Cold War in Asia (F,Sp)	3
LANG/ANTH/HIST 3550 (DHA) Culture of East Asia	3
MIS 4550 (CI) Principles of International Business Communications (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/HIST 3010 Introduction to Buddhism	3
RELS/HIST 3020 Introduction to Hinduism	3
RELS/HIST 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 (F,Sp)	3
ANTH/GEOG/SOC 5650 (DSS) Developing Societies (F)	3
APEC 5850 Regional and Community Economic Development (F)	3
ECN 3400 (DSS) International Economics for Business (F,Sp,Su)	3
ECN 5150 (DSS) Comparative Economic Systems (F)	3
FIN 4300 International Finance (F,Sp)	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
MGT 4590 Global Marketing Strategy (F,Sp)	3
NR 1010 (BSS) Humans and the Changing Global Environment	3
PLSC 4300 World Food Crops and Cropping Systems: The Plants That Feed Us (F even)	3
POLS 2100 Introduction to International Politics (F,Sp)	3
POLS 2200 (BSS) Comparative Politics (F,Sp)	3
POLS 5120 Economics of Russia and Eastern Europe, 9th Century to 21st Century (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 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 (F)	5
CHIN 1020 Chinese First Year II (Sp)	5
CHIN 2010 Chinese Second Year I (F)	5
CHIN 2020 Chinese Second Year II (Sp)	5
CHIN 3010 Chinese Third Year I (F)	4
CHIN 3020 Chinese Third Year II (Sp)	4
CHIN 3100 Readings in Contemporary Chinese Culture (Sp)	3
CHIN 3510 Chinese Business Language (F)	3
JAPN 1010 Japanese First Year I (F)	5
JAPN 1020 Japanese First Year II (Sp)	5
JAPN 2010 Japanese Second Year I (F)	5
JAPN 2020 Japanese Second Year II (Sp)	5
JAPN 3010 Japanese Third Year I (F)	4
JAPN 3020 Japanese Third Year II (Sp)	4
JAPN/ART 3050 Japanese Calligraphy (Sp)	1
JAPN 3100 Readings in Contemporary Japanese Culture (F)	3
JAPN 3510 Japanese for the Business Environment (Sp)	3
JAPN 4250 Internship/Coop (Su)	3-9
KOR 1010 Korean First Year I (F)	5
KOR 1020 Korean First Year II (Sp)	5
KOR 2010 Korean Second Year I (F)	5
KOR 2020 Korean Second Year II (Sp)	5
KOR 3010 Korean Third Year I (F)	4
KOR 3020 Korean Third Year II (Sp)	4
KOR 3510 Business Korean (F)	3

Asian Studies Major and Minor

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 (F).....	4
CHIN 3020 Chinese Third Year II (Sp)	4
CHIN 3100 Readings in Contemporary Chinese Culture (Sp)	3
CHIN 3510 Chinese Business Language (F)	3
JAPN 3010 Japanese Third Year I (F)	4
JAPN 3020 Japanese Third Year II (Sp)	4
JAPN/ART 3050 Japanese Calligraphy (Sp)	1
JAPN 3100 Readings in Contemporary Japanese Culture (F)	3
JAPN 3510 Japanese for the Business Environment (Sp).....	3
KOR 3010 Korean Third Year I (F).....	4
KOR 3020 Korean Third Year II (Sp).....	4
KOR 3510 Business Korean (F).....	3

Sample Four-year Plan for Asian Studies Major

A sample semester-by-semester four-year plan for students working toward a Bachelor of Arts degree in Asian Studies can be found at:
<http://www.usu.edu/degreeplans/>

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests.

Asian Language Course Descriptions

Chinese (CHIN), pages 529-530

Japanese (JAPN), pages 589-590

Korean (KOR), page 593

Department of Biological and Irrigation Engineering

Department Head: Ronald C. Sims

Location: Engineering 402G

Phone: (435) 797-2785

FAX: (435) 797-1248

E-mail: bie@usu.edu

WWW: <http://www.bie.usu.edu>

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, and then sharpened with the study of engineering topics that develop practical problem-solving abilities; expand sensitivity to the economic, social, and legal dimensions of technical problems; provide an understanding of ethics and professional responsibility; and stimulate a desire for lifelong 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 as follows:

1. **Promote the effective application of knowledge.** Develop practical problem-solving and communication abilities to apply what is known and to convey the information to others that will contribute to biological engineering practice, advance knowledge, and contribute to society.
2. **Advance the desire and ability to grow professionally.** Expand the work ethic and drive to provide continuous self-improvement, and expand a professional sensitivity to the economic, social, and legal dimensions of technical problems, in order to ensure that engineering solutions will be more holistic and applicable.

3. **Teach students to adjust to a rapidly changing environment.**

Stimulate a desire for lifelong learning and for adaptation to a change in direction with a rapid response, as two 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, component, or device.
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 continuous 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 BIE Department Industry Advisory Board performs the role of external review of the academic program, graduating seniors, and selected program educational objectives and program outcomes.

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:

Department of Biological and Irrigation Engineering

1. Employer feedback soon after graduation and approximately three years after graduation.
2. BIE Department Industry Advisory Board activities, including interviews of graduating students.
3. Fundamentals of Engineering Examination performance.
4. Behavioral observations with regard to professional conferences and professional organizations membership.
5. Student coursework performance and Course Instructor Self-Evaluation.
6. Capstone Design performance.

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).

Passing the Fundamentals of Engineering examination, the first step in becoming a licensed professional engineer, is desired for graduation. After students have made two credible attempts to pass the national exam, a departmental exam will be administered. When passed, this departmental exam will satisfy the graduation requirement.

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 131-134. 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 2450 Engineering Numerical Methods (Sp)	2
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).....	3
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 5020 Biological Systems Modeling and Controls (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 <i>and</i> Engineering Electives combined)	9-21
Technical Electives (0-12 cr) (21 cr total for Biological Engineering Electives, Engineering Electives, <i>and</i> 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 1210³ Principles of Chemistry I.....	4
CHEM 1215³ Chemical Principles Laboratory I.....	1
ENGR 1000³ Introduction to Engineering Design.....	2
MATH 1210 (QL)³ Calculus I	4

Spring Semester (17 credits)

BIE 1880³ Engineering Quantification of Biological Processes.....	3
ETE 2270³ Computer Engineering Drafting.....	2
MATH 1220 (QL)³ Calculus II	4
PHYS 2200³ Elements of Mechanics	2
University Studies Breadth courses.....	6

Department of Biological and Irrigation Engineering

Sophomore Year (32 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
ENGL 2010 (CL2) ³ Intermediate Writing: Research Writing in a Persuasive Mode.....	3
MATH 2250 (QI) ³ Linear Algebra and Differential Equations.....	4

Spring Semester (16 credits)

BIE 2400 ³ Biological and Environmental Thermodynamics	3
BIOL 3300 (BLS) ¹ General Microbiology	4
ENGR 2030 ³ Engineering Mechanics Dynamics.....	3
ENGR 2450 ³ Engineering Numerical Methods.....	2
ETE 2210 Electrical Engineering for Nonmajors	4

Professional Engineering: Junior and Senior

Junior Year (32 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 (17 credits)

BIE 3000 Instrumentation for Biological Systems	3
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 (14-15 credits)

BIE 4880 (CI) Biological Engineering Design II.....	3
BIE 5020 Biological Systems Modeling and Controls	3
University Studies Depth Humanities and Creative Arts (DHA) course	2-3
Technical Elective courses ²	6

Spring Semester (18-19 credits)

BIE 4890 (CI) Biological Engineering Design III.....	3
Technical Elective courses ²	9
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,Su).....	3
BIE 5110 Sprinkle and Trickle Irrigation (F).....	4
BIE 5150 Surface Irrigation Design (F,Su)	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 5600 Downstream Processes in Biological Engineering (Sp)	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: Metabolic Engineering I	4
BIE 5930 Special Studies: Synthetic Biological Engineering	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 1620 (BLS) Biology II (Sp).....	4
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 3100 (CI) Bioethics (Sp).....	3
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 (F).....	3
CEE 2240 Engineering Surveying (F,Su)	3
CEE/PUBH 3610 Environmental Management (F)	3
CEE/PUBH 3870 (CI) Professional/Technical Writing in Civil and Environmental Engineering (F).....	2
CHEM 1220 (BPS) Principles of Chemistry II (F,Sp,Su)	4
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,Su).....	2
ETE 2020 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
PEP 4200 (QI) Biomechanics (F,Sp,Su).....	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)	4
SOIL 5650 Environmental Soil Physics (F)	4
WATS 4490 Small Watershed Hydrology (F)	4
WATS 4500 Limnology: Ecology of Inland Waters (Sp)	3
WATS 5660 Watershed and Stream Restoration (Su)	2

Other technical courses (especially science and engineering) may be accepted with prior written approval from the Department of Biological and Irrigation Engineering.

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 (31 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) ^{3,6} Introduction to Writing: Academic Prose.....	3
ENGR 2010 ³ Engineering Mechanics Statics.....	2
ETE 2270 ³ Computer Engineering Drafting.....	2

Spring Semester (16 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
ENGR 2450 ³ Engineering Numerical Methods.....	2
BIOL 2320 ⁵ Human Anatomy.....	4

Third Year (31 credits)

Fall Semester (15 credits)

BIE 2330 ³ Engineering Properties of Biological Materials.....	3
CHEM 2310 ³ Organic Chemistry I.....	4
CHEM 2315 Organic Chemistry Laboratory I.....	1
BIOL 2420 ⁵ Human Physiology.....	4
University Studies Breadth American Institutions (BAI) course.....	3

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) ⁵ Principles of Genetics.....	4
ETE 2210 Electrical Engineering for Nonmajors.....	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
STAT 3000 (QI) Statistics for Scientists.....	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 Breadth Creative Arts (BCA) course.....	3

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

Senior Year (30 credits)

Fall Semester (15 credits)

BIE 4880 (CI) Biological Engineering Design II.....	3
BIE 5850 Biomaterials Engineering.....	3
BIE 5020 Biological Systems Modeling and Controls.....	3
BIOL 5210 ⁵ Cell Biology.....	3
BIE elective course.....	3

Spring Semester (15 credits)

BIE 3000 Instrumentation for Biological Systems.....	3
BIE 4890 (CI) Biological Engineering Design III.....	3
Engineering Elective.....	3
University Studies Depth Humanities and Creative Arts (DHA) course ⁶	3
University Studies Depth Social Sciences (DSS) course.....	3

¹The Breadth Life Sciences (BLS) area in the University Studies Program is satisfied by the combination of BIOL 1610 and 3300.

²To emphasize irrigation, bioprocesses, premedical, etc., contact department for suggested technical electives.

³This course is required for admission to the Professional Engineering Program (PEP).

⁴Irrigation engineers must take CEE 3430 this semester. It is a prerequisite to all senior irrigation classes.

⁵These courses are highly recommended, but not required, for the premedical program. They fit in the schedule during the semesters shown. It is important for students to find out the requirements of the schools they desire to attend. Students should consult with the premedical advisor early in their program.

⁶AP English does not satisfy the two semesters of English Composition requirement. However, students may use AP English for ENGL 1010, and then take ENGL 2010 and ENGL 3040 (DHA) for the two semesters.

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@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/>

Department of Biological and Irrigation Engineering

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 133-134.)

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

Department of Biological and Irrigation Engineering

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).

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. Merkle, conveyance systems
Christopher M. U. Neale, remote sensing
Richard C. Peralta, groundwater
Ronald C. Sims, biological process engineering
Wynn R. Walker, surface irrigation

Research Professor

Darwin L. Sorensen, soil microbiology

Adjunct Professors

Richard Allen, irrigation
Anne J. Anderson, plant root-microbe interactions
Daryll B. DeWald, cell biology
H. Scott Hinton, biophotonics
Lawrence E. Hipps, biometeorology
Kamal Rashid, biotechnology
A. Ronald Torres, genetics of autism

Professors Emeritus

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

Research Professor Emeritus

L. Humberto Yap-Salinas, drainage

Associate Professor

David W. Britt, biomedical engineering

Research Associate Professors

Joan E. McLean, soil chemistry
Judith L. Sims, soil biology

Adjunct Associate Professors

Scott B. Jones, soil physics
Michael J. McFarland, biosolids

Associate Professor Emeritus

Edwin C. Olsen III, international irrigation, water management

Assistant Professors

Soonjo Kwon, tissue engineering
Charles D. Miller, synthetic biological engineering
Sridhar Viamajala, biofuels, downstream processing
Jixun Zhan, metabolic 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

Research Assistant Professor Emeritus

R. Kern Stutler, irrigation structures

Principal Lecturer

Timothy A. Taylor, bioprocess engineering

Course Descriptions

Biological and Irrigation Engineering (BIE), pages 511-514

Department Head: Daryll B. DeWald
Location: Biology-Natural Resources 121
Phone: (435) 797-2485
FAX: (435) 797-1575
E-mail: undergrad_info@biology.usu.edu
or graduate_info@biology.usu.edu
WWW: <http://www.biology.usu.edu/>

Associate Head:

Timothy A. Gilbertson, Biology-Natural Resources 327,
(435) 797-7314, tag@biology.usu.edu

Director of Undergraduate Studies:

Dennis L. Welker, Biology-Natural Resources 101, (435) 797-3552,
dennis.welker@usu.edu

Director of Graduate Studies:

Edmund D. Brodie, Jr., Biology-Natural Resources 149,
(435) 797-2489, brodie@biology.usu.edu

Biology Advisor:

Yvonne Kobe, Biology-Natural Resources 101,
(435) 797-2577, yvonne@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 available through the Interdepartmental Program in Toxicology.

Undergraduate emphases: *Biology BS, BA*—Biology, Cellular/Molecular, Ecology/Biodiversity, Environmental; *Public Health BS*—Industrial Hygiene, Environmental Health, Public Health Education

Undergraduate Programs

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. Biology degrees provide a foundation for graduate work or employment in research, industry, or governmental agencies. 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, pre dental, 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 or BA 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 Biology-Natural Resources 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 additional 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 and, if necessary, take the Math Placement Exam 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, pre dental, 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.

Department of Biology

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 Yvonne Kobe, Biology Advisor, at yvonne@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 67-79 in this catalog.)

College of Science Requirements

All college requirements are met by completing the departmental degree requirements; no additional coursework is required.

Admission Requirements for the Biology and Public Health Majors

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), students 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 School of Teacher Education and Leadership (TEAL).

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 4420 Plant Taxonomy (Sp,Su)	3
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; one of the following three lecture courses and BIOL 5610 must be taken to meet the requirement:

BIOL 5100 Neurobiology (F) (3 cr) or	
BIOL 5600 Comparative Animal Physiology (Sp) (3 cr) or	
BIOL 5620 Medical Physiology (F) (3 cr)	3
And	
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

Department of Biology

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

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; one of the following three lecture courses **and** **BIOL 5610** must be taken to meet the requirement:

BIOL 5100 Neurobiology (F) (3 cr) or	
BIOL 5600 Comparative Animal Physiology (Sp) (3 cr) or	
BIOL 5620 Medical Physiology (F) (3 cr).....	3
And	
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 (37 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).....	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 (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

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; one of the following three lecture courses **and** **BIOL 5610** must be taken to meet the requirement:

BIOL 5100 Neurobiology (F) (3 cr) or	
BIOL 5600 Comparative Animal Physiology (Sp) (3 cr) or	
BIOL 5620 Medical Physiology (F) (3 cr).....	3
And	
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.

Plant Biology:

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

Department of Biology

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

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; one of the following three lecture courses **and** BIOL 5610 must be taken to meet the requirement:

BIOL 5100 Neurobiology (F) (3 cr) or	
BIOL 5600 Comparative Animal Physiology (Sp) (3 cr) or	
BIOL 5620 Medical Physiology (F) (3 cr)	3
And	
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.

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 5400 Environmental Toxicology (Sp)	3
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 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

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:** 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; one of the following three lecture courses and BIOL 5610 must be taken to meet the requirement:

BIOL 5100 Neurobiology (F) (3 cr) or	
BIOL 5600 Comparative Animal Physiology (Sp) (3 cr) or	
BIOL 5620 Medical Physiology (F) (3 cr)	3
And	
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 (F,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 (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)	3

Level 3:

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

Note: The Teaching Science I and II courses (SCED 3400 and 4400) are *only* taught once per year. Therefore, it is important for students to consult with their advisor to fit these courses in the correct sequence into their plan of study.

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 pages 76-77 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

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PUBH 4380 Industrial Hygiene Internship (F,Sp,Su)	3
PUBH 5330 (QI) Industrial Hygiene Chemical Hazard Control (F)	3
PUBH 5400 Environmental Toxicology (Sp)	3
PUBH 5500 (CI) Public Health Management (F,Sp)	2

Elective Options (select 5 credits)

BIOL 3060 (QI) Principles of Genetics (F,Sp,Su)	4
CEE 5610 Environmental Quality Analysis (F)	3
MGT 3110 (DSS) Managing Organizations and People (F,Sp,Su)	3
MGT 4630 Human Resource Management (F,Sp)	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

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 (F)	3
NFS 5110 (CI) Food Microbiology (Sp)	4

Required Electives (select 10 credits)

BIOL 3220 (QI) Field Ecology (F)	2
BIOL 3500 (DSC) Plagues, Pests, and People (Sp)	3
BIOL 4420 Plant Taxonomy (Sp,Su)	3
BIOL 5550 Freshwater Invertebrates (Sp)	3
CHEM 3700 Introductory Biochemistry (Sp)	3
CHEM 3710 Introductory Biochemistry Laboratory (Sp)	1

PUBH 5400 Environmental Toxicology (Sp)	3
SOIL 3000 Fundamentals of Soil Science (F,Sp)	4
SPCH 1020 (CI) Public Speaking (F,Sp)	3

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 3900 Social Marketing in Health Education (Sp)	3
HEP 4200 (QI) Planning and Evaluation for Health Education (F)	3
HEP 5300 Grant Proposal Writing (Sp)	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

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/BIO 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
CLIM 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 (Eccles Science Learning Center 245) and the Biology Advising Center (Biology-Natural Resources 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 5800, and a research-based Bachelor's Thesis. For details, students should contact: Kimberly A. Sullivan, (435) 797-3713, yejunco@biology.usu.edu.

Suggested Four-year Plans

Suggested semester-by-semester four-year plans for students working toward a Bachelor of Science or Bachelor of Arts degree in majors within the Department of Biology can be found at:
<http://www.usu.edu/degreeplans/>

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests.

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 36-37. 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

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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, genetics, ecology, physiology, and evolution; general and organic chemistry; biochemistry; 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 228-229).

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.

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 250,000 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 Biology-Natural Resources 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. Pependorf, industrial hygiene
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
Michael E. Pfrender, evolutionary quantitative genetics
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
Susannah S. French, physiological ecology
Erin W. Hodgson, insect biology
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
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
MieJung Park, neurobiology
Ethan White, ecology

Adjunct Professors

James H. Cane, bee biology
Noelle E. Cockett, biotechnology
Robert Fogel, mycology
James A. Powell, mathematical biology
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 514-518

Public Health (PUBH), pages 647-648

Master of Business Administration (MBA)

Executive Director: Frank N. Caliendo, PhD

Location: Business 602

Phone: (435) 797-2963

E-mail: frank.caliendo@usu.edu

Associate Director: Kenneth C. Snyder

Location: Business 309O

Phone: (435) 797-1387

E-mail: ken.snyder@usu.edu

Assistant Director: Katherine A. McConkie

Location: Business 309N

Phone: (435) 797-1773

E-mail: katherine.mcconkie@usu.edu

Staff Assistant: Lindi Brown

Location: Business 309

Phone: (435) 797-2360

E-mail: lindi.brown@usu.edu

FAX: (435) 797-2399

WWW: <http://www.huntsman.usu.edu/mba/>

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 Huntsman School of Business, which is designed to provide students with an understanding of analytical tools necessary for effective and efficient management in today's complex business world. The MBA program is accredited by AACSB International—The Association to Advance Collegiate Schools of Business.

The central focus of the MBA program in the Huntsman School is framed by strategic anchors in ethical leadership, global vision, entrepreneurship, and analytical rigor. Within this framework, the Huntsman School is committed to creating a branded academic experience within the broad context of the school's commitment to the philosophy of operational excellence. A unique academic partnership with the Shingo Prize creates a dynamic opportunity for high-context public/private partnerships. See: <http://www.shingoprize.org/>

The central theme of the operational excellence philosophy is based upon a commitment to deeply imbed the principles and tools of continuous process improvement throughout all learning experiences. A focus on operational excellence, as it is reflected in business processes cultivating patterns of ethical leadership, strategic planning, and deployment, as well as through development of people, partners, and culture, is central to the mission of the MBA program. Participants in the MBA experience will be empowered to reach a higher level of confidence in their application of analytical tools and skill sets, increasing their level of sophistication in managing complex organizational dynamics. The result is the cultivation of managers with a principle-based philosophy of operational excellence, enabling them to add value to the organizations they lead from their first day on the job.

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 international students whose native language is not English, with a minimum of 213 (computerized) or 79 (Internet) deemed acceptable. International students with a prior degree from a university in an English-speaking country 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 an 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 with or without an undergraduate degree in business may enter the MBA program. However, before the student may take advanced courses, basic competencies in business that have not been acquired through prior courses or experience must be met. Before entering the program, each student must meet with an advisor to plan his or her course of study.

The full-time MBA program on USU's main campus is a cohort program which starts every fall semester. Rolling admission to the on-campus program will begin on **December 1** of each year for early applicants who have outstanding credentials in the areas of undergraduate GPA, GMAT/GRE scores, and letters of recommendation. Applications will be accepted until all seats in the cohort are filled, with preference given to early, qualified applicants. Additional reviews for admissions will be conducted on **January 15** and **February 15**, with reviews in subsequent months (March, April, May, etc.) conducted as needed. Deadlines for admission to one of the part-time MBA programs offered by USU can be found on the MBA website at: <http://www.huntsman.usu.edu/mba/>

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 may acquire the necessary basic competencies by completing courses satisfying the following management-specific knowledge and skills requirement: ACCT 2010 (financial accounting), ACCT 2020 (managerial accounting), FIN 3400 (finance), MGT 3500 (marketing), MGT 3700 (operations), ECN 1500 (macroeconomics),

Master of Business Administration (MBA)

ECN 2010 (microeconomics), MGT 2050 (business law), MGT 3110 (organizational behavior), MATH 1100 (calculus techniques), and STAT 2300 (business statistics). 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 seven courses: ACCT 6350; FIN 6420; and MGT 6300, 6500, 6520, 6720, 6890. Additionally, students must complete one course each in information systems (e.g., MIS 6510); research methods (e.g., BUS 6860); and quantitative analysis (e.g., MGT 6740, ECN 6310, 6330). Students will also take a 3-credit field studies course that will provide consultation to companies.

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, 6350, 6410, 6510, and 6610.

Entrepreneurship

This specialization consists of MGT 6410, 6430, 6470, and an approved elective.

Human Resource Management

This specialization requires students to complete MGT 6690 and to select any three of the following courses: MGT 6550, 6620, 6630, 6640, 6670, and 6760.

Manufacturing Management

This specialization is currently undergoing revision.

Personal Financial Planning

This specialization consists of PFP 6060, 6070, and 6080. Students must also complete, or have previously completed, the following courses: PFP 3460 or FIN 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 and are awarded on a competitive basis. Students who apply by **February 15** will be considered for financial awards, which generally range between \$1,600 and \$4,500 for nine months. 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 Huntsman School of Business in developing an effective curriculum for the MBA program.

Master of Business Administration Faculty

Professors

Kenneth R. Bartkus, Accelerated Business Core, marketing techniques
Drew Dahl, Accelerated Business Core, corporate finance essentials
Christopher Fawson, applied econometrics
L. Dwight Israelsen, applied econometrics
Richard L. Jenson, advanced accounting information systems
I. Richard Johnson, accounting theory and research
Vijay R. Kannan, operations management, Accelerated Business Core, essentials of operation management
J. Robert Malko, financial problems, managerial economics
Glenn M. McEvoy, managing individuals and groups
David H. Olsen, information systems for business, applied business research
C. R. Michael Parent, marketing strategy
Clifford R. Skousen, accounting strategies for achieving profit goals
David B. Stephens, global business strategy

Associate Professors

J. Brian Atwater, operations management, decision making in operations management
Katherine M. Chudoba, applied business research
Austin Kwag, financial decision making
Alan A. Stephens, financial problems, financial decision making

Assistant Professors

Alison Cook, managing individuals and groups
Daniel Holland, management principles
Christopher J. Skousen, Accelerated Business Core, financial and managerial accounting

Executive-in-Residence/Principal Lecturers

Chester Brough, Accelerated Business Core, fundamentals of business law
Randy Cook, leadership and operational excellence
Jack W. Peterson, financial auditing
Dale G. Siler, tax research and procedures
Alan P. Warnick, managing individuals and groups

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 (undergraduate): chem.undergrad@usu.edu

E-mail (graduate): chem.grad@usu.edu

WWW: <http://www.chem.usu.edu>

Undergraduate Advisors:

Faculty advisors in the Department of Chemistry and Biochemistry are as follows:

Biochemistry:

Lance C. Seefeldt, Widtsoe 241, (435) 797-3964,
lance.seefeldt@usu.edu

Doug Harris, Widtsoe 335, (435) 797-1609,
doug.harris@usu.edu

Chemistry:

Robert S. Brown, Widtsoe 026, (435) 797-0545,
bob.brown@usu.edu

Steve Scheiner, Maeser Lab 140, (435) 797-7419,
steve.scheiner@usu.edu

Vernon D. Parker, Widtsoe 345, (435) 797-1697,
vernon.parker@usu.edu

For faculty advisor assignment, contact:
Geri Child, (435) 797-0544, geri.child@usu.edu.

Undergraduate Research Coordinator:

Joan Hevel, Widtsoe 235, (435) 797-1622, joanie.hevel@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

Department of Chemistry and Biochemistry

and metabolism, protein structure/function); and chemistry (e.g., intermediate and advanced inorganic, advanced organic).

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/assessment/>

Learning objectives for the Chemistry Major are specifically outlined in an organized matrix at:
<http://www.chem.usu.edu/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) ² Quantitative Analysis	3
CHEM 3005 ² 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 ³ Intermediate Inorganic Chemistry	2
CHEM 3520 ³ 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)	3
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 199)	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 by successfully completing honors contracts in the following courses:

CHEM 4800 (CI) Research Problems (F, Sp, Su)	3-6
CHEM 4990 (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 2320 Organic Chemistry II (Sp)	4
CHEM 3070 (QI) Physical Chemistry (Sp)	3
CHEM 5640 Instrumental Analysis (Sp)	3
CHEM 5700 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)	3

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 199)	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
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(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
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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
CLIM 2000 (BPS) The Atmosphere and Weather (F,Sp)	3

Teacher licensure courses from Secondary Education (35 cr)
(see details on page 199)

35
A teaching minor is optional for the Composite Teaching Major in the Physical Sciences.

⁴PHYS 1080 is sometimes listed as USU 1360, ST: Intelligent Life in the Universe.

Department of Chemistry and Biochemistry

Secondary Teacher Education Program (STEP) (35 credits)

Prior to enrolling in these courses, students must be approved for admission to the STEP by the Emma Eccles Jones 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.

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 (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)	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 Teaching Science I and II courses (SCED 3400 and 4400) are *only* taught once per year. Therefore, it is important for students to consult with their advisor to fit these courses in the correct sequence into their plan of study.

Note: The courses in nonscience majors may differ from those listed here.

Biochemistry Major

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 (31-37 credits)

Fall Semester (15-18 credits)

CHEM 3000 ⁵ (QI) Quantitative Analysis	3
CHEM 3005 ⁵ 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 (16-19 credits)

CHEM 5710 ⁶ General Biochemistry II	3
CHEM 5720 ⁶ General Biochemistry Laboratory	3
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) Undergraduate Biochemistry Seminar	2
CHEM 5070 ⁵ Biophysical Chemistry	3
Advanced elective coursework	6-12
University Studies course(s)	0-3

Spring Semester (12-15 credits)

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. Prerequisites will *not* be waived. Only courses with a C-grade or better can be applied toward the electives requirement.

ADVS 3020 Biotechnology in Agriculture (F) (Prereq: BIOL 1620, CHEM 2310)	3
ADVS 5350 Introductory Pharmacology and Pharmacokinetics (Sp) (Prereq: BIOL 5600, CHEM 3700, permission of instructor)	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) (Prereq: BIOL 1610, CHEM 1210)	4

Department of Chemistry and Biochemistry

BIOL 3065 Genetics Laboratory (F) (Prereq: BIOL 3060, which may be taken concurrently).....	2
BIOL 3300 General Microbiology (F,Sp) (Prereq: BIOL 1610; CHEM 2310, which may be taken concurrently).....	4
BIOL 4000 Human Dissection (F) (Prereq: BIOL 2320).....	1
BIOL 5100 Neurobiology (F) (Prereq: BIOL 1620; BIOL 2420, 5600, or 5620; CHEM 1220; and PHYS 2120 or 2220).....	3
BIOL 5150 Immunology (Sp) (Prereq: CHEM 1220; BIOL 3060; and BIOL 3300 or 5210).....	3
BIOL 5210 Cell Biology (F) (Prereq: BIOL 1620, 3060; CHEM 2300 or 2320; CHEM 5700).....	3
BIOL 5230 Developmental Biology (Sp) (Prereq: BIOL 3060 and 5210; CHEM 5700 strongly recommended).....	3
BIOL 5250 (CI) Evolutionary Biology (F,Sp) (Prereq: BIOL 3060 or WILD 4880 or permission of instructor).....	3
BIOL 5330 Virology (Sp) (Prereq: BIOL 3060 and 3300).....	3
BIOL 5600 Comparative Animal Physiology (Sp) (Prereq: BIOL 1620 and CHEM 1220).....	3
BIOL 5620 Medical Physiology (F) (Prereq: BIOL 1620; BIOL 2420 or 5600; CHEM 5710).....	3
CHEM 4800 (CI) Research Problems: Undergraduate Research (F,Sp,Su) (Prereq: Permission of instructor).....	3
CHEM 6730 Principles of Enzymology (Sp) (Prereq: CHEM 5700).....	3
CHEM 6740 Cellular Communication by Small Molecules and Proteins (Sp) (Prereq: CHEM 5700).....	3
CHEM 6750 Principles of Structural Biology (F) (Prereq: CHEM 5700).....	3
CHEM 6760 Principles of Bioenergetics (F) (Prereq: CHEM 5700).....	3

⁵ Offered fall semester only

⁶ Offered spring semester only

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 by successfully completing honors contracts in the following courses:

CHEM 4800 (CI) Research Problems (F,Sp,Su).....	3-6
CHEM 4890 (CI) Undergraduate Biochemistry Seminar.....	2
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 2320 Organic Chemistry II (Sp).....	4
CHEM 5070 Biophysical Chemistry (F).....	3
CHEM 5700 General Biochemistry I (F).....	3
CHEM 5710 General Biochemistry II (Sp).....	3

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 199).....	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, joanie.hevel@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

Department of Chemistry and Biochemistry

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@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 36-37). 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 116-119), 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 6730, 6740, 6750, and 6760). 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.

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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 \$22,000 per year, three-year stipend is competitively awarded to highly qualified science applicants. Students applying to the graduate program will be considered for this fellowship, and will be sent the necessary information. Application deadline for this fellowship is March 1.

Chemistry and Biochemistry Faculty

Professors

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

Steven D. Aust, biochemistry
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

Research Assistant Professors

Brett Barney, biochemistry
Tapas Kar, physical chemistry

Lecturer

Douglas G. Harris

Course Descriptions

Chemistry and Biochemistry (CHEM), pages 527-529

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@engineering.usu.edu
WWW: <http://www.engineering.usu.edu/cee>

Undergraduate Advisor:

Civil Engineering:

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,
david.stevens@usu.edu

Graduate Program Division Heads:

Environmental Engineering:

David K. Stevens, Engineering 216, (435) 797-3229,
david.stevens@usu.edu

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,
marv.halling@usu.edu

Water Engineering:

Gilberto E. Urroz, Engineering 223, (435) 797-3379,
gurro@engineering.usu.edu

Transportation Systems Engineering:

Anthony Chen, Engineering 231, (435) 797-7109,
achen@engineering.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

The **Program Outcomes** of the Civil Engineering undergraduate program are the following:

- (a) an ability to apply knowledge of mathematics, science, and engineering principles to civil engineering problems.
- (b) an ability to design and conduct experiments, as well as to analyze and interpret data.
- (c) an ability to design a system, component, or process to meet desired goals in civil engineering applications.
- (d) an ability to function on multi-disciplinary teams.
- (e) an ability to identify, formulate, and solve engineering problems.
- (f) an understanding of professional and ethical responsibility.
- (g) an ability to communicate effectively.
- (h) a broad education necessary to understand the impact of engineering solutions in a global and societal context.
- (i) a recognition of the need for, and an ability to engage in, lifelong learning.
- (j) knowledge of contemporary issues in civil engineering.
- (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
- (l) the understanding and application of engineering knowledge of specialized areas in Civil Engineering.*
- (m) the understanding of basic project management techniques and leadership.**
- (n) the understanding of basic professional practices, including work procurement and legal issues.

*Students in the Civil Engineering program should gain proficiency in a minimum of four of the following six recognized major civil engineering areas. These engineering areas include : (1) environmental, (2) geotechnical, (3) hydraulics, (4) structural, (5) transportation, and (6) water resources and hydrology.

**Basic project management techniques can include multiple principles, such as the interaction between design professionals and the construction professions to construct a project, as well as the principles of cost and scheduling, drawing and plans, and project inspection.

Department of Civil and Environmental Engineering

The **Program Outcomes** of the Environmental Engineering undergraduate program are the following:

- (a) an ability to apply knowledge of mathematics, science, and engineering principles to civil engineering problems.
- (b) an ability to design and conduct experiments, as well as to analyze and interpret data.
- (c) an ability to design a system, component, or process to meet desired goals in civil engineering applications.
- (d) an ability to function on multi-disciplinary teams.
- (e) an ability to identify, formulate, and solve engineering problems.
- (f) an understanding of professional and ethical responsibility.
- (g) an ability to communicate effectively.
- (h) a broad education necessary to understand the impact of engineering solutions in a global and societal context.
- (i) a recognition of the need for, and an ability to engage in, lifelong learning.
- (j) knowledge of contemporary issues in civil engineering.
- (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

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 30-35. 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 132-133.

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 131-133. 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

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

Department of Civil and Environmental Engineering

Sophomore Year (30 credits)

Fall Semester (15 credits)

PHYS 2220 (BPS/QI) ² General Physics—Science and Engineering II (prereq. AP Physics or PHYS 2200).....	4
MATH 2210 (QI) Multivariable Calculus	3
ENGR 2010 ² Engineering Mechanics Statics.....	2
ENGL 2010 (CL2) ² Intermediate Writing: Research Writing in a Persuasive Mode.....	3
University Studies Breadth course	3

Spring Semester (15 credits)

ENGR 2030 ² Engineering Mechanics Dynamics.....	3
ENGR 2140 ² Strength of Materials.....	2
ENGR 2450 ² Engineering Numerical Methods.....	2
CEE 2870 ² Sophomore Seminar.....	1
MATH 2250 (QI) ² Linear Algebra and Differential Equations.....	4
University Studies Breadth course	3

¹Passing 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.

²These courses are required for admission to the Professional Engineering Program (PEP).

Professional Engineering Program: Junior and Senior

Junior Year (33 credits)

Fall Semester (17 credits)

CEE 3010 Mechanics of Materials	2
CEE 3030 Uncertainty in Engineering Analysis.....	2
CEE 3500 Civil and Environmental Engineering Fluid Mechanics	3
CEE 3610 ³ Environmental Management.....	3
CEE 3870 (CI) ³ 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 ⁴	3
CEE Group A course ⁴	4
Engineering Science Elective.....	3

³CEE 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 ⁵	3
CEE Technical Elective course ⁵	3
CEE Technical Elective course ⁵	3
CEE Technical Elective Group B course ⁵	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 ⁴	3
CEE Group A course ⁴	3-4
CEE Group A course ⁴	3
CEE Technical Elective course ⁵	3
University Studies Depth Humanities and Creative Arts (DHA) course.....	2-3

⁴Students must complete *all five* of the following Group A Courses. 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

⁵Civil 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 (recommended) 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

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CEE 5540 Hydraulic Structures Design (F).....	3
CEE 5550 Hydraulics of Closed Conduits (Sp).....	3
CEE 5690 Natural Systems Engineering (F).....	3
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
ETE 2210 Electrical Engineering for Nonmajors (F,Sp,Su).....	4
MAE 2160 Material Science (F,Sp).....	3
MAE 2300 Thermodynamics I (Sp,Su).....	3

Senior Design Elective Courses (3 credits required)

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 (3 credits required)

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 Engineering⁶

Pre-engineering Program: Freshman and Sophomore

Freshman Year (30-31 credits)

Fall Semester (16 credits)	
MATH 1210 (QL) ⁸ Calculus I.....	4
CHEM 1210 ⁸ Principles of Chemistry I.....	4
CHEM 1215 ⁸ Chemical Principles Laboratory I.....	1
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 (14-15 credits)

BIOL 1010 (BLS) ⁸ Biology and the Citizen.....	3
MATH 1220 (QL) ⁸ Calculus II.....	4
ETE 2270 ⁸ Computer Engineering Drafting.....	2
PHYS 2200 ⁸ Elements of Mechanics.....	2
GEO 1110 (BPS) ⁸ The Dynamic Earth: Physical Geology (4 cr) or GEOG 1000 (BPS) Physical Geography (3 cr).....	3 or 4

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
ENGL 2010 (CL2) ⁸ Intermediate Writing: Research Writing in a Persuasive Mode.....	3
PHYS 2220 (BPS/QI) ⁸ General Physics—Science and Engineering II (prereq: AP Physics or PHYS 2200).....	4
University Studies Breadth course.....	3

Spring Semester (16 credits)

ENGR 2030 ⁸ Engineering Mechanics Dynamics.....	3
ENGR 2140 Strength of Materials.....	2
ENGR 2450 ⁸ Engineering Numerical Methods.....	2
MAE 2300 ⁸ Thermodynamics I.....	3
CEE 2890 ⁸ Environmental Engineering Sophomore Seminar.....	1
CEE 3030 Uncertainty in Engineering Analysis.....	2
University Studies Breadth course.....	3

⁶Passing 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 senior year.

⁷The Breadth Life Sciences (BLS) area in the University Studies Program is satisfied by the combination of BIOL 1610 and 3300.

⁸These courses are required for admission to the Professional Engineering Program (PEP).

Professional Engineering Program: Junior and Senior Junior Year (32 credits)

Fall Semester (15 credits)

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
New course in Environmental Chemistry.....	3

Senior Year (31-32 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 (15-16 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	3
University Studies Breadth course.....	3
University Studies Depth Humanities and Creative Arts (DHA) and Depth Social Sciences (DSS) courses.....	5-6

⁹CEE 3610 and 3870 must be taken concurrently.

¹⁰Environmental Engineering students are required to complete a Senior Design elective course concurrent with CEE 4790. Available Senior Design elective courses are listed below.

¹¹Environmental 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

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Technical Elective Courses

Solids—Area 1

CEE/PUBH 5670 Hazardous Chemicals Handling and Safety (Sp).....	2
CEE/BIE 5680 Soil-based Waste Management (Sp)	2
CEE/PUBH 5730 Analysis and Fate of Environmental Contaminants (F).....	3
CEE/BIE 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/SOIL 5620 Aquatic Chemistry (F)	3
CEE 5720 Natural Systems Modeling (Sp)	3
CEE/PUBH 5730 Analysis and Fate of Environmental Contaminants (F).....	3
CEE/BIE 5810 Biochemical Engineering (F).....	3

Air—Area 3

CEE 5710 Pollution Prevention and Industrial Ecology (Sp, Alt Years).....	2
CEE 5750 Air Quality Measurements (Sp)	2
CEE/PUBH 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
WATS 4500 Limnology: Ecology of Inland Waters (Sp)	3
WATS 4530 Water Quality and Pollution (F)	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/PUBH 5670 Hazardous Chemicals Handling and Safety (Sp).....	2
CEE 5710 Pollution Prevention and Industrial Ecology (Sp).....	2
CEE/PUBH 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@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 150-152 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 133-134.)

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 36-37. 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

Department of Civil and Environmental Engineering

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 cementitious 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; Applied Economics; Economics; Geology; Biological and Irrigation Engineering; Mechanical and Aerospace Engineering; and Plants, Soils, and Climate. 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

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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, Applied Economics, Economics and Finance, Management, 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

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
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

Research Professor

Darwin L. Sorensen, aquatic microbiology

Professors Emeritus

Loren R. Anderson, geotechnical engineering
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
William J. Grenney, water resources
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

Paul J. Barr, reinforced concrete, bridge design
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
Blake P. Tullis, hydraulics, hydraulic structures, and hydromachinery
Gilberto E. Urroz, 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

Kevin Heaslip, transportation
Bethany T. Neilson, environmental engineering
John D. Rice, geotechnical engineering
David Rosenberg, water resources
Keri L. Ryan, structural dynamics, structural control

Research Assistant Professors

Luis Bastidas, hydrology
Sanjay Chauhan, dam safety, risk assessment, hydrologic modeling
Michael C. Johnson, hydraulics

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
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 520-527

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: mark.damen@usu.edu, susan.o.shapiro@usu.edu, frances.titchener@usu.edu

WWW: <http://www.usu.edu/history/classics/>

An academic minor is available in the field of **Classical Studies** with four areas of emphasis: **Classical Civilization**, **Latin Language**, **Greek Language**, and **Latin Teaching**. 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 four 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/ARTH 3110 (CI/DHA) Ancient Near East (Sp).....	3
ANTH 1030 (BSS) World Archeology (F [Sp online]).....	3

One of the following three ancient literature courses is required:

CLAS 1100 The Latin and Greek Element in English (F,Sp).....	3
CLAS/ARTH 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/ARTH 4210 Celtic Europe (F).....	3
ARTH 4610 (CI) Greek and Roman Art.....	3

One of the following three ancient thought courses is required:

HIST 4350 Greek Intellectual History (Sp).....	3
POLS 4310 (CI) History of Political Thought I (Sp).....	3
PHIL 3100 (CI) Ancient Philosophy.....	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:

ARTH 4610 (CI) Greek and Roman Art.....	3
CLAS 1100 The Latin and Greek Element in English (F,Sp).....	3
CLAS/ARTH 3210 Classical Mythology (F,Sp).....	3
HIST/ARTH 4210 Celtic Europe (F).....	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:

ARTH 4610 (CI) Greek and Roman Art.....	3
CLAS 1100 The Latin and Greek Element in English (F,Sp).....	3
CLAS/ARTH 3210 Classical Mythology (F,Sp).....	3
HIST 4350 Greek Intellectual History (Sp).....	3
PHIL 3100 (CI) Ancient Philosophy.....	3
THEA 5290 Special Topics in Theatre History and Literature (F,Sp).....	3

Classics Minor with Emphasis in Latin Teaching

Twenty-one credits are required. All students must take the following courses:

CLAS 1100 The Latin and Greek Element in English (F,Sp).....	3
HIST 3150 (CI) Roman History (Sp).....	3
LATN 3100 Intermediate Latin Prose (F).....	3
LATN 3130 Intermediate Latin Poetry (F).....	3
LATN 4100 Advanced Latin Readings (F).....	3
LATN 4860 Latin Pedagogy (Sp).....	3

The remaining 3 credits must be taken in upper-division Latin. Students may fulfill this requirement *either* by taking LATN 4100 a second time (provided a different author is studied) *or* by taking 3 credits of LATN 4930 (Directed Readings in Latin Poetry and Prose Authors).

In order to receive teaching certification in Latin, students must also pass the PRAXIS exam, as well as successfully complete the STEP (Secondary Teacher Education Program) as part of their major.

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 530

Greek (GRK), page 574

Latin (LATN), page 596

Department of Communicative Disorders and Deaf Education

Department Head: Beth E. Foley
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Phone: (435) 797-3924
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**Assistant Department Head and Advisor for
Speech-Language Pathology and Audiology:**
Dee R. Child, Lillywhite 112, (435) 797-2318, dee.child@usu.edu

Advisor for Deaf Education:
Jan Kelley-King, Lillywhite 40, (435) 797-5718,
jan.kellyking@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

Bachelor's Degree in Communicative Disorders and Deaf Education

There are two areas of focus available within the department: (1) **communicative disorders**, which includes options 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.

Option 1: 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 Emma Eccles Jones 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 Emma Eccles Jones 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 Emma Eccles Jones College of Education and Human Services teacher education program is necessary before the student may take licensure courses taught in the School of Teacher Education and Leadership and the Department of Special Education and Rehabilitation, 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.

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 (13 credits)

MATH 1010 Intermediate Algebra (F,Sp,Su) (4 cr) or	
MATH 1050 (QL) College Algebra (F,Sp,Su) (4 cr)	4
STAT 1040 (QL) Introduction to Statistics (F,Sp,Su)	3
CS 1030 (BPS) Foundations of Computer Science (F) (3 cr) or	
OSS 1400 Microcomputer Applications (3 cr)	3
PSY 1010 (BSS) General Psychology (F,Sp,Su) (3 cr) or	
FCHD 1500 (BSS) Human Development	
Across the Lifespan (F,Sp) (3 cr)	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 (F,Sp)	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
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Department of Communicative Disorders and Deaf Education

D. Communicative Disorders Major Core Requirements (40-41 credits)

COMD 2400 Orientation and Observation (F,Sp)	1
COMD 2500 Language, Speech, and Hearing Development (F,Sp)	3
COMD 2600 Introduction to Communication Disorders (F)	2
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 4450 Assessment and Treatment of Communicative Disorders in the Pediatric Population (Sp)	3
COMD 5070 Speech Science (F)	3
COMD 5100 Language Science (Sp)	3
COMD 5200 Language Assessment and Intervention for Children Birth to Age Five (Sp)	3
COMD 5210 Cultural and Linguistic Diversity in Communicative Disorders (F)	3
COMD 5250 Diagnosis and Treatment of Adults in Speech-Language Pathology (Sp)	3
COMD 5330 Pediatric Aural Rehabilitation (Sp)	3

E. Upper-division Electives, Preapproved by Department (12 credits)

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 (33 credits)

Fall Semester (17 credits)

COMD 2400 Orientation and Observation	1
COMD 2500 Language, Speech, and Hearing Development	3
COMD 2600 Introduction to Communication Disorders	2
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 (16 credits)

COMD 3400 Acoustics and Anatomy of the Ear	3
COMD 4450 Assessment and Treatment of Communicative Disorders in the Pediatric Population	3
COMD 5100 Language Science	3
PSY 1100 Developmental Psychology: Infancy and Childhood	3
Electives	4

Senior Year (33 credits)

Fall Semester (19 credits)

COMD 2910 (CI) Sign Language I (Majors)	4
COMD 3700 Basic Audiology	3
COMD 5070 Speech Science	3
COMD 5210 Cultural and Linguistic Diversity in Communicative Disorders	3
STAT 1040 (QL) Introduction to Statistics	3
Depth Humanities and Creative Arts (DHA) course	3

Spring Semester (14 credits)

COMD 5200 Language Assessment and Intervention for Children Birth to Age Five	3
COMD 5250 Diagnosis and Treatment of Adults in Speech-Language Pathology	3
COMD 5330 Pediatric Aural Rehabilitation	3
Electives	5

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 Regional Campuses and Distance Education (RCDE).

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 competitive. 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 Pediatric Aural Rehabilitation	3

Department of Communicative Disorders and Deaf Education

Semester 3

COMD 3700 Basic Audiology	3
COMD 5070 Speech Science.....	3
COMD 5200 Language Assessment and Intervention for Children Birth to Age Five	3
COMD 5900 Independent Study: Observation/Graduate Preparation.....	2

Option 2: 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 Emma Eccles Jones 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.

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.

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.....	6
ELED 3005 Beginning Classroom Management.....	1
ELED 4005 Intermediate 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

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: C- or better in 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
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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) 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

Department of Communicative Disorders and Deaf 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@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.cehs.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.

The program meets the mandate of the American Speech-Language-Hearing Association (ASHA) to have audiology students move from master's-level to doctoral-level training as the entry-level requirement within the profession of audiology. Specifically, the AuD requires three years of coursework, one year of intensive clinical practicum, and a doctoral-level clinically-related project to meet the requirements currently recommended for the AuD by ASHA and the American Academy of Audiology (AAA). Students at USU will participate in didactic and experiential learning in clinical, educational, telehealth, and rehabilitative audiology.

Course Requirements

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 (F).....	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 and Audiologic Counseling (Sp).....	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 Clinical Research in Audiology (F).....	3
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

Department of Communicative Disorders and Deaf Education

EDUC 6570 Introduction to Educational and Psychological Research (F,Sp,Su).....	3
EDUC 6600 Research 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

¹In order to earn the required number of credits, students must take this course, which is repeatable for credit, during more than one semester.

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 Clinical Research in Audiology.....	3

Spring Semester

COMD 5330 Pediatric 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
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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 Clinical Research in Audiology.....	3

Summer Semester (Optional)

COMD 7300 Intermediate Clinical Practicum.....	2
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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.

Course Requirements

Graduate Courses in Speech-Language Pathology

Year One:

Fall Semester (15 credits)

COMD 6020 Language Assessment and Intervention for School-age Children and Adolescents.....	3
COMD 6100 Advanced Clinical Practicum in Speech-Language Pathology.....	3
COMD 6130 Neuropathologies of Speech and Language.....	4
COMD 6230 Introduction to Research in Communicative Disorders.....	3
COMD 6850 Seminar in Communicative Disorders and Deaf Education.....	2

Spring Semester (15 credits)

COMD 6100 Advanced Clinical Practicum in Speech-Language Pathology.....	3
COMD 6120 Adult Disorders of Motor Speech and Swallowing.....	4
COMD 6140 Pediatric Neurogenic Disorders.....	3
COMD 6150 Phonological Assessments and Intervention.....	3
COMD 6850 Seminar in Communicative Disorders and Deaf Education: School/Professional Program.....	2

Summer Semester (9-12 credits)

COMD 6220 Severe Communication Impairments.....	3
COMD 6300 Externship in Speech-Language Pathology.....	6-9

Year Two:

Fall Semester (14-15 credits)

COMD 6030 Disorders of Fluency—Stuttering.....	3
COMD 6040 Communication Disorders Related to Orofacial Anomalies.....	3
COMD 6200 Internship in Public Schools—Speech-Language Pathology.....	4-5
COMD 6810 Disorders of Phonation.....	3
COMD 6850 Seminar in Communicative Disorders and Deaf Education.....	1

Spring Semester (15 credits)

COMD 6300 Externship in Speech-Language Pathology.....	9-12
COMD 6900 Independent Study.....	1-9
COMD 6970 Thesis.....	1-7

Department of Communicative Disorders and Deaf Education

Education of the Deaf and Hard of Hearing

Deaf Education—Teacher Preparation Track

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

Deaf Education—Early Intervention Track

This early intervention program is for students wishing to work with families having 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.

COMD 3910 Sign Language II (F,Sp,Su).....	4
COMD 4910 (CI) Sign Language III (F,Sp).....	4
COMD 5610 Introduction to Education of the Deaf and Hard of Hearing (F).....	3
COMD 6630 Teaching Speech to Deaf and Hard of Hearing Children (Sp).....	3

COMD 6700 Practicum in Education of Children who are Deaf and Hard of Hearing (F,Sp,Su).....	3
COMD 6760 Early Intervention for Children who are Deaf and Hard of Hearing (F).....	3
COMD 6770 Audiology and Teachers of Children who are Deaf and Hard of Hearing (F) (3 cr) or	
COMD 7340 Pediatric Audiology (instructor's permission required) (F) (2-3 cr).....	2 or 3
COMD 6780 Socio-Cultural Aspects of Deafness (F).....	3
COMD 6960 Master's Project (F,Sp,Su).....	4
SPED 5060 Consulting with Parents and Teachers (instructor's permission required) (Sp).....	3
SPED 5710 Young Children with Disabilities: Characteristics and Services (taught online; register through Regional Campuses and Distance Education).....	3
SPED 5730 Intervention Strategies for Young Children with Disabilities (instructor's permission required) (F).....	3

In order to earn the MEd from the Education of the Deaf and Hard of Hearing program, the student must (1) pass a sign language competency examination, (2) complete a creative project, or (3) 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.

Auditory Learning and Spoken Language for Children with Hearing Loss

Program Rationale

Today, with universal newborn hearing screening, early diagnosis, fitting of advanced hearing technology (such as digital hearing aids and cochlear implants), and enrollment in early intervention and preschool programs, children with hearing loss have more opportunities than ever before to use audition to develop spoken language. Rapid progress in these areas has created a critical shortage of appropriately trained professionals who can meet the unique communicative and learning needs of children with permanent hearing loss and their families.

The Department of Communicative Disorders and Deaf Education at Utah State University, recognizing the opportunity to provide in-depth training to graduate students in Audiology, Speech-Language Pathology, and Deaf Education, has developed an innovative training program for these graduate programs. In addition to the standard coursework and requirements for a master's degree (MS) in Speech-Language Pathology or a Doctor of Audiology (AuD) degree, students can take additional courses and complete specialized practica and field-study experiences to develop specific knowledge and skills in the practice of pediatric audiology, auditory-verbal therapy, and auditory-oral education for children with hearing loss, aged birth through six, and their families.

Department of Communicative Disorders and Deaf Education

Students who have completed a composite bachelor's degree in Special Education/Early Childhood Education can receive a master's degree in Special Education with an emphasis in auditory learning and spoken language. This specialized training program for educators is a joint effort between the Department of Communicative Disorders and Deaf Education and the Department of Special Education and Rehabilitation.

Sound Beginnings of Cache Valley, a newly established early intervention program and preschool, serves as the primary training site for graduate students and provides a range of practicum placements and experiences, such as audiology diagnostics, auditory-verbal therapy sessions, speech-language therapy, parent-infant intervention, toddler group intervention, and auditory-oral education within the preschool. Further information, can be found at:
<http://www.soundbeginnings.usu.edu/>

The program is built on a strong foundation of interdisciplinary service provision to young children with hearing loss and their families. Therefore, regardless of their major, students enrolled take courses together and are often assigned as teams in practica settings and field study projects. Best practices and guiding principles in family-centered intervention, early childhood education, deaf education, speech-language pathology, and audiology are incorporated throughout the program.

Practicum and Externship Experiences

All students completing the program will be placed at local and in-state facilities, such as Sound Beginnings of Cache Valley and Primary Children's Cochlear Implant Center, as well as at innovative, nationally recognized programs or schools serving children with hearing loss who are acquiring spoken language, such as:

1. Auditory Oral School of New York (Brooklyn, New York)
2. CASTLE Program (University of North Carolina at Chapel Hill)
3. CREC Soundbridge (Wethersfield, Connecticut)
4. Jean Weingarten Oral Peninsula School for the Deaf (San Francisco, California)
5. Listen and Talk (Seattle, Washington)
6. Tucker-Maxon Oral School for the Deaf (Portland, Oregon)
7. Saticoy Elementary School (Los Angeles, California)
8. Hearts for Hearing Foundation (Oklahoma City, Oklahoma)
9. The Moog Center for Deaf Children (St. Louis, Missouri)

Creating Additional Professional Opportunities

Due to the ongoing changes within the field of deafness and the fact that approximately 95 percent of parents having children with hearing loss are hearing themselves, parents are increasingly seeking spoken language communication options and intervention programs that will allow their young children with hearing loss to learn to listen and talk. By completing an emphasis in Auditory Learning and Spoken Language, students receiving graduate degrees in Speech-Language Pathology or Audiology will be qualified to work in a variety of settings serving young children with hearing loss and their families, including but not limited to:

1. Cochlear Implant Programs and Teams
2. Community Speech-Language-Hearing Centers
3. Family-Centered Intervention Programs
4. Educational Programs for Children with Hearing Loss

5. Home Health Organizations
6. Hospitals
7. Private Practice
8. Public and/or Private Schools
9. State and Federal Agencies

Funding for Students

Through generous funding from private foundations, federal and state grants, and University resources, graduate students accepted into the program are eligible for scholarships that include tuition and a monthly stipend. Students will be asked to sign a "payback agreement" stipulating that after graduation they will work in settings serving children with hearing loss and their families. They will be required to work in the field one year for each year of funding (e.g., two years of funding requires two years of work), and the graduate must begin this commitment within five years of graduation.

Required Courses

COMD 6320 Language Learning and Literacy Acquisition in Children with Hearing Loss (Su)	3
COMD 6340 Auditory Learning and Spoken Language for Young Children with Hearing Loss (F,Sp,Su)	3
COMD 6630 Teaching Speech to Deaf and Hard of Hearing Children (Sp).....	3
COMD 6700 Practicum in Education of Children who are Deaf and Hard of Hearing (F,Sp,Su)	3
COMD 6850 Seminar: Auditory Learning and Spoken Language (F,Sp,Su)	1
COMD 6900 Independent Study: Family-Centered Practices for Children with Hearing Loss (F,Sp,Su)	3
COMD 6900 Independent Study: Multiple Disabilities and Hearing Loss in Children (F,Sp,Su)	3
COMD 6900 Independent Study: Cochlear Implantation (F,Sp,Su).....	2
COMD 6950 Practicum in Early Intervention: Externship in Auditory Learning and Spoken Language (F,Sp)	1-6
COMD 7340 Pediatric Audiology (F,Sp,Su).....	2

Clinical Assignments/Practicum

Students are expected to complete approximately 10 hours of practicum-related experience per week. This estimate will fluctuate slightly based on the number of children enrolled in Sound Beginnings. During Fall Semester 2008, students averaged 6.5 hours of direct contact time, and another two hours each week were used for planning the sessions.

For more information about the Graduate Studies Program in Auditory Learning and Spoken Language, contact Dr. Todd Houston, Director, at todd.houston@usu.edu or at (435) 797-0434.

Communicative Disorders and Deaf Education 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.

Department of Communicative Disorders and Deaf Education

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, Emma Eccles Jones 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

Debbie Golos, bilingual-bicultural deaf education, emergent literacy, ASL development, educational television, children's media

K. Todd Houston, spoken language acquisition in children with hearing loss, habilitation after cochlear implantation, early intervention, speech and hearing sciences, family-centered practices, adult aural rehabilitation

Jeffery Larsen, classroom acoustics, speech perception

Jaclyn Littledike, orofacial anomalies, professional practice issues, and clinical supervision

Karen Muñoz, pediatric audiology, amplification, clinical audiology

Lauri Nelson, early childhood spoken language, academic achievement in young children with cochlear implants and hearing aids

Susan Watkins, early intervention programs, sensory impaired infants and toddlers

Julie Wolter, school-age language, literacy

Clinical Assistant Professors

Cache Pitt, cochlear implants, pediatric audiology, clinical supervision

Vicki Simonsmeier, pediatric neurogenic disorders, oral-motor dysphagia, early intervention programs, audiology, auditory processing, clinical supervision

Clinical Instructors

Jill R. Andrus, assistive technology, augmentative communication, child articulation and language disorders, clinical supervision

Natalie Austin, early intervention in deaf education

Department of Communicative Disorders and Deaf Education

Chad Bingham, pediatric brain injury, limited English proficiency, augmentative/assistive technology, clinical supervision
Dee R. Child, distance education, disorders of phonation
Anne Elsweller, 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
Amy Porter, clinical supervision, pediatric/adult diagnostics and amplification, balance assessment

Lecturer

Curt Radford, American sign language, bilingual/bicultural education, teacher preparation

Course Descriptions

Communicative Disorders and Deaf Education (COMD),
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Department of Computer Science

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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, Software Development, 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 Software Development 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, Software Development, 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 (SC) 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.

Department of Computer Science

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.

Software Development Emphasis

The Software Development Emphasis (SD) is designed to give students expertise in all major areas of software engineering, including project management, development processes, group work, requirement capture and analysis, software design, programming, testing, standards, and documentation. Students completing this option are prepared to create sophisticated, reliable, and secure software for a broad range of applications. Students in this option take courses in computer science emphasizing software development processes, conceptual modeling, database design, testing, and security, along with broadening courses in operations research, statistics, and management.

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. Students 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.

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 11 advisor-approved science credits. The year-long science sequence is included in these 11 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 30-35. Transfer students with a 2.0 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 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 2.0. 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.

Department of Computer Science

3. 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 2.0 and a minimum GPA of 2.0 (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) Introduction to Software Engineering I (Sp).....	3
CS 2810 Computer Systems Organization and Architecture I (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) Introduction to Software Engineering I (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

Software Development 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) Introduction to Software Engineering I (Sp).....	3
CS 2810 Computer Systems Organization and Architecture I (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) Introduction to Software Engineering I (Sp).....	3
CS 2810 Computer Systems Organization and Architecture I (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) Introduction to Software Engineering I (Sp).....	3
CS 2810 Computer Systems Organization and Architecture I (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, Software Development, 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 (<i>for Science, IS, DS, or BI Emphasis</i>) (4 cr) or	
MATH 1100 (QL) Calculus Techniques (<i>for IT Emphasis</i>) (3 cr)	3 or 4
University Studies courses	7-8

COMPUTER SCIENCE REQUIRED COURSES

Science Emphasis

In addition to the Department and General College of Science Requirements stated above, students in the science emphasis 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
CS 2450 (CI) Introduction to Software Engineering I (Sp).....	3
CS 2810 Computer Systems Organization and Architecture I (F,Sp)....	3
CS 3000 Undergraduate Seminar (F,Sp).....	1
CS 3100 Operating Systems and Concurrency (F,Sp).....	3
CS 3410 (QI) Computational Science: JAVA/Internet (F,Sp,Su) (3 cr) or	
CS 3420 (QI) Computational Science: C# and .NET (F,Sp,Su) (3 cr) or	
CS 3430 (QI) Computational Science: Python and Perl Programming (Sp,Su) (3 cr)	3
CS 3450 Introduction to Software Engineering II (F).....	3
CS 3810 Computer Systems Organization and Architecture II (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
Or (MATH 2250; or MATH 2270 and 2280)	
MATH 2270 (QI) Linear Algebra (3 cr) and	
MATH 2280 (QI) Ordinary Differential Equations (3 cr).....	6
MATH 3310 Discrete Mathematics (F,Sp,Su).....	3
MATH 5610 Computational Linear Algebra and Solution of Systems of Equations (F) (3 cr) or	
Advisor-approved elective course (3 cr).....	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 cr) or	
ENGL 3080 (CI) Introduction to Technical Communication (F, Sp) (3 cr)	3

Department of Computer Science

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 10
 In addition, students must complete 3 credits at the 3000 level or
 higher, appropriate to the degree.

Digital Systems Emphasis

In addition to the Department and General College of Science
 Requirements stated above, students in the digital systems emphasis
 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)..... 3
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) Introduction to Software Engineering I (Sp)..... 3
CS 3000 Undergraduate Seminar (F,Sp)..... 1
CS 3100 Operating Systems and Concurrency (F,Sp)..... 3
CS 3410 (QI) Computational Science: JAVA/Internet (F,Sp,Su) (3 cr) **or**
CS 3420 (QI) Computational Science: C# and .NET (F,Sp,Su) (3 cr) **or**
CS 3430 (QI) Computational Science: Python and Perl
 Programming (Sp,Su) (3 cr) 3
CS 3450 Introduction to Software Engineering II (F)..... 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 2250 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
 Or (MATH 2250; or MATH 2270 and 2280)
MATH 2270 (QI) Linear Algebra (3 cr) **and**
MATH 2280 (QI) Ordinary Differential Equations (3 cr)..... 6
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 cr) **or**
ENGL 3080 (CI) Introduction to Technical
 Communication (F, Sp) (3 cr) 3
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su) 3
 Advisor-approved computer science classes numbered 5000
 or above 10

Software Development Emphasis

In addition to the Department and General College of Science
 Requirements stated above, students in the software development
 emphasis 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
CS 2450 (CI) Introduction to Software Engineering I (Sp)..... 3
CS 2810 Computer Systems Organization and Architecture I (F,Sp)..... 3
CS 3000 Undergraduate Seminar (F,Sp)..... 1
CS 3100 Operating Systems and Concurrency (F,Sp)..... 3
CS 3450 Introduction to Software Engineering II (F)..... 3
CS 3810 Computer Systems Organization and Architecture II (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
ECN 1500 (BAI)¹ Introduction to Economic Institutions, History, and
 Principles (F,Sp,Su)..... 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
MGT 3080 (QI) Operations Research (F,Sp)..... 3
MGT 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 cr) **or**
ENGL 3080 (CI) Introduction to Technical
 Communication (F, Sp) (3 cr) 3
STAT 2300 (QL) Business Statistics (F,Sp,Su) 4
 Advisor-approved computer science class
 numbered 3000 or above 3
 Advisor-approved computer science classes numbered
 5000 or above 10

**The Software Development Emphasis also requires completion of
 two of the following three courses (6 credits)**

CS 3410 (QI) Computational Science: JAVA/Internet (F,Sp,Su)..... 3
CS 3420 (QI) Computational Science: C# and .NET (F,Sp,Su)..... 3
CS 3430 (QI) Computational Science: Python and Perl
 Programming (Sp,Su)..... 3

**The Software Development Emphasis requires the following two
 courses. These two courses are included in the 10 credits for this
 category.**

CS 5700 Object-Oriented Software Development (F) 3
CS 5800 Introduction to Database Systems (F)..... 3

¹ ECN 1500 fulfills the University Studies Breadth American Institutions (BAI) requirement.

² MGT 3110 fulfills the University Studies Depth Social Science (DSS) requirement.

Bioinformatics Emphasis

In addition to the Department and General College of Science
 Requirements stated above, students in the bioinformatics emphasis
 must complete the following courses:

BIOL 3060 (QI) Principles of Genetics (F,Sp,Su) 4
CHEM 1110 (BPS) General Chemistry I (F,Sp)..... 4
 Or (CHEM 1110; or CHEM 1210 and 1215)
CHEM 1210 Principles of Chemistry I (F,Sp) (4 cr) **and**
CHEM 1215 Chemical Principles Laboratory I (F,Sp) (1 cr) 5
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) Introduction to Software Engineering I (Sp)..... 3
CS 2810 Computer Systems Organization and Architecture I (F,Sp)..... 3
CS 3000 Undergraduate Seminar (F,Sp)..... 1
CS 3100 Operating Systems and Concurrency (F,Sp)..... 3
CS 3410 (QI) Computational Science: JAVA/Internet (F,Sp,Su) (3 cr) **or**
CS 3420 (QI) Computational Science: C# and .NET (F,Sp,Su) (3 cr) **or**
CS 3430 (QI) Computational Science: Python and Perl
 Programming (Sp,Su) (3 cr) 3
CS 3450 Introduction to Software Engineering II (F)..... 3
CS 3810 Computer Systems Organization and Architecture II (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

Department of Computer Science

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 3060 (QI) Principles of Genetics (F,Sp,Su).....	4
BIOL 3100 (CI) Bioethics (Sp).....	3
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 cr) or	
ENGL 3080 (CI) Introduction to Technical Communication (F, Sp) (3 cr).....	3
Advisor-approved elective courses.....	12-13
Prior written advisor approval is required for electives. As part of their electives in this emphasis, students are strongly encouraged to include the following Chemistry sequence: CHEM 1210 (or 1220), 2300 (or 2310), and 3700.	
Information Technology Emphasis	
In addition to the Department and General College of Science Requirements stated above, students in the information technology emphasis must complete the following courses:	
ACCT 2010 Survey of Accounting I (F,Sp,Su).....	3
ACCT 2020 Survey of Accounting II (F,Sp,Su).....	3
CS 1030 (BPS) Foundations of Computer Science (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) Introduction to Software Engineering I (Sp).....	3
CS 2810 Computer Systems Organization and Architecture I (F,Sp).....	3
CS 3000 Undergraduate Seminar (F,Sp).....	1
CS 3100 Operating Systems and Concurrency (F,Sp).....	3
CS 3410 (QI) Computational Science: JAVA/Internet (F,Sp,Su) (3 cr) or	
CS 3420 (QI) Computational Science: C# and .NET (F,Sp,Su) (3 cr) or	
CS 3430 (QI) Computational Science: Python and Perl Programming (Sp,Su) (3 cr).....	3
CS 3450 Introduction to Software Engineering II (F).....	3
CS 3810 Computer Systems Organization and Architecture II (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 5800 Introduction to Database Systems (F).....	3
CS 5850 Systems Analysis (Sp).....	3
ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su).....	3
FIN 3400 (QI) Corporate Finance (F,Sp,Su).....	3
MATH 1100 (QL) Calculus Techniques (F,Sp,Su).....	3
MGT 3080 (QI) Operations Research (F,Sp).....	3
MGT 3110 (DSS) Managing Organizations and People (F,Sp,Su).....	3
MGT 3500 Fundamentals of Marketing (F,Sp,Su).....	3
MGT 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.....	7

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) Introduction to Software Engineering I (Sp).....	3
CS 2810 Computer Systems Organization and Architecture I (F,Sp).....	3
CS 3100 Operating Systems and Concurrency (F,Sp).....	3
CS 3450 Introduction to Software Engineering II (F).....	3
CS 3810 Computer Systems Organization and Architecture II (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.	

Suggested Four-year Plans

Suggested semester-by-semester four-year plans for students working toward a Bachelor of Science or Bachelor of Arts degree in emphases within the Computer Science major can be found at:

<http://www.usu.edu/degreeplans/>

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests.

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@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/>

Department of Computer Science

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, space flight software systems applications

Heng-Da Cheng, image processing, artificial intelligence, parallel processing, computer vision, fuzzy logic, VLSI algorithms and architectures, neural networks

Donald H. Cooley, 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, multi-agent systems, artificial intelligence, computer science education, pipelining program optimization

Stephen W. Clyde, software engineering, object orientation, distributed systems, database theory, multimedia systems

Nicholas S. Flann, computational biology, medical modeling, machine intelligence applications

Vladimir Kulyukin, assistive technology, robotics

Xiaojun Qi, image processing, pattern recognition, computer vision, image retrieval, data mining

Daniel W. Watson, parallel and cluster computing, interconnection networks

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

Daniel Bryce, artificial intelligence, systems biology

Renee Bryce, software testing

Curtis Dyreson, databases, data warehousing

Robert F. Erbacher, digital forensics, situational awareness, computer security, intrusion detection, visualization, cyber-terrorism, cyber command and control

Minghui Jiang, design and analysis of algorithms, discrete and computational geometry, bioinformatics, computer biology

Seungjin Lim, data mining, databases

Chad D. Mano, computer security

Supratik Mukhopadhyay, distributed systems, software engineering, programming languages, service oriented computing

Changhui Yan, bioinformatics, data mining, machine learning, computational biology

Lecturers

Linda Duhadway, computer science education, programming languages, web application design and deployment, computer problem solving across disciplines, user interface, software engineering

Dean Mathias, computer graphics, game development, massive virtual environments

Course Descriptions

Computer Science (CS), pages 536-540

Interdepartmental Program in Ecology

Director: James A. MacMahon
Location: Natural Resources 314A
Phone: (435) 797-2555
FAX: (435) 797-3872
E-mail: jim.macmahon@usu.edu
WWW: <http://www.usu.edu/ecology/>

Associate Director for Administrative Affairs:

Marvin C. Bennett, Natural Resources 314B, (435) 797-2090,
marv.bennett@usu.edu

Degrees offered: Master of Science (MS) and Doctor of Philosophy (PhD) in the following departments: Biology; Environment and Society; Plants, Soils, and Climate; 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 Climate; 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 and Statistics, Physics, and Chemistry

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 once per academic year.
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 once per academic year.
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.

Interdepartmental Program in Ecology

Functional (Core) Blocks

1. Biophysical Ecology
(CEE 6930 or WATS 6900, CLIM 6500, CLIM/GEO/WATS 6680, CLIM 6800, GEO/WATS 6150, SOIL 6130, SOIL/WILD 6350)
2. Organismic, Population, and Evolutionary Ecology
(BIOL 6260, 6380, 6600, WATS 6230/7230, WILD 6400, 6720/7720, 7200, 7400)
3. Community, Ecosystem, and Landscape Ecology
(BIOL 6010, BIOL/SOIL/WILD 6200, BIOL 6590, ENVS 6400, WATS 6310, 6820/7820, WILD 6710/7710, 6770, 6900)

Department of Economics and Finance

Department Head: Tyler J. Bowles

Location: Business 615

Phone: (435) 797-2310

FAX: (435) 797-2701

E-mail: info@econ.usu.edu

WWW: <http://www.huntsman.usu.edu/economicsandfinance/>

Undergraduate Advisor:

Ruth Harrison, Business 309, (435) 797-2275,
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Graduate Program Director:

Tyler J. Bowles, Business 616, (435) 797-2310,
tyler.bowles@usu.edu

Degrees offered: Bachelor of Science (BS) and Bachelor of Arts (BA) in Finance; BS, BA, Master of Science (MS), and Master of Arts (MA) in Economics; the department also participates in the Master of Business Administration (MBA). The Economics major is structured to facilitate a dual major with companion majors within or outside the Huntsman School of Business.

Undergraduate emphases: *BS, BA in Economics*—Economic Theory, Managerial Economics, Prelaw Economics

Undergraduate Programs

Objectives

The undergraduate economics and finance curricula provide students with the basic intellectual framework to understand and analyze economic and financial problems and to make informed decisions. A basic understanding of economics and finance is essential to becoming a well-informed citizen, as well as a successful business or public leader.

Students majoring in finance receive training leading to careers in banking, brokerage activities and investments, and positions as financial analysts in industry.

Admission Requirements

Freshmen who meet the admission requirements and are accepted in good standing by the University are eligible for admission to the Department of Economics and Finance. All transfer students, whether transferring from within Utah State University or from other colleges and universities, must have an overall minimum GPA of 2.5 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 Economics or Finance may do so by listing the Economics or Finance major on their application when they apply for admission to USU. Students enrolled at USU may change to the Economics or Finance major by applying directly to the Department of Economics and Finance.

Graduation Requirements

To receive a bachelor's degree in Economics or Finance, students must complete all University requirements and the college and departmental requirements as noted in this catalog section.

Matriculation Requirement and Transfer Limitation

No more than 15 USU Huntsman School of Business credits (ACCT, BUS, FIN, MGT, MIS), numbered 2000 and above, earned as a nonbusiness major (before acceptance into the Huntsman School) can be applied to a Huntsman School degree. More than 15 business credits can be transferred from other accredited institutions. However, additional USU Huntsman School 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 Huntsman School major, at least 50 percent of the required Huntsman School credits must be earned from coursework taken from the Utah State University Huntsman School 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 Huntsman School of Business credits required for a Huntsman School degree must be taken from the Utah State University Huntsman School or its departments, which include: School of Accountancy, Economics and Finance, Management, and Management Information Systems.

Business Core

Finance majors in the Department of Economics and Finance must complete the following prerequisite courses and business core courses in addition to the specific courses listed for the major. (Check with the undergraduate advisor concerning the need for students in the economics major to complete the business core.)

Prerequisite Courses (13 credits)

ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su).....	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 Huntsman School of Business.

Huntsman School 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
FIN 3400 (QI) Corporate Finance (F,Sp,Su).....	3
MGT 3500 Fundamentals of Marketing (F,Sp,Su).....	3
MGT 3700 Operations Management (F,Sp,Su).....	3
BUS 3250 Discussions With Business Leaders (F,Sp)	1
ECN 2010 (BSS) Introduction to Microeconomics (F,Sp,Su)	3
ECN 3400 International Economics for Business (F,Sp,Su).....	3
MGT 2050 Legal and Ethical Environment of Business (F,Sp,Su)	3
MGT 3110 Managing Organizations and People (F,Sp,Su).....	3
MGT 4880 (CI) Business Strategy in an Entrepreneurial Context (F,Sp,Su) (3 cr) or	
MGT 4890 (CI) Business Strategy in a Global Context (F,Sp,Su) (3 cr)	3
MIS 2100 Principles of Management Information Systems (F,Sp,Su).....	3
MIS 2200 (CI) Business Communication (F,Sp,Su).....	3

All 3000-, 4000-, and 5000-level courses in the Huntsman School of Business are restricted to students admitted to the Huntsman School or another USU major with an overall GPA of at least 2.67 and completion of at least 40 credits.

Department of Economics and Finance

Economics Major

As 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 ECN 1500, MATH 1100, and STAT 2300 and an overall GPA of 2.67 or higher is required for admission into some MGT 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, and students must earn a C or better in each of these courses. For information regarding elective requirements, students should contact their academic advisor.

Economics Major:

ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su).....	3
ECN 2010 (BSS) Introduction to Microeconomics (F,Sp,Su).....	3
ECN 3400 (DSS) International Economics for Business (F,Sp,Su).....	3
ECN 3010 (DSS) Managerial Economics (F,Sp) (3 cr) or	
ECN 4010 Intermediate Microeconomics (Sp) (3 cr).....	3
ECN 4020 Intermediate Macroeconomics (F,Sp) (3 cr) or	
ECN 5000 Advanced Macroeconomic Topics (F) (3 cr).....	3
MATH 1050 (QL) College Algebra (F,Sp,Su).....	4
MATH 1100 (QL)¹ Calculus Techniques (F,Sp,Su).....	3
STAT 2300 (QL) Business Statistics (F,Sp,Su).....	4
Upper-division ECN electives ²	6

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
ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su).....	3
ECN 2010 (BSS) Introduction to Microeconomics (F,Sp,Su).....	3
ECN 3400 (DSS) International Economics for Business (F,Sp,Su).....	3
ECN 4010 Intermediate Microeconomics (Sp).....	3
ECN 4020 Intermediate Macroeconomics (F).....	3
ECN 4310 (QI) Mathematical Methods for Economics (F).....	3
ECN 5100 History of Economic Thought (Sp).....	3
ECN 5330 (QI) Applied Econometrics (Sp).....	3
ECN 5950 (CI) Senior Project (Sp).....	3

MATH 1050 (QL) College Algebra (F,Sp,Su).....	4
MATH 1100 (QL)¹ Calculus Techniques (F,Sp,Su).....	3
STAT 2300 (QL) Business Statistics (F,Sp,Su).....	4
ECN electives (3000-level or above) ²	12

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
ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su).....	3
ECN 2010 (BSS) Introduction to Microeconomics (F,Sp,Su).....	3
ECN 3010 (DSS) Managerial Economics (F,Sp).....	3
ECN 3400 (DSS) International Economics for Business (F,Sp,Su).....	3
ECN 4020 Intermediate Macroeconomics (F,Sp).....	3
ECN 4310 (QI) Mathematical Methods for Economics (F).....	3
ECN 5330 (QI) Applied Econometrics (Sp).....	3
ECN 5950 (CI) Senior Project (Sp).....	3
FIN 3400 (QI) Corporate Finance (F,Sp,Su).....	3
MATH 1050 (QL) College Algebra (F,Sp,Su).....	4
MATH 1100 (QL)¹ Calculus Techniques (F,Sp,Su).....	3
MGT 2050 Legal and Ethical Environment of Business (F,Sp,Su).....	3
MGT 3110 (DSS) Managing Organizations and People (F,Sp,Su).....	3
MGT 3500 Fundamentals of Marketing (F,Sp,Su).....	3
MGT 3700 Operations Management (F,Sp,Su).....	3
MIS 2100 Principles of Management Information Systems (F,Sp,Su).....	3
MIS 2200 (CI) Business Communication (F,Sp,Su).....	3
STAT 2300 (QL) Business Statistics (F,Sp,Su).....	4
ECN electives (3000-level and above) ²	6

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):

ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su).....	3
ECN 2010 (BSS) Introduction to Microeconomics (F,Sp,Su).....	3
ECN 3170 Law and Economics (F) (3 cr) or	
POLS 3170 Law and Economics (F) (3 cr).....	3
ECN 3010 (DSS) Managerial Economics (F,Sp) (3 cr) or	
ECN 4010 Intermediate Microeconomics (Sp) (3 cr).....	3
ECN 3400 (DSS) International Economics for Business (F,Sp,Su).....	3
ECN 4020 Intermediate Macroeconomics (F,Sp).....	3
ECN 5950 (CI) Senior Project (Sp).....	3
MATH 1050 (QL) College Algebra (F,Sp,Su).....	4
MATH 1100 (QL)¹ 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
ECN electives (3000-level or above) ²	6
POLS electives (3000-level or above).....	3

Department of Economics and Finance

Finance Major

Finance is concerned with how individuals and firms allocate resources over time. Solutions to allocation problems rely upon the existence of capital markets that allow the exchange of resources over time, and firms that allow individuals to transform current resources into resources available in the future. In particular, finance deals with the financial management of firms, investment management, and the management of financial institutions. Before continuing with the following courses, students must receive a grade of *B-* or better in FIN 3400.

Required Courses (12 credits)

ECN 3010 Managerial Economics (F,Sp).....	3
ECN 4020 Intermediate Macroeconomics (F,Sp).....	3
FIN 4450 Financial Policy (F,Sp).....	3
FIN 4460 Investments (F,Sp).....	3

Electives (9 credits)

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

FIN 4300 International Finance (F,Sp).....	3
FIN 4410 Financial Institutions (F,Sp).....	3
FIN 4420 Insurance (F).....	3
FIN 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
ECN 5330 (QI) Applied Econometrics (Sp).....	3
ECN 5600 Financial Economics (Sp).....	3
MGT 3080 (QI) Operations Research (F,Sp).....	3
PFP 5060 Personal Financial Planning and Advising (F).....	3
PFP 5070 Retirement Planning (Sp).....	3
PFP 5080 Estate Planning (Sp).....	3

Minor Requirements

Economics Minor

ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su).....	3
ECN 2010 (BSS) Introduction to Microeconomics (F,Sp,Su).....	3
ECN 3010 (DSS) Managerial Economics (F,Sp) (3 cr) or	
ECN 4010 Intermediate Microeconomics (Sp) (3 cr).....	3
ECN electives (3000-level or above) ²	6

¹The regular calculus series (MATH 1210 and 1220) is recommended for students contemplating graduate studies in economics. MATH 1210 will fulfill the MATH 1100 requirement.

²For a list of acceptable electives, students should contact their advisor.

Finance Minor

Required Courses (12 credits)

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

Elective Course (3 credits)

Select one of the following courses:

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

Business Minor

A Business Minor is administered by the Huntsman School of Business. For further information, students should contact the Huntsman School of Business Programs and Advising Center, Business 309, (435) 797-2272.

Four-year Degree Plans (8 semesters)

Four-year degree plans for majors offered by the Department of Economics and Finance can be found at:

<http://www.usu.edu/degreeplans/>

Students will need to meet with their advisor periodically to ensure all requirements are being met.

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@usu.edu. Additional information can be found online at: <http://honors.usu.edu/>

Financial Support

The Department of Economics and Finance and the Huntsman School 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 and Finance, see the major requirement sheet, available from the department, or accessed online at: <http://www.usu.edu/majorsheets/>

Graduate Programs

The MA and MS in Economics are offered by the Department of Economics and Finance. The MBA is offered through the Huntsman School of Business.

Department of Economics and Finance

Objectives

Economics graduate training emphasizes economic theory, critical thinking, and quantitative analysis.

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.

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). 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

Master of Science and Master of Arts in Economics

Students are required to complete the first-year core (ECN 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 Huntsman School 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 194-195) and 9 specialization credits. These specialization credits should be coordinated with the MBA Program director.

Research

The Department of Economics and Finance 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 Huntsman School of 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 of Economics and Finance 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.

Economics and Finance Faculty

Professors

Basudeb Biswas, international trade and economic development

Tyler J. Bowles, Department Head; econometrics and forensic economics

Drew Dahl, financial institutions and international finance

Christopher Fawson, public finance and econometrics

Terrence F. Glover, production economics and policy

L. Dwight Israelsen, comparative systems and economic history

W. Cris Lewis, regional-urban and managerial economics

J. Robert Malko, corporate and energy utility finance

H. Craig Petersen, regulation and antitrust and managerial economics

Randy T. Simmons, public choice, political economy

Associate Professors

John P. Gilbert, international trade theory and policy, applied general equilibrium modeling, development economics

Austin Kwag, financial policy, investments, corporate finance

Alan A. Stephens, corporate finance and investments

Assistant Professor

Frank N. Caliendo, macroeconomics and public economics

Clinical Assistant Professor

Shannon Peterson, international policy and relations

Adjunct Lecturers

Steven R. Broadbent

Paul Fjelsted

Kent Hauetter

Instructor

Doug Romrell

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

Philip R. Swensen

Morris D. Whitaker

Associate Professor Emeritus

Glenn F. Marston

Course Descriptions

Economics (ECN), pages 545-546

Finance (FIN), pages 565-566

Education, Interdepartmental Doctoral Program in Curriculum and Instruction

Director, Curriculum and Instruction Doctoral Program:

Deborah A. Byrnes, Associate Department Head,
School of Teacher Education and Leadership

Location: Emma Eccles Jones Education 399

Phone: (435) 797-0396

FAX: (435) 797-0372

E-mail: deborah.byrnes@usu.edu

WWW: <http://teal.usu.edu/hm/graduate-programs/>

Faculty: Faculty are listed with participating programs and departments (e.g., Elementary Education Program, Secondary Education Program, Engineering and Technology Education Department, and Agricultural Systems Technology and Education Department)

Degrees offered: Doctorate of Education (EdD) and Doctorate of Philosophy (PhD)

Graduate specialization: PhD or EdD—Curriculum and Instruction

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; or visit: <http://www.usu.edu/graduateschool/>

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. A copy of 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.
6. A statement of specific reasons for wanting to enroll in the Curriculum and Instruction doctoral program. This essay is completed as part of the School of Graduate Studies online application.

Applicants to the Curriculum and Instruction PhD and EdD degrees must have the equivalent of two years of appropriate teaching experience.

General Information About Doctorate in Curriculum and Instruction (C & I)

Both the **Doctorate of Education (EdD)** and the **Doctorate of Philosophy (PhD)** degrees are offered through the School of Teacher Education and Leadership (TEAL) in the Emma Eccles Jones College of Education and Human Services (CEHS). The C & I specialization prepares graduates for leadership, teaching, and research positions in curriculum and instruction.

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. Areas of emphasis within the EdD include early childhood; engineering and technology education; instructional leadership; literacy; and schooling, culture, and society. 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. Areas of emphasis are more flexible within the Curriculum and Instruction PhD program and are developed by each student with his or her doctoral committee.

Planned Program

To complete a doctorate degree (PhD or EdD), 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 Curriculum and Instruction Program of Studies Core (12-15 semester credits) and a Research and Statistics Core (12 semester credits).
2. Complete a planned program of supporting electives, as 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 the Curriculum and Instruction specialization, the Emma Eccles Jones 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 (PhD)

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.

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 111-112).

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.

Emma Eccles Jones College of Education and Human Services Courses

Education courses are listed under the EDUC prefix, pages 546-547

Department of Electrical and Computer Engineering

Department Head: Todd K. Moon
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:

YangQuan Chen, Engineering Laboratory 216, (435) 797-0148,
yqchen@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 Engineering 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 132-133). 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 131), *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 (32-33 credits)

Fall Semester (16 credits)

MATH 2210 (QI)* Multivariable Calculus.....	3
MATH 2270 (QI)* Linear Algebra.....	3
PHYS 2220 (BPS/QI)* General Physics— Science and Engineering II.....	4
University Studies Breadth courses.....	6

Spring Semester (16-17 credits)

MATH 2280 (QI)* Ordinary Differential Equations.....	3
ECE 2250* Electrical Circuits.....	4
ENGL 2010 (CL2)* Intermediate Writing: Research Writing in a Persuasive Mode.....	3
Technical Elective course.....	3-4
University Studies Breadth 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 (33-34 credits)¹

Fall Semester (17 credits)

ECE 3620 Circuits and Signals.....	3
ECE 3710 Microcomputer Hardware and Software.....	4
ECE 3810** Engineering Professionalism.....	1
ECE 5530 Digital System Design.....	3
ENGL 3080 (CI)** Introduction to Technical Communication.....	3
MATH 5710 Introduction to Probability.....	3

Spring Semester (16-17 credits)

ECE 3410 Microelectronics I.....	4
ECE 3640 Signals and Systems.....	3
ECE 3870 Electromagnetics I.....	4
Math/Science elective course.....	3
University Studies Depth Humanities and Creative Arts (DHA) course.....	2-3

Senior Year (29-30 credits)

Fall Semester (15 credits)

ECE elective courses.....	15
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Spring Semester (14-15 credits)

ECE 4850 (CI)*** Engineering Communications.....	2
ECE elective courses.....	6
University Studies Depth Social Sciences (DSS) course.....	3
ECE Capstone course***.....	3-4

¹Some 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.

**ENGL 3080 and ECE 3810 must be taken concurrently.

***ECE 4850 and a capstone course must be taken during the same semester.

Capstone Courses (select 3-4 credits)

ECE 4840 (CI) Engineering Design (F,Sp).....	3
ECE 5240 Space System Design (Sp).....	3
ECE 5340 Mobile Robots (F).....	4
ECE 5770 Microcomputer Interfacing (Sp).....	4
ECE 5930 ST: Optical Systems (F).....	3
ECE 5930 ST: Digital Radio (ECE 5660 or 5810 should be taken concurrently) (Sp).....	3

Department of Electrical and Computer Engineering

Technical Elective Courses (select 28 or more credits)

Electrical Engineering Electives (select 21-25 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.

Math and Science Electives (select 3-7 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 (F)	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 5510	Introduction to Topology (Alt 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 3710	Intermediate Modern Physics	3
PHYS 3750	Foundations of Wave Phenomena	3
PHYS 4550	Advanced Classical Mechanics	3
PHYS 4600	Advanced Electromagnetism	3
PHYS 4650 ⁴	Optics I	3
PHYS 4680 ⁴	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 0-4 credits)

CS 2420 (QI)	Algorithms and Data Structures—CS 3 (F,Sp,Su)	3
CS 2450 (CI)	Introduction to Software Engineering I (Sp)	3
CS 2810	Computer Systems Organization and Architecture I (F,Sp)	3
CS 3100	Operating Systems and Concurrency (F,Sp)	3
CS 3450	Introduction to Software Engineering II (F)	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 (Sp)	3
CS 5400	Computer Graphics I (Sp)	4
CS 5450	Multimedia Systems (Sp)	4
CS 5500	Parallel Programming (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 4250	Internship/Co-op (F,Sp,Su)	3
ENGR 2010 ²	Engineering Mechanics Statics (F,Sp)	2
ENGR 2030	Engineering Mechanics Dynamics (F,Sp,Su)	3
ENGR 2140	Strength of Materials (F,Sp,Su)	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

²Students cannot receive credit for both Engineering Mechanics and Analytical Mechanics.

³Students cannot receive credit for both Engineering Thermodynamics and Thermal Physics.

⁴Students 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*	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 (31-32 credits)

Fall Semester (16 credits)

ENGL 2010 (CL2)*	Intermediate Writing: Research Writing in a Persuasive Mode	3
CS 2420 (QI)*	Algorithms and Data Structures—CS 3	3
MATH 2270 (QI)*	Linear Algebra	3
PHYS 2220 (BPS/QI)*	General Physics—Science and Engineering II	4
University Studies Breadth course		3

Spring Semester (15-16 credits)

MATH 2280 (QI)*	Ordinary Differential Equations	3
MATH 3310	Discrete Mathematics	3
ECE 2250*	Electrical Circuits	4
Technical Elective course		2-3
University Studies Breadth course		3

⁵Students 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.

Department of Electrical and Computer Engineering

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 (33 credits)⁶

Fall Semester (17 credits)

CS 3100 Operating Systems and Concurrency.....	3
ECE 3620 Circuits and Signals	3
ECE 3710 Microcomputer Hardware and Software.....	4
ECE 3810** Engineering Professionalism.....	1
ECE 5530 Digital System Design	3
ENGL 3080 (CI)** Introduction to Technical Communication	3

Spring Semester (16 credits)

ECE 3410 Microelectronics I	4
ECE 3640 Signals and Systems.....	3
ECE 3720 Microcomputer Systems Programming.....	3
MATH 5710 Introduction to Probability.....	3
University Studies Breadth course	3

Senior Year (30-33 credits)

Fall Semester (16-17 credits)

ECE 4740 Computer and Data Communications	3
High-Level Technical Elective course	4
Computer Science elective course.....	4
Computer Engineering elective course.....	3
University Studies Depth Humanities and Creative Arts (DHA) course.....	2-3

Spring Semester (14-16 credits)

ECE 4850 (CI)** Engineering Communications	2
High-Level Technical Elective course	3-4
Math/Science elective course.....	3
University Studies Depth Social Sciences (DSS) course	3
ECE Capstone course***	3-4

⁶Some 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.

**ENGL 3080 and ECE 3810 must be taken concurrently.

***ECE 4850 and a capstone course must be taken during the same semester.

Capstone Courses (select 3-4 credits)

ECE 4840 (CI) Engineering Design (F,Sp).....	3
ECE 5240 Space System Design (Sp).....	3
ECE 5340 Mobile Robots (F).....	4
ECE 5770 Microcomputer Interfacing (Sp).....	4
ECE 5930 ST: Optical Systems (F)	3
ECE 5930 ST: Digital Radio (ECE 5660 or 5810 should be taken concurrently) (Sp).....	3

High-Level Technical Elective Courses

(select 14-17 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 20 or more credits)

Computer Engineering Electives (select 3-13 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 4-14 credits)

CS 5100 Graphical User Interfaces and Windows Programming (Sp).....	4
CS 5200 Distributed and Network Programming (F).....	4
CS 5400 Computer Graphics I (Sp).....	4

Math and Science Electives (select 3-6 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 (F)	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 5510 Introduction to Topology (Alt 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 3710 Intermediate Modern 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 0-3 credits)

CS 2450 (CI) Introduction to Software Engineering I (Sp).....	3
CS 3450 Introduction to Software Engineering II (F).....	3
CS 2810 Computer Systems Organization and Architecture I (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

Department of Electrical and Computer Engineering

ENGR 2010 Engineering Mechanics Statics (F,Sp)	2
ENGR 2030 Engineering Mechanics Dynamics (F,Sp,Su).....	3
ENGR 2140 Strength of Materials (F,Sp,Su).....	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.

⁷Students cannot receive credit for both Engineering Mechanics *and* Physics Mechanics.

⁸Students cannot receive credit for both Engineering Thermodynamics *and* Physics Thermodynamics.

⁹Students 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, 5570, and 5580, are also required.

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 PHYS 2500, 2710, and/or PHYS courses at the 3000 level and above (*not* to include PHYS courses designated as USU Depth courses).

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. At least 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 242).

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 of 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@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 133-134.)

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/>

Department of Electrical and Computer Engineering

Graduate Programs

Admission Requirements

See general admission requirements on pages 36-37. 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 may 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 (excluding thesis and ECE 6800 seminar) 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 15 credits of ECE 5000-level courses, Independent Study courses, or non-ECE courses may be applied toward the MS in Electrical Engineering 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 15 credits of ECE 5000-level courses or CS 5000-level courses, or non-ECE/CS courses, or Independent Study courses may be applied toward the MS in Computer Engineering degree.

Master of Engineering (Electrical Engineering or Computer Engineering Specialization)

To obtain the specialization in Electrical Engineering or Computer Engineering, at least 9 credits of ECE coursework must be taken in the desired specialization area.

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. No more than 15 credits of ECE 5000-level or Independent Study courses may be applied toward the ME degree.
5. At least 3 credits of Professional Experience (ECE 6250 Internship or a lab-intensive course) are required. Only 3 credits of ECE 6250 Internship are allowed and must have prior approval.
6. 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 of coursework beyond the requirements for a BS degree; *or* to complete at least 21 credits of coursework 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

Department of Electrical and Computer Engineering

MS degree, and allowing 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. Information Dynamics Laboratory (IDL)
3. Space Dynamics Laboratory (SDL)
4. Anderson Center for Wireless Teaching and Research
5. Rocky Mountain NASA Space Grant
6. Center for Advanced Imagery LADAR (CAIL)
7. Micron Research Center
8. CHAMP

Research activities include: robotics, control systems, digital system design, computer networks, concurrent systems, antennas, space systems, image processing, digital signal processing, wireless communications, acoustics, electromagnetic compatibility, and LADAR systems.

Financial Assistance

All applicants who are accepted academically are automatically considered for financial aid. 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
H. Scott Hinton, photonic switching
Todd K. Moon, communications and signal processing
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

Associate Professors

Scott E. Budge, signal processing, image processing
YangQuan Chen, control systems
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
Bedri Cetiner, microwaves, electromagnetics
Koushik Chakraborty, computer engineering
Aravind Dasu, computer engineering
Brandon K. Eames, computer engineering
Wei Ren, controls
Sanghamitra Roy, computer engineering
Edmund Spencer, space science and engineering
Chris Winstead, analog VLSI

Principal Lecturers

Fon R. Brown, networking
Donald L. Cripps, control systems, robotics

Research Assistant Professor

Hui Fang Dou, precision instruments, mechatronics

Adjunct Assistant Professor

Patric L. Patterson, space research

Adjunct Research Assistant Professor

Randy J. Jost, electromagnetic fields, solid state, microwaves

Course Descriptions

Electrical and Computer Engineering (ECE), pages 541-544

Elementary Education Program, School of Teacher Education and Leadership

Associate Dean/Department Head of School of Teacher Education and Leadership: Martha T. Dever

Location: Emma Eccles Jones Education 385A

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E-mail: teal@usu.edu

WWW: <http://www.teal.usu.edu/htm/eled>

Associate Department Head, Doctoral Program:

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deborah.byrnes@usu.edu

Associate Department Head, Elementary Education Program:

Parker C. Fawson, Edith Bowen Laboratory School 235,
(435) 797-0866, parker.fawson@usu.edu

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Director of Advising:

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Undergraduate Advisors:

Shannon M. Burgin, Coordinator of Recruitment, Education 377,
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Chad Downs, Education 378, (435) 797-3397,
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Shelly Wiegand, Education 375, (435) 797-0383,
shelly.wiegand@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; Kindergarten through Grade 6 (K-6) Licensure Program. The School of TEAL administers the Doctor of Education (EdD) and Doctor of Philosophy (PhD) programs, with a 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 Elementary Education Program 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 program 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 Elementary Education Program at Utah State University offers nine 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) Elementary Education K-6 (kindergarten through grade 6); (4) Elementary and Early Childhood Education (preschool through grade 6); (5) Composite Elementary Education/Special Education—Mild/Moderate (grades 1 through 6, K through 6, and Special Education grades kindergarten through 12); (6) Composite Elementary Education/Special Education—Severe (grades 1 through 6, K through 6, and Special Education grades kindergarten through 12); (7) Composite Early Childhood Education/Special Education—Early Childhood (preschool through grade 3, and Special Education birth through age 5); (8) Composite Elementary Education/Deaf Education (grades 1-6, K through 6, and Master's in Deaf Education); (9) 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 Emma Eccles Jones College of Education and Human Services, (435) 797-2714, francine.johnson@usu.edu.

Assessment

To review Elementary Education Program assessment information, visit: <http://www.teal.usu.edu/htm/eled/assessment/>

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 these courses.)

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 (18-19 credits)

Choose one course from the following to meet the BAI requirement:
ECN 1500, HIST 2700, 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

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Choose one course from the following to meet the BLS requirement:
BIOL 1010, NFS 1020, PLSC 2100, USU 1350, WATS 1200,
WILD 2200 3

Choose one course from the following to meet the BPS requirement:
CHEM 1010, CLIM 2000, GEO 1010, GEO 1110, GEOG 1000,
PHYS 1040, SOIL 2000, USU 1360 3

Exploration Requirement (3-4 credits)

Students in the Elementary and Early Childhood Education majors should fulfill this requirement by completing PHYS 1200 (BPS).

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 (4 credits minimum)

Complete at least 4 credits in approved University Studies depth courses designated DSC, DHA, or DSS (outside of area of emphasis).

¹Prerequisite: MATH 1050, Math ACT score of 25 or higher, or Math SAT score of 580 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 Emma Eccles Jones 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 and Learning Sciences who work in conjunction with the Elementary Education Program. 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 includes the first-level course (ELED 1010) introducing the teacher training program at USU, exploring teaching as a career field (with emphasis on the INTASC standards), and emphasizing the student's self-assessment in relation to his or her ability and desire to teach. A minimum of 15 hours is spent observing in an elementary or middle school classroom, completing volunteer service in other community settings, and participating in personal development activities. In addition, a human growth and development course (FCHD 1500) 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 or who have a vested interest in the education community. During the Level II semester, students take interdisciplinary coursework in the social foundations of education, educational psychology, special education, instructional technology, and their first course in teaching reading. Additionally, they are assigned as teacher assistants in elementary school classrooms. Entrance to Level II requires prior admission to the Teacher Education Program.

Level III, Disciplines, is represented by the "D" in the acronym SODIA. This stands for the disciplines that comprise the elementary curriculum. During the Level III semester, students take 16 credits of methods coursework, including reading, social studies, language arts, mathematics, science, and classroom management. Students apply what they have learned in this coursework during a five-week practicum.

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.

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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 Emma Eccles Jones College of Education and Human Services. An advisor will be assigned from the Elementary Education Program. Programs of professional education courses, as well as teaching support courses and an area of emphasis, have been developed by the Elementary Education Program 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 Program website: <http://www.teal.usu.edu/htm/eled/>

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.

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 Elementary Education Program.

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 Elementary Education Program.

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) 3
ELED 3100² Classroom Reading Instruction (F,Sp,Su) 3

²ELED 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,Su) 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,Sp) 3
ELED 4480 Early Childhood Education Kindergarten through Grade 3 (F,Sp)..... 3
ELED 4710 Diversity in Education (F,Sp)..... 3
ENGL 3530 Children's Literature (Sp)..... 3
ENVS 5110 Environmental Education (Sp) 3
FCHD 2610 Child Guidance (F,Sp) 3
TEAL 4730 Educational Linguistics (F) 3
TEAL 4745 Second Language Acquisition in the Classroom (Sp)..... 3
THEA 4030 (DHA) Storytelling (F,Sp,Su)..... 3
THEA 4330 Drama and Theatre for Youth: Grades K-6 (F,Sp,Su) 3

Elementary Education Program, School of Teacher Education and Leadership

Emphasis (12 credits) (C- or better required)

Available Emphasis areas are shown below. For a listing of required and recommended courses, students should contact their advisor.

Early Childhood Education Major (80 credits) or Elementary Education K-6 Licensure Program (79 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 ³ Preschool Methods and Curriculum (F,Sp)	3
ELED 4480 ³ 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 for Early Child. Educ. or 23 credits for K-6) (taken during two semesters)

ELED 5050 ⁴ Student Teaching—Kindergarten (F,Sp)	6
ELED 5100 ⁴ Student Teaching—Primary Grades (1-3) (F,Sp) (for Early Childhood Education majors) (6 cr) or	6
ELED 5150 ⁴ Student Teaching—Elementary (Grades 4-6) (F,Sp) (for Dual majors) (6 cr)	6
ELED 5250 ⁴ Student Teaching—Seminar: Classroom Management (F,Sp)	3
FCHD 4960 ⁵ Practice Teaching in Child Development Laboratories (F,Sp)	3 (for K-6) or 6 (for Early Child. Educ.)
MUSC 3260 Elementary School Music (F,Sp,Su) (required for K-6 program <i>only</i>)	(2)
PEP 3050 Physical Education in the Elementary School (F,Sp,Su) (required for K-6 program <i>only</i>)	(3)

³Level II must be completed prior to taking this course.

⁴Level III and ELED 4480 must be completed prior to taking this course.

⁵FCHD 4550 must be completed prior to taking this course.

Emphasis (9 credits for Elementary Education K-6 Licensure Program, 12 credits for Early Childhood Education Major) (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 or Early Childhood Education must complete an area of Emphasis consisting of 9-12 credits. (For the K-6 Licensure Program 9 credits are required, while 12 credits are required for all other programs.) 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.

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

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Level IV (15 credits) (taken during fall or spring semester)

ELED 5100 Student Teaching—Primary Grades (1-3) (6 cr) or	
ELED 5150 Student Teaching—Elementary (Grades 4-6) (6 cr).....	6
SPED 5210 (CI) ⁶ Student Teaching in Special Education:	
Dual Majors	6
ELED 5250 Student Teaching—Seminar: Classroom Management.....	3

⁶Students 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) ⁷ Sign Language I (F,Sp,Su)	4
HEP 2000 ⁷ First Aid and Emergency Care (F,Sp,Su).....	2

⁷Required 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

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 (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

Transition (11 credits)

SPED 4000 Education of Exceptional Individuals (F,Sp,Su)	2
SPED 5530 Technology for Teaching Exceptional Learners (Sp <i>only</i>)..	3
FCHD 4550 ⁸ Preschool Methods and Curriculum (F,Sp)	3
ELED 4480 ⁸ 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.....	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 ⁹ Student Teaching—Seminar: Classroom Management....	3
ELED 5050 ⁹ Student Teaching—Kindergarten.....	3
ELED 5100 ⁹ Student Teaching Primary Grades (1-3)	6
SPED 5210 (CI) ⁹ Student Teaching in Special Education:	
Dual Majors	6
FCHD 4960 ¹⁰ Practice Teaching in Child Development Laboratories ...	3

⁸Level II must be completed prior to taking this course.

⁹Level III, Special Education major, and ELED 4480 must be completed prior to taking this course.

¹⁰FCHD 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

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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

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 (50 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	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 ¹¹ Preschool Methods and Curriculum	3
ELED 4480 ¹¹ Early Childhood Education Kindergarten through Grade 3	3

Elementary Education Program, School of Teacher Education and Leadership

Level III (courses taken concurrently during fall, spring, or summer semester) (19 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
FCHD 4960 Practice Teaching in Child Development Laboratories	3

¹¹Level 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

Endorsements

The USU Elementary Education Program and Secondary Education Program jointly offer a K-12 English as a Second Language (ESL) Endorsement, as well as a Middle-Level Math Endorsement. Graduate endorsements are also available in Early Childhood Education, ESL, Reading, Gifted and Talented, and Middle-Level Education.

Suggested Four-year Plans

Suggested semester-by-semester four-year plans for students working toward bachelor's degrees within the Elementary Education Program of the School of TEAL can be found at:

<http://www.usu.edu/degreeplans/>

These plans are models of the requirements and possible sequences of courses. However, students may progress through their 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.

Students should consult with their advisor to develop a plan of study tailored to their individual circumstances.

Departmental Honors

Students having majors within the Elementary Education Program 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 Elementary Education Program, 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 Program 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 Program 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 doctorate program. Students with deficient oral or written English skills will be required to complete additional coursework to improve their skills.

Elementary Education Program, School of Teacher Education and Leadership

Admission to graduate programs is contingent upon (1) completion of an application to graduate school and (2) recommendation by the School of TEAL 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 36-37), 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 School of TEAL 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 School of TEAL 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 School of TEAL 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 TEAL 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 School of TEAL 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 School of TEAL 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 School of TEAL at Utah State University primarily through offerings at USU Distance 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 TEAL 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 Elementary Education Program 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 School of TEAL 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 Elementary Education Program 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 School of TEAL administers the Doctoral Program in Education, which includes the Doctor of Philosophy (PhD) and the Doctor of Education (EdD). For information about admission requirements, procedures to follow, and research sponsored, as well as other information, see pages 234-235 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 distance education centers: Uintah Basin Campus (Vernal and Roosevelt), Moab Center, Price Center, and Blanding Center.

The Program of Study form for the appropriate degree and plan described above should be approved by the committee and submitted to the School of Graduate Studies *at least two months prior to the oral exam, oral review, or presentation appropriate to that degree.*

After matriculation into the program, a master's degree must be completed within a six-year time period. Pass/fail grades will be accepted only for seminars, special problems, interdisciplinary workshops, thesis or dissertation research, and continuing graduate advisement. A maximum of 8 workshop credits may be included. Transfer credit accepted toward a degree is normally limited to 6 credits; however, with prior approval, 12 transfer credits may be accepted. A maximum of 15 credits taken during one summer may be counted toward the degree. A maximum of 12 credits taken before admission to the program may be counted toward the degree. All coursework in a student's area of specialization must be taken at the 6000 level or above, in order to be applied toward a graduate degree in the School of TEAL. 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 School of TEAL 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 School of TEAL. 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 School of TEAL to cover specific teaching assignments and by the faculty to provide for research.

Doctoral students desiring information about financial assistance should write to: Deborah A. Byrnes, Associate TEAL Department Head for Doctoral Program, Emma Eccles Jones 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 Program Faculty

Emma Eccles Jones Distinguished Professor
D. Ray Reutzell, reading

Professors

Deborah A. Byrnes, Associate Department Head for Doctoral Program; social studies education, early childhood education
Martha T. Dever, Department Head; foundations, early childhood education
James T. Dorward, Associate Dean for Research; mathematics, program evaluation
Patricia Moyer-Packenham, mathematics education

Associate Professors

Parker C. Fawson, Associate Department Head for Elementary Education Program; reading
Michael K. Freeman, Associate Dean for Education Outreach; educational leadership
Scott L. Hunsaker, gifted/talented education, foundations
Francine Fukui Johnson, Associate Dean for Teacher Education, Graduation, and Licensure; foundations, gifted/talented education, supervision
Rebecca M. Monhardt, science education
Martha L. Whitaker, Associate Department Head for Secondary Education; foundations

Clinical Associate Professor

Steven Laing, Coordinator of Administrative/Supervisory Certificate Program

Assistant Professors

Steve Camicia, social studies
Cindy Jones, literacy
Sylvia Read, language arts education
Cinthya Saavedra, Coordinator of English-as-a-second-language Education

Elementary Education Program, School of Teacher Education and Leadership

Clinical Assistant Professors

Barbara DeBoer, early childhood education
Richard Rhees, Coordinator of Teacher Education Accreditation
Council (TEAC)

Senior Lecturer

Eric Packenham, science education

Lecturers

Dorothy Dobson, social studies
Judy Greene, language arts/foundations

Temporary Lecturers

Janet Adams
Chad Downs, advisor; generalist
Kristen Whoolery

RCDE Faculty

James J. Barta, Associate Department Head for RCDE;
associate professor; mathematics, early childhood education
Amy Brown, assistant professor—Tooele
Laura Foley, assistant professor—Uintah Basin/Vernal
Amy Morris, assistant professor—Price
Gary Ockey, assistant professor—Ephraim
Jennifer Peterson, assistant professor—Brigham City
Janey Stoddard, RCDE Advising Coordinator

Elementary Education Student Teaching Director

Vesna Jenkins

Course Descriptions

Elementary Education (ELED), pages 547-548
Teacher Education and Leadership (TEAL), pages 667-671

Department of Engineering and Technology Education

Department Head: Kurt Becker
Location: Industrial Science 112E
Phone: (435) 797-1795
FAX: (435) 797-2567
E-mail: kurt.becker@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

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, Doctor of Philosophy (PhD) in Engineering Education

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** program 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 for incoming freshmen are commensurate with those outlined for the University. See pages 30-35 in this catalog.

For the **Aviation Technology—Maintenance Management** and **Aviation Technology—Professional Pilot** majors, transfer students from other institutions need a 2.5 total GPA for admission in good standing. Students transferring from other USU majors need a total GPA of 2.4 in major courses for admission to these majors in good standing. A cumulative GPA of 2.5 must be maintained.

For the **Engineering and Technology Education** major, transfer students from other institutions need a 2.75 total GPA for admission in good standing. Students transferring from other USU majors need a total GPA of 2.75 for admission to this major in good standing.

Graduation Requirements for Aviation Technology Majors (Professional Pilot and Maintenance Management)

A student can repeat no more than six of the required courses in order to satisfy the graduation requirements. Multiple repeats of the same course are included in the total of six repeats. Audits count as a time taking a class unless prior written approval is obtained from a college academic advisor.

Although transfer credit accepted by the department and the college may be applied toward graduation requirements, the grades received will not be used in the USU GPA calculation.

For all aviation technology majors, the following academic regulations apply in addition to University regulations:

1. A minimum GPA of 2.4 must be maintained in technology/math/science/business courses required for, or used as technical electives in, the chosen major. University Studies courses are not included in this GPA calculation.
2. No more than 6 credits 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 six required or elective courses can be repeated in order to meet graduation requirements.
4. The *P-D-F* grading option may not be used in required or elective courses. (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 have a registration hold placed on their record.
 - a. Students will be placed on probation (registration hold) if they (i) have more than 6 credits of *D* credit (see item 2 above); or (ii) have a GPA of less than 2.4 (see item 1 above).
 - b. The hold remains until they improve their standing by repeating classes to reduce the number of *D* credits to 6 or less, and/or by raising their GPA above 2.4. Students must meet with their advisor to have the hold removed.

The student must meet with a college academic advisor at least once each semester to work out a schedule having the primary goal of correcting the existing academic problems.

Department of Engineering and Technology Education

Bachelor of Science in Engineering and Technology Education (124-125 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 (Emma Eccles Jones College of Education and Human Services).

The Department of Engineering and Technology Education is partnered with Project Lead the Way (PLTW) and provides pre-service training for students to become qualified to teach selected PLTW courses. PLTW is a national program that has developed a curriculum introducing students to the scope, rigor, and discipline of engineering prior to entering college. Students opting to become qualified to teach selected PLTW courses must include MATH 1100 in their program of study, as well as an additional science course with a laboratory experience.

The suggested semester schedule is as follows:

Freshman Year (32 credits)

Fall Semester (17 credits)

ETE 1000	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 American Institutions (BAI) course.....	3

Sophomore Year (31-32 credits)

Fall Semester (15-16 credits)

Note: Students should apply to the Secondary Teacher Education Program (STEP) *early* (see advisor).

ETE 2030	Wood-Based Manufacturing Systems.....	3
ETE 2220	Civil Engineering and Architecture.....	3
	University Studies Breadth Humanities (BHU) course.....	3
	Elective course(s).....	3
	Exploration Requirement course.....	3-4

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 Creative Arts (BCA) and Breadth Social Sciences (BSS) courses.....	6

Spring Semester (17 credits)

ETE 2020	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 2660	Principles of Engineering Education.....	3
ETE 3050	Computer Systems and Networking.....	3
ETE 5220 (CI)	Program and Course Development.....	3
	University Studies Depth Humanities and Creative Arts (DHA) course.....	3
	Elective course(s).....	4

Project Lead The Way (PLTW) Option (7-8 credits)

Required Course (3 credits)

MATH 1100 (QL) ⁶	Calculus Techniques (F,Sp,Su).....	3
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Additional Science Course(s) with Laboratory Experience (4-5 credits)

In addition to completing MATH 1100, students must also complete one of the following three science options, as shown below.

CHEM 1110 (BPS) ⁶	General Chemistry I (F,Sp) (4 cr) and	
CHEM 1115	General Chemistry Laboratory (F,Sp) (1 cr).....	5

Or

BIOL 1010 (BLS)	Biology and the Citizen (F,Sp,Su) (3 cr) and	
BIOL 1020	Biological Discovery: A Lab Course (F,Sp) (1 cr).....	4

Or

PHYS 2110	The Physics of Living Systems I.....	4
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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 ¹	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

Department of Engineering and Technology Education

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.

¹The INST 3500 requirement has been waived. However, INST 4500 is recommended.
²This course is included in the Secondary Education Licensure Requirements. Prior to enrolling in this course, students must be admitted to the STEP.
³Students must maintain a cumulative 2.75 GPA for admission to the Emma Eccles Jones College of Education and Human Services, for student teaching, and to receive secondary education licensure.
⁴A 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.
⁵PHYS 1800 fulfills the University Studies Breadth Physical Sciences (BPS) requirement. SCED 3210 fulfills the University Studies Depth Social Sciences (DSS) requirement.
⁶MATH 1050 is a prerequisite for these courses.
⁷PHYS 1800 needs to be completed during the sophomore year.

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 Flight Principles.....	2
AV 1140 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) ⁹ College Algebra	4
University Studies Breadth American Institutions (BAI) course ^{11,12}	3

Spring Semester (15 credits)

AV 1240 Aircraft Maintenance	3
AV 2170 Aircraft Systems	2
AV 2190 Aircraft Systems Lab	1
ETE 1030 ¹¹ Material Processing Systems	3
ETE 2300 (QI) ⁹ Electronic Fundamentals	4
MATH 1060 Trigonometry	2

Sophomore Year (32 credits)⁸

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) ^{11,12} Introduction to Writing: Academic Prose	3
MATH 1100 (QL) ^{11,12,14} Calculus Techniques.....	3

Spring Semester (17 credits)

AV 1100 ¹¹ The Aviation Profession	1
AV 2140 Aircraft Turbine Powerplants and Maintenance Operations....	3
AV 2150 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) ^{11,12} Intermediate Writing: Research Writing in a Persuasive Mode.....	3
University Studies Breadth Life Sciences (BLS) 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
MGT 3110 (DSS) ^{10,11,12,14} Managing Organizations and People	3
PHYS 1800 (BPS) ¹⁴ Physics of Technology	4
University Studies Breadth Humanities (BHU) course ^{11,12}	3

Senior Year (31 credits)

Fall Semester (15 credits)

AV 3120 Aviation Law.....	3
AV 4610 (CI) AeroTechnology Design II	3
MGT 3710 ^{10,11,12} Developing Team and Interpersonal Skills	3
University Studies Breadth Creative Arts (BCA) and Breadth Social Sciences (BSS) courses ^{11,12}	6

Spring Semester (16 credits)

AV 4200 Composite Manufacturing Processes and Repair	3
AV 4620 (CI) AeroTechnology Design III	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.

⁸Completion of the Computer and Information Literacy (CIL) exams with passing grades is required by the end of the sophomore year.
⁹A 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 and ETE 2300.
¹⁰Students must have a cumulative GPA of at least 2.67 and have professional status to be admitted to these Huntsman School of Business courses.
¹¹Due 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.
¹²These courses may be taken during summer semester to allow for more reasonable course loads during the academic year.
¹³Students must take 10 credits of related technical electives which must be in upper-division courses (3000-level and above).
¹⁴PHYS 1800 fulfills the University Studies Breadth Physical Sciences (BPS) requirement. MGT 3110 fulfills the University Studies Depth Social Sciences (DSS) requirement. MATH 1100 fulfills the University Studies Exploration requirement.

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 Private Pilot Ground School	4
AV 2350 ¹⁸ Private Pilot Certification	1
MATH 1050 (QL) ²⁰ College Algebra	4
University Studies Breadth American Institutions (BAI) course	3

Spring Semester (15 credits)

AV 2170 Aircraft Systems	2
AV 2510 ¹⁸ Intermediate Flight	1
CLIM 2000 (BPS) ¹⁷ The Atmosphere and Weather	3
ETE 2300 (QI) ¹⁹ Electronic Fundamentals	4
MATH 1060 Trigonometry	2
Elective courses	3

Sophomore Year (31 credits)¹⁵

Fall Semester (16 credits)

AV 2180 Aircraft Hydraulic and Pneumatic Systems	2
AV 2520 ²¹ Instrument Pilot Ground School	4
AV 2540 ¹⁸ Instrument Pilot Certification I	1
ENGL 1010 (CL1) Introduction to Writing: Academic Prose	3
MATH 1100 (QL) ¹⁹ Calculus Techniques	3
University Studies Breadth Life Sciences (BLS) course	3

Spring Semester (15 credits)

AV 2430 Aircraft Electrical Systems and Components	2
AV 2550 ¹⁸ Instrument Pilot Certification II	1
CLIM 3250 ²¹ Aviation Weather	3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode	3
Any Communications Intensive (CI) approved course	3
University Studies Breadth Humanities (BHU) course	3

Junior Year (31 credits)

Fall Semester (15 credits)

AV 2620 Commercial Pilot Ground School	2
AV 2660 ¹⁸ 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

Spring Semester (16 credits)

AV 2720 CFI and CFII Ground School	3
AV 2880 ¹⁸ Multi-Engine Certification	1
AV 4490 Human Factors in Aviation Safety	3
AV 5400 Regional Jet Ground School I	4
MGT 3110 (DSS) ^{16,17,22} Managing Operations and People	3
Elective course(s)	2

Senior Year (34 credits)

Fall Semester (17 credits)

AV 2740 ¹⁸ 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 Creative Arts (BCA) course	3
University Studies Breadth Social Sciences (BSS) course	3

Spring Semester (17 credits)

AV 2860 ¹⁸ CFII Certification	1
AV 5420 Advanced Regional Jet Simulation	3
PHYS 1800 (BPS) ¹⁷ Physics of Technology	4
Upper-division elective courses ¹⁶	6
University Studies Depth Humanities and Creative Arts (DHA) course	3

¹⁵Completion of the Computer and Information Literacy (CIL) exams with passing grades is required by the end of the sophomore year.

¹⁶Students should contact their advisor for a list of approved upper-division electives.

¹⁷MGT 3110 fulfills the University Studies Depth Social Sciences (DSS) requirement. PHYS 1800 fulfills the University Studies Breadth Physical Sciences (BPS) requirement. CLIM 2000 fulfills the University Studies Exploration requirement.

¹⁸Depending 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.

¹⁹MATH 1050 is a prerequisite for ETE 2300 and MATH 1100.

²⁰A 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.

²¹Students should take CLIM 2000 prior to taking AV 2520 and CLIM 3250.

²²All students must have a cumulative GPA of at least 2.67 and have professional status in order to be admitted to Huntsman School 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)	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 (Sp)	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@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. The department also offers the PhD/EdD degree in Education (Curriculum and Instruction) and the PhD degree in Engineering Education. Further details about these degrees are shown below.

Admission Requirements

See the general admission requirements for graduate study in this catalog (pages 36-37). 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.

PhD Degree in Engineering Education

This degree is the culmination of a multi-year initiative to refocus the department and develop a new emphasis in engineering education. This new focus was supported by a ten million dollar grant from the National Science Foundation to establish the National Center for Engineering and Technology Education at Utah State. Because the new emphasis in engineering education within the department is sufficiently different than the technology education program, a new doctoral degree with a very different set of requirements is warranted.

This program will produce graduates who:

1. Are familiar with the theory and practice of engineering education and are adept at these aspects within their specific area of engineering specialization.
2. Have the ability to conduct research in engineering education in areas such as engineering epistemologies, engineering learning mechanisms, engineering learning systems, engineering diversity and inclusiveness, and engineering assessment.
3. Have the ability to develop/implement/assess engineering curricula at both the high school and university levels.

PhD/EdD Degree in Education (Curriculum and Instruction)

This degree is a doctoral specialization in Curriculum and Instruction (C&I) and is offered through the School of Teacher Education and Leadership (TEAL). (See *Education, Interdepartmental Doctoral Program in Curriculum and Instruction* on pages 234-235.) Students who complete the C&I specialization program receive a degree with an area of emphasis in engineering and technology education. This is a research degree and is primarily chosen by people seeking teaching/research positions in colleges and universities. Depending on students' professional goals and their ability or inability to attend graduate school full time during the academic year, students will *either* be accepted into the Doctorate of Education (EdD) program *or* the Doctorate of Philosophy (PhD) program.

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

Professors Emeritus

Jay C. Hicken, technology education, wood technology, power/energy/transportation

Maurice G. Thomas, technology education

Department of Engineering and Technology Education

Associate Professors

Ward P. Belliston, electronics technology
Ning Fang, dynamics, manufacturing engineering
Gary A. Stewardson, technology education, manufacturing technology

Assistant Professors

Oenardi Lawanto, engineering education
Paul D. Schreuders, engineering education

Principal Lecturers

Nolan D. Clifford, director of Aviation Program, aviation technology, professional pilot
Lawrence Hemingway, aviation technology, professional pilot

Lecturer

Randall W. Chesley, aviation maintenance

Chief Flight Instructor

Sean E. Heiner

Assistant Chief Flight Instructors

Aaron C. Dyches
Gregory P. Walton

Course Descriptions

Aviation Technology (AV), pages 509-510

Engineering and Technology Education (ETE), pages 557-560

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Director, Folklore Program:

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Director, Writing Program:

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Director, USU Writing Center:

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Director, Departmental Honors Program:

Christine Cooper-Rompato, Ray B. West 204E, (435) 797-3856,
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Chair, British and Commonwealth Studies Minor:

Shane Graham, Ray B. West 301B, (435) 797-2719,
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Chair, Creative Writing Emphasis:

Michael Sowder, Ray B. West 301A, (435) 797-7100,
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Chair, English Teaching Emphasis:

Patricia Gantt, Ray B. West 305, (435) 797-2718,
pgantt@english.usu.edu

Chair, Literary Studies Emphasis:

Brian W. McCuskey, Ray B. West 302D, (435) 797-0262,
brian.mccuskey@usu.edu

Chair, Literature and Writing Master's Specialization:

Jennifer Sinor, Ray B. West 302D, (435) 797-3440,
jennifer.sinor@usu.edu

Chair, Technical and Professional Writing Emphasis:

Ryan M. Moeller, Ray B. West 312B, (435) 797-8637,
rylish.moeller@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:**

Keith Gibson, Ray B. West 204A, (435) 797-8412,
keith.gibson@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.

Department of English

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 30-35 and 76-79 of this catalog. To remain in good standing and to obtain approval for graduation as English majors or minors, students must earn a grade of C or better in all English classes and 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 pages 442-443 for procedures and requirements pertaining to teacher licensure and admission requirements, or go online to:
<http://www.cehs.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

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 46-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.

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.

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. 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

E. Genre (6 credits)

Select two courses from the following:

ENGL 4340 ² Studies in Prose (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

F. 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

G. Electives (6 credits)

Select two additional courses from categories C, D, E, or F. One linguistics course (ENGL 4200 or 4210) may also count as an elective.

Note: The Period Studies; Authors; Genre; and Literature and Culture courses vary according to the specialty of the faculty member teaching the course.

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 48-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 Requirement (3 credits)

ENGL 1120⁴ 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)

ENGL 3450 Methods and Research in Professional and Technical Communication (Sp).....3

ENGL 3460 Modern Rhetorical Theory (F).....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 (3 credits)

Complete 3 credits from the following:

ENGL 3040 Perspectives in Writing and Rhetoric (F or 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/THEA 4250⁹ Playwriting (F).....3

ENGL 4420 (CI)² Advanced Fiction Writing (Sp).....3

ENGL 4430 (CI)² Advanced Poetry Writing (Sp).....3

ENGL 4900 Internship/Cooperative Work Experience (F,Sp,Su).....1-12

G. Major Courses (18 credits)

ENGL 4400 (CI)⁶ Professional Editing (Sp).....3

ENGL 4410^{2,6} Document Design and Graphics (F,Sp).....3

ENGL 5400^{2,5,6} Specialized Documents (F,Sp).....3

ENGL 5410^{2,6,8} Studies in Writing for Digital Media Production (F).....3

ENGL 5420⁶ Publications Production (F).....3

ENGL 5490^{2,7} Topics in Professional and Technical Writing (Sp).....3

H. Capstone Seminar (3 credits)

ENGL 5430 (CI)³ Professional Writing Capstone (Workplace Culture and Communication) (F,Sp).....3

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 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

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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 Secondary Education Program of the School of Teacher Education and Leadership (TEAL).

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
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D. Upper-division Writing Courses (3 credits)

Select one course from the following:

ENGL 3080 (CI) Introduction to Technical Communication (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
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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,Sp)	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/ARTH 3210 Classical Mythology (Honors only) (F,Sp)	3

d. Group 4 (3 credits)

ENGL 4340 Studies in Prose (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

Grammar Competency Requirement:

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.

G. 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.

H. 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 Secondary Education Program of the School of TEAL. 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 Secondary Education Program of the School of TEAL for further information regarding this program.

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 46-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 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 (6 credits)

Select two 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 (18 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 three of the following courses:

ENGL/THEA 4250 ⁹ Playwriting (F)	3
ENGL 4420 (CI) ² Advanced Fiction Writing (prereq. ENGL 3420) (Sp)	3
ENGL 4430 (CI) ² Advanced Poetry Writing (prereq. ENGL 3430) (Sp)	3
ENGL 4440 (CI) ² Advanced Nonfiction Writing (prereq. ENGL 3440) (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. 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.

F. Genres (3 credits)

Select one of the following courses:

ENGL 4340 ² Studies in Prose (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.

G. Electives (9 credits)

Students should select electives with the guidance and approval of the English undergraduate advisor.

Note: The Period Studies, Authors, and Genre courses vary according to the specialty of the faculty member teaching the course.

¹ENGL 2600 should be taken before registering for 3000 or above literature courses.

²These courses are repeatable for credit.

³This capstone course should be completed during the senior year.

⁴ENGL1120 is waived if students pass the grammar challenge exam. For further information, contact the undergraduate advisor.

⁵ENGL 5400 includes proposals, brochures, environmental impact statements, newsletters, computer documentation, etc. This course is repeatable for credit.

⁶Prerequisite: Admittance to program and completion of ENGL 3400 and 3410 with grades of B- or better.

⁷Prior to enrolling in ENGL 5490, students must have completed both ENGL 3400 and 3410 with grades of B- or better.

⁸ENGL 5410 includes multimedia, interactive and electronic texts, etc. This course is repeatable for credit.

⁹ENGL/THEA 4250 requires a prerequisite of THEA 1713.

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

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

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

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and environment, political science, and sociology and anthropology. Students will be required to meet with either the director or the undergraduate advisor (contact HASS Advising, 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 (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/HIST 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 (contact HASS Advising, Taggart Student Center 302) 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 (CI) Advanced Fiction Writing (Sp)	3
ENGL 4430 (CI) Advanced Poetry Writing (Sp)	3
ENGL 4440 (CI) Advanced Nonfiction Writing (F,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/RELS 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/WGS 4550 (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 (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/HIST 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	3
NR 2220 General Ecology (F,Sp)	3
PHIL 3510 Environmental Ethics (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/ECN 3170 Law and Economics (Sp)	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 (F,Sp)	3
ANTH 4110 (DSS) Southwest Indian Cultures, Past and Present (F)	3
ANTH 5800 Museum Development (F,Sp,Su)	1-3
SOC 1010 (BSS) Introductory Sociology (F,Sp)	3
SOC 3010 Social Inequality (F,Sp)	3
SOC 4370 Sociology of Gender (F)	3

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 page 264 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 264 in section D). These courses of study must be approved by the Director of American Studies or by the American Studies advisor (contact HASS Advising, 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 (contact HASS Advising, Taggart Student Center 302) 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/RELS 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 (Sp)	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) Anthropology of Childhood (Sp)	3
ANTH 4230 (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/RELS 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

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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

Grammar Competency Requirement:

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 (HASS Advising, Taggart Student Center 302).

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 (DHA) 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/ARTH 4210 Celtic Europe (F)	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).

Sample Four-year Plans

Sample semester-by-semester four-year plans for students working toward a bachelor's degree within the English Department can be found at:

<http://www.usu.edu/degreeplans/>

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests.

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 (contact HASS Advising, 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.

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.

Department of English

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 36-37 (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 **April 20** 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 116-119 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.

Department of English

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
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, technical 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

Christopher Cokinos, creative nonfiction, poetry writing, science and nature writing; editor, *Isotope*
Christine Cooper-Rampato, medieval literature, commonwealth
Lisa Ann Gabbert, folklore, American studies
Keith Gibson, rhetoric and technical communication
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 Eyre, literature and writing, professional and technical writing
Julie R. Foust, writing; Director of Rhetoric Associates
Marina L. Hall, Coordinator of Public Relations and Educational Outreach
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 548-553

Department of Environment and Society

Department Head: Joseph A. Tainter

Location: Natural Resources 201

Phone: (435) 797-1790

FAX: (435) 797-4048

WWW: <http://www.cnr.usu.edu/envs>

Undergraduate Advisor:

Maureen A. Wagner, Natural Resources 120, (435) 797-2448,
maureen.wagner@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; MS and PhD in Ecology

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.

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 138-139).

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 (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 4900 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 5570 Sustainable Living (Sp)	3
ENVS/SOC 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 to complement their general professional foundation. Students must file an approved emphasis plan prior to applying for graduation, but it is recommended that they meet with their advisor to develop and gain approval for the emphasis *no later* than midway through the first semester of their junior year.

Complete 15 credits chosen from one of the following seven emphasis areas:

Business and Economics

APEC 5560 Natural Resource and Environmental Economics (Sp)	3
ECN 3170 Law and Economics (Sp)	3
ENVS 5550 Sustainable Development (Sp)	3
MGT 2050 Legal and Ethical Environment of Business (F,Sp,Su)	3
MGT 3110 (DSS) Managing Organizations and People (F,Sp,Su)	3
MGT 3500 Fundamentals of Marketing (F,Sp,Su)	3
Other business or economics course approved by faculty advisor	3-4

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
Other communications course approved by faculty advisor	3-4

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 5570 Sustainable Living (Sp)	3
ENVS/SOC 5640 Conflict Management in Natural Resources (Sp)	3
POLS 5180 Natural Resource Policy (Sp)	3
Other policy course approved by faculty advisor	3-4

Human Impacts on the Environment

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 <i>Section A</i>)	3
SOC 4620 (DSS) Sociology of the Environment and Natural Resources (Sp)	3
WATS/CLIM 3820 (DSC/QI) Climate Change (Sp)	3
WILD 4600 Conservation Biology (Sp)	3
Other appropriate course approved by faculty advisor	3-4

International

ANTH 2010 (BSS) Peoples of the Contemporary World (Sp)	3
ECN 5400 International Trade Theory (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/ANTH/SOC 5650 Developing Societies (F)	3
SOC 4730 Women in International Development (Sp)	3
Other course with international focus approved by faculty advisor	3-4

Planning and Analysis

BIOL 5010 Biogeography (Sp)	3
ENVS/SOC 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 (Sp)	3
Other planning course approved by faculty advisor	3-4

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

Department of Environment and Society

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 67-69) and "Depth Education Requirements" (see pages 70-75) should be consulted to ensure meeting University Studies Requirements.

Environmental Studies Minor (15-17 credits)

The Environmental Studies minor is open to all majors, *except* those in the College of Natural Resources. However, this minor *is available* to students enrolled in the Geography major. 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 (Sp)	3
ENVS 5570 Sustainable Living (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 to complement their disciplinary foundation. Students must file an approved emphasis plan prior to applying for graduation, but it is recommended they meet with their faculty advisor to develop and gain approval for the emphasis no later than midway through the first semester of the junior year. Some courses may require prerequisites; for additional information, see course descriptions.

Complete 12 credits chosen from one of the following four emphasis areas.

Cultural/Social Geography

ANTH 3160 (DSS) Anthropology of Religion (F)	3
ENVS 5550 Sustainable Development (Sp)	3
FREN 3550 (DHA) French Civilization (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) (Must be the <i>second</i> geographic area of study <i>beyond</i> the area chosen in the <i>Disciplinary Foundation Courses</i> .)	3
GEOG 5650 (DSS) Developing Societies (F)	3
SOC 4710 Asian Societies (Sp)	3
Other course related to cultural/social geography approved by faculty advisor	3-4

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) (Students can count <i>either</i> WILD 2200 <i>or</i> NR 2220 toward the emphasis area, but <i>cannot</i> count both.)	3
WILD 4600 Conservation Biology (Sp)	3
Other appropriate course approved by faculty advisor	3-4

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
Other planning course approved by faculty advisor	3-4

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.

Department of Environment and Society

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).....	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)

SCED 3300 Clinical Experience I (F,Sp).....	1
SCED 3500 Teaching Social Studies (F,Sp).....	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 Program of the School of Teacher Education and Leadership (TEAL).

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).....	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

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B. Geography Education Courses (4 credits)

SCED 3300 Clinical Experience I (F,Sp)	1
SCED 3500 Teaching Social Studies (F,Sp)	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 4900 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 67-69) and "Depth Education Requirements" (see pages 70-75) should be consulted to ensure meeting University Studies Requirements.

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

Recommended Four-year Plans

Recommended semester-by-semester four-year plans for students working toward a bachelor's degree within the Environment and Society Department can be found at:

<http://www.usu.edu/degreeplans/>

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests.

Financial Assistance

The main opportunities for undergraduates to find financial support through grants, work-study, and loans are listed on pages 46-47 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 310.

Department of Environment and Society

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/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 36-37. Applicants for graduate study in the Department of Environment and Society should have a bachelor's degree from an accredited college or university, a cumulative GPA of at least 3.0 (out of 4.0), and GRE scores (quantitative and verbal) above the 40th percentile. Foreign students should submit a TOEFL score of at least 550. Exceptions to these standards will be considered on a case-by-case basis. Written statements of interest help match applicants with faculty advisors. A faculty member must agree to serve as the major professor in order for an applicant to be accepted. Prospective students are encouraged to contact faculty members early in the application process to investigate mutual interests, projects, and prospects for financial support.

The department's graduate programs focus on providing students with a broad foundation in the social and natural sciences as they relate to the study, planning, and management of ecosystems. The curriculum is designed to enhance interdisciplinary integration by emphasizing current and future environmental issues facing humanity. Coursework and research are focused on problem-solving through application of social research methods, case studies, computer mapping, and other analytical techniques.

The department values intellectual, academic, and social diversity in the applicants for graduate study. Mature professionals seeking education to augment life experiences, or practical training to pursue new career paths, are also encouraged to apply. Knowledge gaps will be identified early in a student's program and addressed on a case-by-case basis through agreements between students and their graduate advisory committees.

Degree Programs

The department offers opportunities for graduate study through the MS, MA, PhD, and graduate certificate programs listed below.

The 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.

Ecology

The Environment and Society Department offers MS and PhD degrees in Ecology through the ecology program at Utah State University. This program is administered by the interdepartmental Ecology Center. For further information, see the *Interdepartmental Program in Ecology* section of this catalog on pages 228-229.

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.

Department of Environment and Society

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.

Financial Assistance

General aspects of financial support for graduate students at Utah State University are listed on pages 111-112 in the *Graduate Financial Assistance* section. This includes important information on the University-wide policies and terms of reference for research and teaching assistantships, graduate tuition obligations and benefits, Western Regional Graduate Programs, and competitive University-wide fellowships and scholarships.

The Department of Environment and Society intends that all graduate students be financially supported. Graduate research assistantships are available through major professors having contracts, grants, or other awards. Internships may also be created on a case-by-case basis. A student may want to author or co-author a proposal with a faculty member to fund a new initiative. There are also open competitions for graduate scholarships and fellowships through the College of Natural Resources. The department also has a few graduate teaching assistantships where graduate students typically help instructors with teaching, grading, or recitation in large courses. Interested persons should contact the department early in the application process for more information on financial assistance for graduate students. Prospective students may also visit: <http://www.cnr.usu.edu/envs>

Environment and Society Faculty

Professors

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

Joseph A. Tainter, sustainability, social conflict in environmental issues, human responses to climate change and environmental degradation, human use of energy and resources

Richard E. Toth, bioregional planning and water resources management

Adjunct Professors

Thomas C. Edwards, Jr., Utah Cooperative Fish and Wildlife Research Unit, spatial

Terry L. Sharik, academic administration and leadership, teaching and learning pedagogy, forest ecology

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

Department of Environment and Society

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
Peggy Petrzalka, environmental sociology, rural sociology, social change and development
R. Douglas Ramsey, remote sensing, geographic information systems, landscapes

Assistant Professors

Michael Dietz, sustainable living, water resource management
Ann Laudati, human-environmental interactions, community conservation and development, political ecology, natural resources and violent conflict, Sub-Saharan Africa
Christopher Manz, recreation ecology, outdoor recreation, wilderness management
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
Nicole L. McCoy, natural resource economics and policy

Paul Rogers, aspen ecology, lichenology, large-scale monitoring, Forest Service policy
Douglas G. Wachob, development effects 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

Adjunct Instructors

Dana E. Dolsen, Wildlife Planning Manager, State of Utah, Department of Natural Resources
Larry H. Freeman, environmental writing, NEPA specialist
Richard C. Moore, NEPA and CEQ compliance, training, and consulting
Michael Smith, NEPA consulting and workshop training
Rhey M. Solomon, environmental analyst, NEPA trainer/instructor/facilitator

Course Descriptions

Environment and Society (ENVS), pages 554-557

Geography (GEOG), pages 571-572

National Environmental Policy Act (NEPA), pages 618-619

Department of Family, Consumer, and Human Development

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Location: Family Life 203B

E-mail: tom.lee@usu.edu

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**Senior Associate Department Head and Adele and Dale Young
Child Development Laboratory Director:**

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Associate Department Head and Graduate Coordinator:

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Gerontology Certificate Program Coordinator:

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Marriage and Family Therapy Program Director:

Scot M. Allgood, Family Life Center 207, (435) 797-7433,
scot.allgood@usu.edu

Undergraduate Academic Advisor:

Marilyn B. Kruse, Family Life 205A, (435) 797-1530,
marilyn.b.kruse@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; BS in Family Life Studies (offered online *only*); 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, Child 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; Early Childhood Education; and Family Life Studies (online *only*). All programs

are designed to prepare students for successful careers serving individuals and families across the lifespan. 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 Child 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), Early Childhood Education (ECE), and Family Life Studies (FLS) 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)

The Family and Community Services emphasis fulfills the academic requirements for the Certified Family Life Educator (CFLE) credential offered through the National Council on Family Relations. Information about how to become a CFLE may be accessed at:
<http://www.ncfr.org/>

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 215, by calling (435) 797-1989, or accessed online at:
<http://www.usu.edu/fchd/html/gerontology/>

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 1010, 1500, and 2400) with a cumulative GPA of 3.0 is required for admission into the FCHD major. Family Finance premajor courses include FCHD 1010, 1500, 2400, and 2450. A cumulative GPA of 3.0 is required.

Department of Family, Consumer, and Human Development

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.

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, Child Development, Deaf Education, or Family Finance. These requirements are shown below.

Family and Community Services and Child 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 (57 credits)

FCHD 1010 (BSS) Balancing Work and Family (F,Sp)	3
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)	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)	3
FCHD 3530 Adolescence (Prereq: Junior standing, FCHD 1500) (F,Sp)	3
FCHD 3540 Adult Development and Aging (Prereq: Junior standing and FCHD 1500) (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) (Sp)	3
FCHD 4240 Social and Family Gerontology (Prereq: Junior standing, FCHD 2400, 3540) (F)	3

FCHD 4900 (CI) Pre-Practicum Skills (Prereq: Junior standing, FCHD 2610, 3100, CL2 fulfillment) (majors only) (F,Sp)	3
FCHD 4980 ¹ Practicum (F,Sp,Su)	6
PSY 2800 (QI) Psychological Statistics (Prereq: STAT 1040) (F,Sp) (3 cr) or	
SOC 3120 (QI) Social Statistics I (Prereq: Completion of 6 credits in Sociology, Social Work and Anthropology departmental courses and grade of C- or better in STAT 1040 or equivalent) (F,Sp,Su) (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 Child Development emphasis must take FCHD 3550 concurrently with FCHD 3510 and FCHD 3560 concurrently with FCHD 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, Brigham City, and Snow College regional campuses, the FCHD 3550 and 3560 labs *must* 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 Child Development Emphasis.

Family and Community Services Emphasis (10 credits)

FCHD 2100 Family Resource Management (F,Sp)	3
FCHD 3350 Family Finance (F,Sp,Su)	3
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 5540 Family Life Education Methods (Prereq: Junior Standing, FCHD 1500, 2400) (F,Sp) (majors only)	3

Child 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

PSY 3210 Abnormal Psychology (F,Sp)	3
PSY 4210 Personality Theory (Sp)	3

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.

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Required Courses³

FCHD 1010 (BSS) Balancing Work and Family (F,Sp)	3
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).....	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 3550 Infant Lab (F,Sp).....	1
FCHD 3520 Children in the Middle Years (Prereq: Junior standing, FCHD 1500, 2610) (F).....	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, CL2 fulfillment) (F,Sp).....	3
FCHD 4960² Practice Teaching in Child Development Laboratories (Prereq: Junior standing, FCHD 4550) (F,Sp,Su).....	3
FCHD 4980¹ 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) (F,Sp) (3 cr) or	
SOC 3120 (QI) Social Statistics I (Prereq: Completion of 6 credits in Sociology, Social Work and Anthropology departmental courses and grade of C- or better in STAT 1040 or equivalent) (F,Sp,Su) (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 5710 Young Children with Disabilities: Characteristics and Services (Sp).....	3
SPED 5810 Seminar and Field Experiences with Infants and Families (Sp)	4

Students in this emphasis must meet with their advisor each semester.

¹Prerequisite: 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.

²Students must sign up three full semesters in advance in Family Life 205.

³For COMD and SPED course offerings, contact the Department of Communicative Disorders and Deaf Education and the Department of Special Education and Rehabilitation.

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's housing and financial counseling services are approved by

the U.S. Department of Housing and Urban Development (HUD) and provide 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 (61 credits)

FCHD 1010 (BSS) Balancing Work and Family (F,Sp)	3
FCHD 1500 (BSS) Human Development Across the Lifespan (F,Sp) ...	3
FCHD 2100 Family Resource Management (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) (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

ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su).....	3
STAT 1040 (QL) Introduction to Statistics (Prereq: C or better in MATH 1010, or Math ACT score of at least 23, or Math SAT score of at least 540) (F,Sp,Su)	3
SPCH 1020 (CI) Public Speaking (F,Sp)	3

Suggested Support Courses

ECN 2010 (BSS) Introduction to Microeconomics (Prereq: ECN 1500) (F,Sp,Su).....	3
FCHD 3540 Adult Development and Aging (Prereq: Junior Standing, FCHD 1500) (Sp)	3
FCHD 4240 Social and Family Gerontology (Prereq: Junior standing, FCHD 2400, 3540) (F)	3
OSS 2450 Spreadsheets and Databases (Prereq: OSS 1400 or CIL Exam).....	3
PFP 3460 Fundamentals of Personal Investing (Sp)	3
PFP 5060 Personal Financial Planning and Advising (F)	3
PFP 5070 Retirement Planning (Sp)	3
PFP 5080 Estate Planning (Sp).....	3

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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 1010 (BSS) Balancing Work and Family (F,Sp)	3
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 ⁴ Abuse and Neglect in Family Context (F,Sp)	3
FCHD 3110 ⁵ Human Sexuality (F)	3
FCHD 3510 ⁶ Infancy and Early Childhood (F,Sp)	3
FCHD 3520 ⁶ Children in the Middle Years (F)	3
FCHD 3530 ⁷ Adolescence (F,Sp)	3
FCHD 3540 ⁷ Adult Development and Aging (Sp)	3
FCHD 4220 ⁸ Family Crises and Interventions (F,Su)	3
FCHD 4230 ⁸ Families and Social Policy (Sp)	3
FCHD 4240 ⁹ Social and Family Gerontology (F)	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, 3350, 4550, 4800, 4940, 5550; practica (FCHD 4900, 4950, 4960, 4970, 4980); and Readings and Conference (FCHD 4990).

⁴Prerequisites: Sophomore standing, FCHD 1500, 2400.

⁵Prerequisites: FCHD 1500, 2400.

⁶Prerequisites: Junior standing, FCHD 1500, 2610.

⁷Prerequisites: Junior standing, FCHD 1500.

⁸Prerequisites: Junior standing, FCHD 2400.

⁹Prerequisites: 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 2100 Family Resource Management (F,Sp)	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 3450 Consumer Credit Problems (Prereq: FCHD 3350) (F)	3
FCHD 4350 Advanced Family Finance (Prereq: FCHD 3350) (Sp)	3

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 Elementary Education Program in the School of Teacher Education and Leadership (TEAL). 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 these courses.)

STAT 1040 (QL) Introduction to Statistics (F,Sp,Su)	3
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(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:

ECN 1500, HIST 1700, POLS 1100, USU 1300	3
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Choose *one* course from the following to meet BCA requirement:

MUSC 1010, USU 1330, ID 1750	3
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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
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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
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Choose *one* course from the following to meet BLS requirement:

BIOL 1010, NFS 1020, PLSC 2100, USU 1350, WATS 1200, WILD 2200	3
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Complete PHYS 1200 and choose *one* course from the following to meet BPS requirement:

CLIM 2000, GEOG 1000, GEO 1010, GEO 1110, CHEM 1010, PHYS 1040, SOIL 2000, USU 1360	6
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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
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(Prereq: C- or better in MATH 1050, Math ACT score of 25 or higher, or Math SAT score of 580 or higher; also required to apply to the Teacher Education Program)

Depth Course Requirements (4 credits minimum)

Complete at least 4 credits in 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 School of TEAL.

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 at least 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 (3 credits)

FCHD 1010 (BSS) Balancing Work and Family (F,Sp).....	3
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Level I (6 credits)¹⁰

ELED 1010 Orientation to Elementary Education.....	3
FCHD 1500 (BSS) Human Development Across the Lifespan.....	3

Level II (14 credits)¹¹

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 3100¹³ Classroom Reading Instruction.....	3
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(ELED 3100 may be taken during transition semester, if desired.)

Transition (11 credits)

SPED 4000¹¹ Education of Exceptional Individuals.....	2
INST 4010¹¹ Principles and Practices of Technology for Elementary Teachers.....	3
FCHD 4550^{12,13} Preschool Methods and Curriculum.....	3
ELED 4480¹² 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) 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 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^{13,14} Practice Teaching in Child Development Laboratories 6.....	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 3530¹⁵ Children's Literature.....	3
MUSC 3260 Elementary School Music.....	2

¹⁰These courses are prerequisites to Level II.

¹¹SPED 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. Log into Access for information about when these courses will be taught.

¹²ELED 4480 and FCHD 4550 must be taken *after* completion of Level II.

¹³FCHD 4550 is a prerequisite for FCHD 4960.

¹⁴Students must apply for FCHD 4960 three full semesters in advance of taking the class. Apply in Family Life Building, room 205.

¹⁵ENGL 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

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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/HIST 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/HIST 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 1030 (BSS) World Archaeology.....	3
ANTH 2010 (BSS) Peoples of the Contemporary World.....	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

ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles.....	3
ECN 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 Social Inequality.....	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-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/ENGL 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

Department of Family, Consumer, and Human Development

PHYS 3030 (DSC/QI) The Universe.....	3
CLIM 2000 (BPS) The Atmosphere and Weather.....	3
CLIM 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

BIOL 1610 Biology I.....	4
BIOL 1620 (BLS) Biology II.....	4
BIOL 2060 Elementary Microbiology.....	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
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
WATS 3000 (DSC) Oceanography.....	3
WILD 2200 (BLS) Ecology of Our Changing World.....	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 Technology in 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 Food Science from Farm to Fork.....	3
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 and Learning Sciences 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, child care, and preschools where there is a strong commitment to a parent involvement program, or as an instructor for community adult education programs.

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FCHD 3510¹⁶ Infancy and Early Childhood (Coreq: FCHD 3550)	3
FCHD 3550¹⁶ Infant Lab (Coreq: FCHD 3510)	1
FCHD 3520¹⁶ Children in the Middle Years (Coreq: FCHD 3560)	3
FCHD 3560¹⁶ Middle Childhood Lab (Coreq: FCHD 3520)	1
FCHD 3110¹⁷ Human Sexuality	3
NFS 1020 (BLS) Science and Application of Human Nutrition	3

¹⁶Prerequisites: Junior standing and FCHD 1500, 2610.

¹⁷Prerequisites: 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.

Note: The requirements shown below for the FCS major are effective for students beginning the degree Summer 2008 or thereafter.

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 1010, 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. A GPA of 3.0 in FCS major courses is also 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 1010 (BSS) Balancing Work and Family (F,Sp)	3
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 (30 credits)

Select at least 6 credits from each of the following five areas:

Clothing and Textiles (6 credits)

FCSE 1140 Introductory Sewing (F,Sp)	2
FCSE 2040 Clothing Production Principles (F,Sp)	3
FCSE 3030 (DSC/QI) Textile Science (Sp)	4
FCSE 3040 Advanced Clothing Production Principles (F)	3
FCSE 3060 (DSS/CI) Human Behavior Related to Dress (Su)	3
FCSE 3080 (DHA) Dress and Humanity (F,Sp)	3

Consumer and Family Finance (6 credits)

FCHD 2100 Family Resource Management (F,Sp)	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 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 (6 credits)

NFS 1000 Food Science from Farm to Fork	3
NFS 1020 (BLS) Science and Application of Human Nutrition (F,Sp,Su)	3
NFS 1240 Culinary Basics (F)	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 3070 Science of Food Preparation (Prereq: CHEM 1120 or 2300 or 2310) (Sp)	4
NFS 3110 (DSC) Food, Technology, and Health (Prereq: University Studies Breadth Life Sciences Course) (F)	3
NFS 4480 Community Nutrition (Prereq: NFS 1020) (F)	3

Human Development and Family Studies (6 credits)

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)	3
FCHD 3510 Infancy and Early Childhood (Prereq: Junior standing, FCHD 1500, 2610) (F,Sp)	3
FCHD 3550¹⁸ Infant Lab (F,Sp)	1
FCHD 3520 Children in the Middle Years (Prereq: Junior standing, FCHD 1500, 2610) (F)	3
FCHD 3560¹⁸ 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) (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) (Sp)	3
FCHD 4240 Social and Family Gerontology (Prereq: Junior standing, FCHD 2400, 3540) (F)	3
FCHD 4550 Preschool Methods and Curriculum (Prereq: Junior standing, FCHD 1500) (F,Sp)	3

Interior Design (6 credits)

ID 1750 (BCA) Design in Everyday Living (F,Sp)	3
ID 1770 History of Interior Furnishings and Architecture I (F)	3
ID 1780 History of Interior Furnishings and Architecture II (Sp)	3

Research Methods and Professional Development 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
FCHD 4900 (CI) Pre-Practicum Skills (Prereq: Junior Standing, FCHD 2610, 3100, CL2 fulfillment) (F,Sp)	3
SPCH 1020 (CI) Public Speaking (F,Sp)	3
SPCH 2110 (CI) Interpersonal Communication (F,Sp)	3

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Choose one of the following:

FCHD 4900 (CI) Pre-Practicum Skills (Prereq: Junior Standing, FCHD 2610, 3100, CL2 fulfillment) (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 4950¹⁹ Practicum: Consumer Science (F,Sp,Su).....	3-6
FCHD 4960²⁰ Practice Teaching in Child Development Laboratories (Prereq: Junior Standing, FCHD 4550) (F,Sp,Su)	3

¹⁸FCHD 3550 must be taken concurrently with FCHD 3510. FCHD 3560 must be taken concurrently with FCHD 3520.

¹⁹Enrollment in FCHD 4950 is limited to *only* FCS majors 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.

²⁰Students must sign up at *least* three full semesters in advance in Family Life 205.

Suggested Four-year Plans

Suggested semester-by-semester four-year plans for students working toward a bachelor's degree within the Family, Consumer, and Human Development Department can be found at:

<http://www.usu.edu/degreplans/>

These plans are 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.

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. Additional information can be found online at: <http://www.usu.edu/honors/>, or by contacting Kaelin Olsen (FCHD honors advisor) at kaelin.olsen@usu.edu or at (435) 797-8242.

Additional Information

For more detailed information about the Family, Consumer, and Human Development; Early Childhood Education; Family and Consumer Sciences; and Family Life Studies 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 Emma Eccles Jones 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 36-37. 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 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

Professor Emeritus

Jay D. Schvaneveldt, marriage and family studies, family life education, international families, theory and methods

Department of Family, Consumer, and Human Development

Associate Professors

Scot M. Allgood, family therapy process, assessment, and marital studies

Kay P. Bradford, interparental conflict, couple dynamics, parenting, adolescent well-being

Lucy Delgadillo, family and consumer sciences, housing

David D. Law, parent education, marriage and family therapy, health care utilization

Yoon G. Lee, family and consumer sciences, family finance

Maria C. Norton, geriatric mental health, psychosocial and biological factors, research methodology and epidemiology

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

Linda M. Skogrand, families from diverse populations, transcending traumatic childhoods, marriage and family education

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

Brian J. Higginbotham, remarriage and step families, marriage education, program evaluation

Research Assistant Professors

Lisa K. Boyce, infancy and early childhood, language development, parent-child interaction

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

Principal Lecturer

Deborah B. Ascione, marriage, human development, child abuse and neglect

Lecturers

Susan L. Ericksen, undergraduate practicum coordinator, marriage and family therapy, professional development

Kelly J. Esparza, early childhood education, human development, infancy and early childhood

Victor W. Harris, close relationships (i.e., relationship quality, process, education)

Alena Johnson, family financial management, financial counseling, students and debt

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

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Department of Geology

Department Head: John W. Shervais

Location: Geology 205

Phone: (435) 797-1273

FAX: (435) 797-1588

E-mail: geology@usu.edu

WWW: <http://www.usu.edu/geo/>

Undergraduate Advisor:

Joel L. Pederson, Geology 112, (435) 797-7097,
joel.pederson@usu.edu

Graduate Program Director:

W. David Liddell, Geology 212, (435) 797-1261,
dave.liddell@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 Earth Science Composite Teaching

Undergraduate emphases: *BS in Geology*—Hydrogeology-Engineering Geology and Geoarchaeology

Graduate Specializations: *MS in Geology*—Geochemistry, Hydrogeology, Igneous Petrology, Paleogeology, 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 sciences, 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 Earth Science Composite Teaching Major 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 Earth Science Composite Teaching Major 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 School of Teacher Education and Leadership (TEAL).

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 Earth Science Composite Teaching Major should be aware that a 2.75 minimum GPA is required for admission to the Secondary Teacher Education Program (STEP) in the School of TEAL. 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

Department of Geology

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 (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).

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 (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,Su).....	3
ENGR 2140 Strength of Materials (F,Sp,Su).....	2
CEE 3430 Engineering Hydrology (Sp) (3 cr) or	
CEE 4300 Engineering Soil Mechanics (Sp) (4 cr).....	3 or 4
CEE 3500 Civil and Environmental Engineering Fluid Mechanics (F,Sp).....	3
SOIL 3000 Fundamentals of Soil Science (F) (4 cr) or	
SOIL 5130 Soil Genesis, Morphology, and Classification (F) (4 cr)	4

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 1030 (BSS) World Archaeology (F [Sp online]).....	3

ANTH 5300 Archaeology Field School (Su).....	4-5
ANTH 5310 Archaeology Lab.....	1-3

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
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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
SOIL 3000 Fundamentals of Soil Science (F) (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 (Sp) (3 cr) or	
GEO 1110 (BPS) The Dynamic Earth: Physical Geology (F,Sp) (4 cr).....	3 or 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 5600 Geochemistry (F).....	3

Geology Electives (12 credits required)

Students must complete at least 12 credits, selected from the following:

GEO 5150 Fluvial Geomorphology (F).....	3
GEO 5410 Introduction to Clay Mineralogy (Sp).....	2
GEO 5510 (QI) Groundwater Geology (F).....	3
GEO 5520 (CI) Techniques of Groundwater Investigations (Sp).....	3
GEO 5530 (QI) Petroleum Systems: Principles of Exploration and Development (Sp).....	3
GEO 5540 (QI) Quantitative Methods in Geology (F).....	3
GEO 5550 Geochemical Application of Electron Microprobe and X-Ray Fluorescence Analysis (Sp).....	4
GEO 5630 Photogeology (Sp).....	3
GEO 5650 Senior Thesis (F,Sp).....	3-4
GEO 5680 Paleoclimatology (Sp).....	3

Required Support Courses (39-40 credits)

Chemistry Group (10 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

Mathematics and Statistics Group (7 credits)

MATH 1210 (QL)¹ Calculus I (F,Sp,Su).....	4
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su).....	3

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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 (F)..... 4
BIOL 1620 (BLS) Biology II (Sp)..... 4
WATS 3700 (CI) Fundamentals of Watershed Science (Sp)..... 3
SOIL 3000 Fundamentals of Soil Science (F)..... 4
CEE 5190 Geographic Information Systems for
 Civil Engineers (Sp) (3 cr) **or**
WATS 4930 Geographic Information Systems (F) (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 (Sp)..... 3
WATS 4490 (d5490) Small Watershed Hydrology (F)..... 4
WATS 5660 Watershed and Stream Restoration (Su) 2
WATS 5670 Watersheds and Stream Restoration Practicum (Su)..... 2

Group B: Ecology, Soils, and Environmental Chemistry

BIOL 2220 General Ecology (F,Sp)..... 3
BIOL 3220 (QI) Field Ecology (F)..... 2
CHEM 3650 (DSC) Environmental Chemistry (Sp)..... 3
SOIL 5050 (d6050) Principles of Environmental Soil
 Chemistry (Sp odd) 3
SOIL 5130 (d6130) Soil Genesis, Morphology,
 and Classification (F)..... 4
SOIL 5560 (d6560) Analytical Techniques for the
 Soil Environment (Sp) 2
SOIL 5620 Aquatic Chemistry (F)..... 3

Group C: GIS/Remote Sensing

WATS 4750 Fundamentals of Remote Sensing Science (F)..... 3
WATS 4930 (d6920) Geographic Information Systems (F)..... 4
WATS 5250 (d6250) Remote Sensing of Land Surfaces (Sp) 4
WATS 5760 (d6760) Remote Sensing: Modeling and Analysis (Sp)..... 3
WILD 5750 Applied Remote Sensing (F) 3

Earth Science Composite Teaching Major

GEO 1110 (BPS) The Dynamic Earth: Physical Geology (F,Sp) 4
GEO 2500² 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 1040 (BPS) Introductory Astronomy 3
PHYS 2210 (QI) General Physics—Science and Engineering I..... 4
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II .. 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
ENVS 5110 Environmental Education (Sp) (3 cr) **or**
WILD 2200 (BLS) Ecology of Our Changing World (F,Sp) (3 cr) 3
CLIM 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 (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 (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)..... 3

Level 3 (12 credits)

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

Notes

The Teaching Science I and II courses (SCED 3400 and 4400) are *only* taught once per year. Therefore, it is important for students to consult with their advisor to fit these courses in the correct sequence into their plan of study.

This curriculum meets the standards of the Utah Core Curriculum—Science 7-12.

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) Introduction to Geology:
 Geology of National Parks (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.

¹Students may need to complete prerequisite courses prior to enrolling in MATH 1210.

²GEO 2500 (a 1-credit course) is repeatable for credit, and must be taken *twice* for the student to earn the required 2 credits.

³PHYS 1020 may also be listed as USU 1360, IPS: Energy.

⁴GEO 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.

Suggested Four-year Plans

Suggested semester-by-semester four-year plans for students working toward a bachelor's degree within the Geology Department can be found at: <http://www.usu.edu/degreeplans/>

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests.

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 advisor, Joel Pederson, (435) 797-7097, joel.pederson@usu.edu.

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 distinguish 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 36-37. 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 matriculation 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 Climate; 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, and Climate; 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

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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, paleobiology (including invertebrate paleontology and paleoecology), 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/CLIM/WATS 6250, ENV5 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 activities follow.

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.

Recent research in **hydrogeology** includes determining the feasibility of constructing an artificial salmon spawning channel; characterizing, modeling, and monitoring groundwater flow systems; and investigating the hydraulic properties of faults in sandstones as they relate to carbon dioxide sequestration.

Research in **petrology** focuses on the origin and evolution of magmatic systems, hotspots, 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** currently includes sequence stratigraphy of Paleozoic mixed carbonate-siliciclastic systems in the Great Basin; ecology, paleoecology, and sedimentology of coral reefs; tectonics of sedimentary basins at plate margins; and basin analysis, isotope geochemistry, and paleobiology of Proterozoic rocks in the western United States.

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 Climate, 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

Mary S. Hubbard, tectonics, structural geology,

Dean of College of Science

Susanne U. Janecke, tectonics, structural geology

W. David Liddell, marine ecology, paleoecology, sedimentology

John W. Shervais, igneous petrology, geochemistry, tectonics

Professor Emeritus

Robert Q. Oaks, Jr., sedimentary petrology, stratigraphy

Associate Professors

Donald W. Fiesinger, igneous petrology

Thomas E. Lachmar, hydrogeology

Joel L. Pederson, process geomorphology, Quaternary geology

Associate Professor Emeritus

Peter T. Kolesar, carbonate petrology, geochemistry

Assistant Professors

Carol M. Dehler, sedimentation, geochemical cycles

Anthony R. Lowry, geophysics

Tammy M. Rittenour, geomorphology, geochronology

Lecturer

Susan K. Morgan, science education, carbonate petrology

Adjunct Faculty

Reese Barrick, vertebrate paleontology

Janis L. Boettinger, soil mineralogy

Craig B. Forster, hydrogeology

James P. McCalpin, neotectonics

John C. Schmidt, fluvial geomorphology

David G. Tarboton, water resources and hydrology

Course Descriptions

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Department of Health, Physical Education and Recreation

Department Head: Dennis G. Dolny
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:
Julie A. Gast, HPER 138, (435) 797-1490,
julie.gast@usu.edu

Undergraduate Academic Advisors:
Mary Lou Reynolds, HPER 157, (435) 797-1278,
marylou.reynolds@usu.edu

Dayna Barrett, HPER 156, (435) 797-8519, dayna.barrett@usu.edu

For student appointments, call (435) 797-1495.

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, Sports Medicine, 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.

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 with a teaching or exercise science emphasis. The pre-physical therapy emphasis requires a 3.0 GPA. A 2.75 total GPA is 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

Department of Health, Physical Education and Recreation

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 ²² 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 5205 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 4230 (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 3010 Social Inequality (F,Sp)	3
SOC 3330 Medical Sociology (F)	3
SOC 4370 Sociology of Gender (F)	3
SW 2100 ¹⁷ Human Behavior in the Social Environment (Sp)	3

Content and Methods in Education

OSS 1400 ¹⁹ Microcomputer Applications	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
NFS 2020 ²³ Nutrition Throughout the Life Cycle (Sp)	3

PEP 4100 (CI) ²⁴ Exercise Physiology (F,Sp,Su)	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
MGT 3110 (DSS) Managing Organizations and People (F,Sp,Su)	3
MGT 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

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 Secondary Education Program of the School of Teacher Education and Leadership (TEAL). 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

Department of Health, Physical Education and Recreation

School Health Minor (33 credits)

Note: This is an approved teaching minor through the Secondary Education Program of the School of TEAL. 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

¹Prerequisites: Junior standing and FCHD 1500.

²Prerequisites: 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.

³Prerequisite: Admittance to teacher education program.

⁴Prerequisite: Admission to teacher education program and completion of level 1.

⁵Prerequisite: Formal acceptance into the School Health emphasis or School Health minor.

⁶Prerequisite: Completion of Levels 1 and 2: Student Teaching Placement.

⁷Students 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.

⁸Course approved for University Studies credit.

⁹Prerequisite: HEP 2500.

¹⁰Prerequisites: HEP 3600, 4100, and consent of instructor.

¹¹Prerequisite: Junior standing (or higher).

¹²Prerequisite: STAT 1040 (or higher).

¹³It is recommended that BIOL 2060 or 3300; or BIOL 2320 and 2420 be completed prior to taking PUBH 4030.

¹⁴It is recommended that a course in statistics, such as STAT 3000 or PSY 2800, and PUBH 4030 be completed prior to taking PUBH 4040.

¹⁵Prerequisite: PSY 1010.

¹⁶Prerequisites: FCHD 1500, 2400.

¹⁷Prerequisite: SW 1010.

¹⁸Prerequisites: SW 1010, 2100, 2400.

¹⁹Prerequisite: Ability to keyboard at 25 wpm minimum.

²⁰Prerequisites: CL1 fulfillment, English Proficiency Test, typing test, passing scores on CIL exams, and permission of Department of Journalism and Communication.

²¹Prerequisites: Minimum grades of C+ in JCOM 1130, 1500, and 2010.

²²Prerequisite: Consent of instructor for students not in the School Health emphasis or the School Health minor.

²³Prerequisite: NFS 1020.

²⁴Prerequisites: BIOL 2320, 2420; and MATH 1050 or ACT score of 25 or higher.

²⁵Prerequisite: CHEM 1220.

²⁶Prerequisites: HEP 2500, CL2 fulfillment, and passing score on Computer and Information Literacy (CIL) exam.

²⁷Prerequisites: HEP 2500 and passing score on Computer and Information Literacy (CIL) exam.

Parks and Recreation Major (51 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, 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 (42 credits)

PRP 1000 Introduction to Recreation Services (F,Sp).....	3
PRP 3000 Designing Recreation Experiences (F,Sp)	3
PRP 3025 ²⁸ Techniques of Experiential Recreation (F).....	3
PRP 3050 ²⁹ Evaluation of Recreation Services (F)	3
PRP 3075 ³⁰ Applications of Experiential Recreation (Sp).....	3
PRP 3900 ³¹ Diverse Populations (F)	3
PRP 4100 (CI) ³² History of Leisure (Sp).....	3
PRP 4500 ³³ Management of Recreation Services I (F).....	3
PRP 4550 ³⁴ Management of Recreation Services II (Sp).....	3
PRP 4700 ³⁵ Pre-Internship Seminar (F)	3
PRP 4725 (CI) ³⁶ Senior Seminar (Sp)	3
PRP 4750 ³⁷ Internship in Recreation Services (F,Sp,Su).....	6
INST 5205 Computer Applications for Instruction and Training (F,Sp,Su)	3

B. Electives (9 credits)

Select at least 9 credits from the following courses:

PRP 4250 Cooperative Work Experience (F,Sp,Su)	1-12
FCHD 1500 (BSS) Human Development Across the Lifespan (F,Sp)	3
HEP 2000 First Aid and Emergency Care (F,Sp,Su)	2
HEP 3400 Stress Management (F,Sp)	3
LAEP 1030 (BCA) Introduction to Landscape Architecture (F,Sp,Su)	3
SOC 3010 Social Inequality (F,Sp).....	3
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
Activity Courses in Physical Education (numbered PE 1000-2000).....	1-3

C. Additional Requirements

In addition to the above requirements for the major, students must complete a designated minor and 200 hours of documented work experience prior to enrolling in PRP 4750.

Parks and Recreation Minor

(for students not majoring in Parks and Recreation)

A. Required Courses (12 credits)

PRP 1000 Introduction to Recreation Services (F,Sp).....	3
PRP 3000 Designing Recreation Experiences (F,Sp)	3
PRP 3025 ²⁸ Techniques of Experiential Recreation (F).....	3
PRP 3050 ²⁹ Evaluation of Recreation Services (F)	3

B. Elective Courses (9 credits)

Select at least 9 credits from the following courses.

PRP 3075 ³⁰ Applications of Experiential Recreation (Sp).....	3
PRP 3900 ³¹ Diverse Populations (F)	3
PRP 4100 (CI) ³² History of Leisure (Sp).....	3
PRP 4250 Cooperative Work Experience (F,Sp,Su)	1-12
PRP 4500 ³³ Management of Recreation Services I (F).....	3
PRP 4550 ³⁴ Management of Recreation Services II (Sp).....	3
FCHD 1500 (BSS) Human Development Across the Lifespan (F,Sp)	3
HEP 2000 First Aid and Emergency Care (F,Sp,Su)	2
HEP 3400 Stress Management (F,Sp)	3
LAEP 1030 (BCA) Introduction to Landscape Architecture (F,Sp,Su)	3
SOC 3010 Social Inequality (F,Sp).....	3
ENVS 3300 Fundamentals of Recreation Resources Management (F).....	3

Department of Health, Physical Education and Recreation

ENVS 4130 Recreation Policy and Planning (Sp).....	3
ENVS 4500 (CI) Wildland Recreation Behavior (F).....	3
ENVS 4600 Natural Resource Interpretation (F).....	3
Activity Courses in Physical Education (numbered PE 1000-2000).....	1-3

²⁸Prerequisites: PRP 1000 and 3000.

²⁹Prerequisites: PRP 1000, 3000; and MATH 1030 or STAT 1040 or a higher MATH or STAT course. Can be taken concurrently with PRP 3025. (PRP 3050 is pending approval for a Quantitative Intensive [QI] University Studies designation.)

³⁰Prerequisites: PRP 1000, 3000, 3025, 3050, 4500, 4550. Can be taken concurrently with PRP 4550.

³¹Prerequisite: PRP 1000 (can be taken concurrently).

³²Prerequisite: PRP 1000 and fulfillment of Communications Literacy CL2 requirement.

³³Prerequisites: PRP 1000 and 3000.

³⁴Prerequisites: PRP 1000, 3000, and 4500.

³⁵Prerequisites: PRP1000, 3000, 3025, 3050, 3075, 3900, 4500. Can be taken concurrently with PRP 4500.

³⁶Prerequisites: PRP 1000, 3000, 3025, 3050, 3075, 3900, 4500, 4550. Can be taken concurrently with PRP 3075 and 4550. PRP 4725 is approved for a Communications Intensive (CI) University Studies designation.

³⁷Prerequisites: PRP 1000, 3000, 3025, 3050, 3075, 3900; 4100, 4500, 4550, 4700, 4725; INST 5205.

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) ³⁸ College Algebra (F,Sp,Su).....	4

B. Professional Foundation (26 credits)

PEP 2000 Introduction and History of Physical Education (F,Sp).....	2
PEP 3000 Dynamic Fitness (F,Sp,Su).....	3
PEP 3100 Athletic Injuries (F,Sp).....	3
PEP 3250 Anatomical Kinesiology (Sp).....	3
PEP 4100 (CI) ^{39, 55} Exercise Physiology (F,Sp,Su).....	4
PEP 4200 (QI) ^{39, 54, 55} Biomechanics (F,Sp,Su).....	4
PEP 4400 (QI) ^{54, 55} Evaluation in Physical Education (F,Sp).....	3
PEP 5100 ⁵⁸ Fitness Assessment and Exercise Programs.....	4

C. Professional Development (17 credits)

HPER (7 credits minimum)

HEP 2000 First Aid and Emergency Care (F,Sp,Su).....	2
HEP 2500 Health and Wellness (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) ⁵³ 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) ⁴⁰ Biology II (Sp).....	4
BIOL 2060 Elementary Microbiology (F).....	4
BIOL 3060 (QI) ^{41, 54} Principles of Genetics (F,Sp,Su).....	4
BIOL 3300 ⁴² General Microbiology (F,Sp).....	4

Chemistry (3 credits minimum)

CHEM 1010 (BPS) Introduction to Chemistry (F,Sp).....	3
CHEM 1110 (BPS) ⁵⁷ General Chemistry I (F,Sp).....	4
CHEM 1115 ⁴⁴ General Chemistry Laboratory (F,Sp).....	1
CHEM 1120 (BPS) ⁴⁴ General Chemistry II (Sp).....	4

CHEM 1210 ⁴⁵ Principles of Chemistry I (F,Sp).....	4
CHEM 1215 ⁴⁶ Chemical Principles Laboratory I (F,Sp).....	1
CHEM 1220 (BPS) ⁴⁷ Principles of Chemistry II (F,Sp,Su).....	4
CHEM 1225 ⁴⁸ Chemical 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 ⁴³ 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 ⁴⁹ The Physics of Living Systems I.....	4
PHYS 2120 (BPS) ⁵⁰ The Physics of Living Systems II.....	4
PSY 1010 (BSS) General Psychology (F,Sp,Su).....	3
PSY 2100 ⁵¹ Developmental Psychology: Adolescence (Sp).....	3
PSY 2800 (QI) ⁵² Psychological Statistics (F,Sp).....	3
PSY 3210 (DSS) Abnormal Psychology (F,Sp).....	3
STAT 1040 (QL) ⁵⁶ 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
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³⁸Math ACT score of at least 23, C or better in MATH 1010, or satisfactory AP calculus or Math Placement Test score is a prerequisite for this course.

³⁹BIOL 2320, 2420; and MATH 1050 or ACT score of 25 or higher are prerequisites for this course.

⁴⁰BIOL 1610 is a prerequisite for this course.

⁴¹BIOL 1610; and CHEM 1110 or 1210 are prerequisites for this course.

⁴²BIOL 1610 (with a grade of C- or better); and CHEM 1120 or 2300 or 2310 (may be taken concurrently) are prerequisites for this course.

⁴³NFS 1020 is a prerequisite for this course.

⁴⁴CHEM 1110 is a prerequisite for this course.

⁴⁵MATH 1050 or higher (may be taken concurrently), or Math ACT score of at least 25, is a prerequisite for this course.

⁴⁶CHEM 1210 must be taken previously or concurrently.

⁴⁷CHEM 1210 is a prerequisite for this course.

⁴⁸CHEM 1215 is a prerequisite for this course.

⁴⁹MATH 1100 or 1210 is a prerequisite for this course.

⁵⁰MATH 1100 or 1210, and PHYS 2110 are prerequisites for this course.

⁵¹PSY 1010 is a prerequisite for this course.

⁵²STAT 1040 is a prerequisite for this course.

⁵³This course is approved for Communications Intensive (CI) University Studies credit.

⁵⁴This course is approved for Quantitative Intensive (QI) University Studies credit.

⁵⁵Admission to the Physical Education Major is required prior to enrolling in this course.

⁵⁶Math ACT score of 23 or greater, or C or better in MATH 1010, or satisfactory score on Math Placement Test is a prerequisite for this course.

⁵⁷Math ACT score of at least 23, or MATH 1050 or higher (may be taken concurrently), is a prerequisite for this course.

⁵⁸PEP 4100 is a prerequisite for this course.

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) ⁵⁹ College Algebra (F,Sp,Su).....	4
PSY 1010 (BSS) General Psychology (F,Sp,Su).....	3

B. Professional Foundations (30 credits)

PEP 2020 Introduction to Physical Therapy (F).....	2
PEP 3000 Dynamic Fitness (F,Sp,Su).....	3
PEP 3100 Athletic Injuries (F,Sp).....	3
PEP 3250 Anatomical Kinesiology (Sp).....	3
PEP 4100 (CI) ^{60, 75} Exercise Physiology (F,Sp,Su).....	4
PEP 4200 (QI) ^{60, 74, 75} Biomechanics (F,Sp,Su).....	4
PEP 4250 Advanced Cooperative Work Experience (F,Sp,Su).....	4

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PEP 4400 (QI) ^{74, 79} 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) ⁶¹ Biology II (Sp)	4
BIOL 3060 (QI) ^{62, 74} Principles of Genetics (F,Sp,Su).....	4
BIOL 3300 ⁶³ General Microbiology (F,Sp).....	4

Chemistry (9 credits minimum)

CHEM 1110 (BPS) ⁷⁶ General Chemistry I (F,Sp)	4
CHEM 1115 ⁷⁷ General Chemistry Laboratory (F,Sp).....	1
CHEM 1120 (BPS) ⁷⁸ General Chemistry II (Sp).....	4
Or	
CHEM 1210 ⁶⁴ Principles of Chemistry I (F,Sp)	4
CHEM 1215 ⁶⁵ Chemical Principles Laboratory I (F,Sp).....	1
CHEM 1220 (BPS) ⁶⁶ Principles of Chemistry II (F,Sp,Su).....	4
CHEM 1225 ⁶⁷ Chemical Principles Laboratory II (F,Sp).....	1

Mathematics and Statistics (6 credits minimum)

Choose one course from the following:

MATH 1100 (QL) ⁶⁸ Calculus Techniques (higher-numbered course may be substituted) (F,Sp,Su).....	3
MATH 1210 (QL) ⁶⁸ Calculus I (F,Sp,Su).....	4

Choose one course from the following:

STAT 2000 (QI) ⁶⁹ Statistical Methods (F,Sp)	3
STAT 2300 (QL) ⁶⁹ Business Statistics (F,Sp,Su).....	4
STAT 3000 (QI) ⁷⁰ Statistics for Scientists (F,Sp,Su).....	3

Physics (8 credits minimum)

PHYS 2110 ⁷¹ The Physics of Living Systems I.....	4
PHYS 2120 (BPS) ⁷² The Physics of Living Systems II.....	4

Psychology (3 credits minimum)

PSY 1210 ⁷³ Psychology of Human Adjustment (F,Sp)	3
PSY 2100 ⁷³ Developmental Psychology: Adolescence (Sp)	3
PSY 3210 ⁷³ (DSS) Abnormal Psychology (F,Sp).....	3

⁵⁹Math ACT score of at least 23, C or better in MATH 1010, or satisfactory AP calculus or Math Placement Test score is a prerequisite for this course.

⁶⁰BIOL 2320, 2420; and MATH 1050 or ACT score of 25 or higher are prerequisites for this course.

⁶¹BIOL 1610 is a prerequisite for this course.

⁶²BIOL 1610; and CHEM 1110 or 1210 are prerequisites for this course.

⁶³BIOL 1610 (with a grade of C- or better); and CHEM 1120 or 2300 or 2310 (may be taken concurrently) are prerequisites for this course.

⁶⁴MATH 1050 (may be taken concurrently), or Math ACT score of at least 25, is a prerequisite for this course.

⁶⁵CHEM 1210 must be taken previously or concurrently.

⁶⁶CHEM 1210 is a prerequisite for this course.

⁶⁷CHEM 1215 is a prerequisite for this course.

⁶⁸C- or better in MATH 1050, or a Math ACT score of at least 25, is a prerequisite for MATH 1100; C- or better in 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.

⁶⁹C- or better in MATH 1050 is a prerequisite for this course.

⁷⁰MATH 1100 or 1210 is a prerequisite for this course.

⁷¹MATH 1100 or 1210 is a prerequisite for this course.

⁷²MATH 1100 or 1210, and PHYS 2110 are prerequisites for this course.

⁷³PSY 1010 is a prerequisite for this course.

⁷⁴This course is approved for Quantitative Intensive (QI) University Studies credit.

⁷⁵Admission to the Physical Education Major is required prior to enrolling in this course.

⁷⁶Math ACT score of at least 23, or MATH 1050 or higher (may be taken concurrently), is a prerequisite for this course.

⁷⁷CHEM 1110 must be taken previously.

⁷⁸CHEM 1110 is a prerequisite for this course.

⁷⁹Enrollment in PEP 4400 is available *only* to students who have been accepted into the Physical Education major

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 Secondary Education Program of the School of TEAL.

A. Prerequisites (17 credits)

BIOL 2320 Human Anatomy (Sp,Su)	4
BIOL 2420 Human Physiology (F,Sp,Su)	4
MATH 1050 (QL) ⁶⁰ College Algebra (F,Sp,Su)	4
HEP 2000 First Aid and Emergency Care (F,Sp,Su)	2
PEP 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) ^{87, 91} Motor Learning and Technology in Skill Analysis (F,Sp,Su).....	3

D. Methods of Teaching (3 credits)

PEP 3550 Strategies for Teaching Physical Education (F,Sp).....	3
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E. Professional Foundations (16 credits)

PEP 4000 Mental Aspects of Sports Performance (F,Sp,Su).....	3
PEP 4100 (CI) ^{81, 91} Exercise Physiology (F,Sp,Su).....	4
PEP 4200 (QI) ^{84, 90, 91} Biomechanics (F,Sp,Su).....	4
PEP 4350 Administration and Classroom Management of Physical Education (F,Sp)	2
PEP 4400 (QI) ⁹⁰ Evaluation in Physical Education (F,Sp).....	3

F. Methods of Coaching (3 credits)

PEP 4500 ⁸² Motivational Strategies for Physical Education and Coaching (Sp)	3
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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) ⁸³	1
Methods of Teaching (in minor) ⁸⁴	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 ⁸⁵ Clinical Experience II (F,Sp).....	1
PEP 4900 (CI) ^{86, 87} Methods of Physical Education (F,Sp,Su).....	3

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Level 3 (includes 13 weeks of student teaching and 2 weeks of Student Teaching Seminar)

PEP 5500 ⁸⁸ Student Teaching Seminar (2 weeks) (F,Sp).....	2
PEP 5630 ⁸⁹ Student Teaching in Secondary Schools (13 weeks) (F,Sp)	10

⁸⁰Math ACT score of at least 23, C or better in MATH 1010, or satisfactory AP calculus or Math Placement Test score is a prerequisite for this course.

⁸¹BIOL 2320, 2420; and MATH 1050 or ACT score of 25 or higher are prerequisites for this course.

⁸²HEP 2000 (which may be taken concurrently) should be completed prior to taking this course.

⁸³Clinical Experience I is taught under course number 3300 in various departments. Must be taken concurrently with Methods of Teaching in minor.

⁸⁴Methods of Teaching courses are taught under various course numbers in various departments. Must be taken concurrently with Clinical Experience I in minor.

⁸⁵Must be taken concurrently with PEP 4900.

⁸⁶PEP 3550 is a prerequisite for this course.

⁸⁷This course is approved for Communications Intensive (CI) University Studies credit.

⁸⁸Must be taken concurrently with PEP 5630.

⁸⁹Must be taken concurrently with PEP 5500. Application for student teaching must be completed. Applications are available in EDUC 330.

⁹⁰This course is approved for Quantitative Intensive (QI) University Studies credit.

⁹¹Admission to the Physical Education Major is required prior to enrolling in this course.

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) ⁹² College Algebra (F,Sp,Su)	4
HEP 2000 First Aid and Emergency Care (F,Sp,Su)	2
PEP 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) ^{95, 97} Motor Learning and Technology in Skill Analysis (F,Sp,Su)	3
PEP 4000 Mental Aspects of Sports Performance (F,Sp,Su)	3
PEP 4100 (CI) ^{93, 97} Exercise Physiology (F,Sp,Su)	4
PEP 4350 Administration and Classroom Management of Physical Education (F,Sp)	2
PEP 4400 (QI) ^{96, 97} Evaluation in Physical Education (F,Sp)	3

D. Methods of Teaching (3 credits)

PEP 3550 Strategies for Teaching Physical Education (F,Sp)	3
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E. Methods of Coaching (4 credits)

PEP 2050 Sport Rules and Regulations of the Utah High School Athletic Association (Sp)	1
PEP 4500 ⁹⁴ Motivational Strategies for Physical Education and Coaching (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.

⁹²Math ACT score of at least 23, C or better in MATH 1010, or satisfactory AP calculus or Math Placement Test score is a prerequisite for this course.

⁹³BIOL 2320, 2420; and MATH 1050 or ACT score of 25 or higher are prerequisites for this course.

⁹⁴HEP 2000 (which may be taken concurrently) should be completed prior to taking this course.

⁹⁵This course is approved for Communications Intensive (CI) University Studies credit.

⁹⁶This course is approved for Quantitative Intensive (QI) University Studies credit.

⁹⁷Admission to the Physical Education Coaching Minor is required prior to enrolling in this course.

Suggested Four-year Plans

Suggested semester-by-semester four-year plans for students working toward a bachelor's degree within the Health, Physical Education and Recreation Department can be found at:

<http://www.usu.edu/degreeplans/>

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests.

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@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://cehs.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 Emma Eccles Jones 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, or check the departmental home page at: <http://cehs.usu.edu/hper/>

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.

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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.

Additional assessment information can be found at:
<http://cehs.usu.edu/hper/>

Graduate Programs

Please refer to the general admission requirements on pages 36-37 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 in Health, Physical Education and Recreation

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, Sports Medicine, and Health Education.

Course Requirements

Corporate Wellness Specialization (40 credits)

MS candidates specializing in **Corporate Wellness** must complete the following courses. (This specialization is a Plan C nonthesis option.)

Required Core Courses (13 credits)

PEP 6400 Exercise in Health, Fitness, and Sport (F)	4
PEP 6800 Biomechanics and Ergonomics of Health, Industry, and Sport (Sp)	3
PEP 6810 Research Methods in Health Sciences (F)	3
EDUC/PSY 6600 Research Design and Analysis I (F,Sp,Su)	3

Corporate Wellness Specialization Requirements (15 credits)

PEP 6450 Fitness Assessment and Exercise Testing (Sp)	3
PEP 6500 Practicum in Corporate Wellness (on campus, complete 1 credit per semester) (F,Sp,Su)	2
PEP 6500 Practicum in Corporate Wellness (remote site) (F,Sp,Su)	4
PEP 6540 Wellness Programming (Sp)	3
PSY 6470 Health Psychology (F)	3

Corporate Wellness Specialization Electives (select 12 credits)

HEP 6000 Evaluating Health-Promotion Programs (Sp)	3
HEP 6100 Current Trends in Health Promotion (F)	3
PEP 5100 Fitness Assessment and Exercise Programs (F)	4
NFS 3020 Nutrition and Physical Performance (F)	2
NFS 6200 Nutritional Epidemiology (F)	2
NFS 6210 Advanced Public Health Nutrition (Sp)	2
SOC 6400 Sociology of Health (F)	3

Exercise Science Specialization (30 credits)

MS candidates specializing in **Exercise Science** must complete the following courses. (This specialization is a Plan A thesis option.)

Required Core Courses (13 credits)

PEP 6400 Exercise in Health, Fitness, and Sport (F)	4
PEP 6800 Biomechanics and Ergonomics of Health, Industry, and Sport (Sp)	3
PEP 6810 Research Methods in Health Sciences (F)	3
EDUC/PSY 6600 Research Design and Analysis I (F,Sp,Su)	3

Exercise Science Specialization Requirements (9 credits)

PEP 6540 Wellness Programming (Sp)	3
PEP 6970 Thesis (F,Sp,Su)	6

Exercise Science Specialization Electives (select 8 credits)

BIOL 4000 Human Dissection (F)	1
EDUC/PSY 7610 Research Design and Analysis II (F,Sp,Su)	3
HEP 6100 Current Trends in Health Promotion (F)	3
NFS 3020 Nutrition and Physical Performance (F)	2
NFS 6200 Nutritional Epidemiology (F)	2
NFS 6210 Advanced Public Health Nutrition (Sp)	2
PEP 5100 Fitness Assessment and Exercise Programs (F)	4
PEP 6450 Fitness Assessment and Exercise Testing (Sp)	3
PSY 6470 Health Psychology (F)	3

Sports Medicine Specialization

(thesis track: 31 credits; nonthesis track: 33 credits)

MS candidates specializing in **Sports Medicine** must complete the following courses.

EDUC/PSY 6600 Research Design and Analysis I (F,Sp,Su)	3
PEP 6400 Exercise in Health, Fitness, and Sport (F)	4
PEP 6550 Athletic Training Clinical Orthopedics I (F)	3
PEP 6560 Athletic Training Clinical Orthopedics II (Sp)	3
PEP 6570 Athletic Training Clinical Orthopedics III (F)	3
PEP 6580 Athletic Training Clinical Orthopedics IV (Sp)	3
PEP 6800 Biomechanics and Ergonomics of Health, Industry, and Sport (Sp)	3
PEP 6810 Research Methods in Health Sciences (F)	3
PEP 6970 Thesis (for thesis track only) (F,Sp,Su)	(6)

For nonthesis track, select at least 8 credits from the following electives (instead of taking PEP 6970).

NFS 3020 Nutrition and Physical Performance (F)	2
PEP 5100 Fitness Assessment and Exercise Programs (F)	4
PEP 6450 Fitness Assessment and Exercise Testing (Sp)	3
PEP 6540 Wellness Programming (Sp)	3

Department of Health, Physical Education and Recreation

Health Education Specialization (24-32 credits)

MS candidates specializing in *Health Education* must complete the following courses.

Required Core Courses (23 credits)

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)	6

Health Education Specialization Electives (select 7 credits)

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
MGT 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:

TEAL 6710 Diversity in Education (Sp,Su)	3
PEP 6000 Administration of Athletics (Arr)	3
PEP 6010 Leadership in Health, Physical Education, and Recreation (Sp)	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 6700 Special Topics in Physical Education (F,Sp,Su)	3
PEP 6810 Research Methods in Health Sciences (F)	3
PEP 6830 Motor Learning (Sp)	3
PEP 6960 Master's Project (F,Sp,Su)	3
PEP 7550 Practicum in the Evaluation of Instruction (F,Sp,Su)	3

Research

Research areas include health promotion, health education, exercise science, corporate wellness, sport psychology, sport in society, biomechanics, and pedagogy. Research laboratories include the Motion Analysis Lab, the Biomechanics Lab, the Exercise Physiology Lab, the Body Composition Lab, and the Sport Medicine Lab.

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 for the first fiscal year. For additional financial assistance information, check the departmental home page at: <http://cehs.usu.edu/hper/>

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://cehs.usu.edu/hper/>

Health, Physical Education and Recreation Faculty

Professors

Dennis G. Dolny, Head, Health, Physical Education and Recreation Department

Richard D. Gordin, Jr., sport psychology

Edward M. Heath, exercise physiology

Gerald A. Smith, biomechanics

Associate Professors

Eadric Bressel, biomechanics

Hilda Fronske, motor learning

Julie A. Gast, community health

Donna L. Gordon, community health

John M. Kras, administration of physical education

Dennis A. Nelson, parks and recreation

Phillip Waite, community health

Rolayne Wilson, elementary physical education

Nontenure Assistant Professors

Ginni Dilworth, parks and recreation

Mark Roark, parks and recreation

Dale Wagner, exercise physiology

Principal Lecturer

Peter J. Mathesius, physical education

Senior Lecturer

Matthew Flint, health education

Course Descriptions

Health Education Professional (HEP), pages 574-576

Physical Education Professional (PEP), pages 628-630

Parks and Recreation Professional (PRP), page 641

Physical Education Activity (PE), pages 624-628

Dance West Summer, Dance Education Classes (DE), pages 540-541

Department of History

Department Head: Norman L. Jones

Location: Main 323

Phone: (435) 797-1290

FAX: (435) 797-3899

E-mail: monica.ingold@usu.edu

WWW: <http://www.usu.edu/history>

Graduate Program Coordinator: Christopher A. Conte,
Main 323G, (435) 797-1303, chris.conte@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 teach 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 emphasis, 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

Transfer Students

The History Department accepts all history courses taught by institutions within the Utah System of Higher Education. Students who are transferring may wish to consult the online *Advisor Handbook* for articulation information for the institution from which they are transferring. This information can be found at:

http://www.usu.edu/advising/for_advisors/handbook/2007-2008

AP Credit

The History Department *does not* accept AP credit for use toward its degrees. However, if a student has passed an AP exam with a score of 3 or better, the equivalent lower-division course will be waived, and the student can complete the equivalent number of credits in an upper-division course. This waiver *does not* apply to students enrolled in the History Teaching Emphasis.

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.

Since history can be classified in *both* the humanities *and* the social sciences, majors may receive either a Bachelor of Arts (BA) or a Bachelor of Science (BS) degree. However, because history primarily involves the study of written documents, the department encourages students to choose the BA, which requires proficiency in a foreign language.

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 emphasis or teaching minor, or a classics minor.

Bachelor of Arts Language Track

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.

Note: Demonstration of proficiency in American Sign Language will *not* meet the foreign language requirement for the BA degree in history.

Bachelor of Science Mathematics and Science Track

For those interested in a BS degree, a significant amount of coursework in the College of Science is required. These courses must contribute significantly to an understanding of science and the scientific method. Therefore, students must complete 8 credits in one of the following course pairs: BIOL 1610/1620, CHEM 1210/1220, PHYS 2110/2120, or PHYS 2210/2220. Students *cannot* receive a BS in history unless they successfully complete one of these course pairs with grades of C- or better. Students must also complete at least 6 additional credits in math or science, 3 of which are required to be in *either* statistics (e.g. STAT 2000, 2300, or 3000) or social science statistics (e.g., PSY 2800, POLS 3000, or SOC 3120). The other 3 science credits may be chosen from any 2000-, 3000-, or 4000-level math or science course having one of the following prefixes: BIOL, CHEM, CS, GEO, MATH, STAT, or PHYS. For these 3 science credits only, students may petition the department head of the History Department to substitute a course from outside the College of Science, if it has a demonstrable scientific or technical focus (e.g., ADVS 3020, ETE 3200, PEP 4200, WATS 3000). In all instances, a grade of C- or better is required for any math or science course to be applied toward a BS degree.

Students who minor in a science field will fulfill the BS requirement through their minor.

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

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).

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

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.)

Each student must complete the following government and politics course:

POLS 1100 (BAI) United States Government and Politics (F,Sp).....	3
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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 21 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 Shelly Wiegand, secondary education undergraduate advisor, (435) 797-0383.

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.

Department of History

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

Thirty credits are required. A grade of C or better must be earned in all history courses used for the minor. Every student must complete *two* 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 *both* 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 211 of this catalog.

Sample Four-year Plans

Sample semester-by-semester four-year plans for students working toward a bachelor's degree within the History Department can be found at: <http://www.usu.edu/degreplans/>

Students should consult with their advisors to develop a plan of study tailored to their individual needs and interests.

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.

Upon arrival at USU, students are urged to meet with the departmental graduate advisor, who will direct them to one or more faculty members with similar interests. Through consultations with the graduate and faculty advisor, the first-year student will form a thesis committee and formulate a course of study. By the end of the first year, most students

will have submitted to their committees a proposal for the thesis, which they will write under the close supervision of the committee members. The oral defense usually takes place in the spring semester of the second year.

Master's Degree, Plan B (Nonthesis)

A nonthesis master's program can help a student attain employment in many areas, but is not recommended for students planning to secure a doctorate. A master of arts, master of science, or master of social sciences degree can be completed with this option.

The Plan B program consists of 30 credits beyond the bachelor's degree. The course requirements are identical to those of the Plan A program, except that only 3 thesis credits are permitted.

Students completing the Plan B program do not write a full-length thesis. Instead, Plan B students write a research paper of approximately 30 pages in length and submit a portfolio of their graduate writing, which includes two additional and distinct pieces of writing. Students defend their Plan B research papers and writing portfolios before their major professor and the members of the supervisory committee. Final approval of the Plan B rests with the department, rather than with the School of Graduate Studies.

Master of Arts

To receive a master of arts (MA) degree, students must successfully complete two years of foreign language at the undergraduate level. If two years of undergraduate language study already appear on the student's transcript, he or she must demonstrate current competence through successful completion of a language exam or by taking a 3000- or 4000-level language course for which a grade of *B* or higher proves competency. In all cases, an individual assessment must be made of a student's language status. For further information, see page 117.

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.

Department of History

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 111). 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. Uteley 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; and the College of Humanities, Arts, and Social Sciences. The S. George Ellsworth Fellowship is being offered for the 2009-2010 academic year.

Funding for the Robert M. Uteley Fellowship is provided by the *Western Historical Quarterly* and the School of Graduate Studies. The Robert M. Uteley Fellowship is being offered for the 2010-2011 academic year. 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: carolyn.doyle@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
Philip L. Barlow, Leonard J. Arrington Chair of Mormon History and Culture, religious studies, American religion, Mormon history
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, reform
Charles S. Prebish, Charles Redd Endowed Chair in Religious Studies, Buddhist studies and religion
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*

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
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
James Sanders, Latin America, Atlantic world
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
Timothy S. Wolters, science and technology, American history

Adjunct Professors

Doran J. Baker, Electrical and Computer Engineering Department, history of science
Richard W. Clement, Dean of Libraries
Barry M. Franklin, Secondary Education Program, history of education
Christopher B. R. Pelling, Regius Professor of Greek, Oxford University: Classics

Senior Lecturer

Denise O. Conover, American diplomatic history, U.S. military, American civilization

Lecturer

Eric Kimball, early American history, slavery and abolition, Atlantic history

Adjunct Assistant Professors

Daniel M. Davis, photograph curator, U.S. West

H. Bert Jenson, associate librarian

Stephen C. Sturgeon, manuscript curator, Twentieth Century U.S. West, political, environmental history

Adjunct Instructor

Robert E. Parson, University Archivist, Special Collections and Archives

Trustee Professor Emeritus

Anne M. Butler, U.S. West, U.S. Women

Professors Emeritus

William F. Lye, Africa, India, Canada

Michael L. Nicholls, early American history

F. Ross Peterson, U.S. modern political history, Black history

Course Descriptions

History (HIST), pages 576-581

Latin (LATN), page 596

Greek (GRK), page 574

Classics (CLAS), page 530

Honors Program

Director: Christie L. Fox
Location: Main 15
Phone: (435) 797-2715
FAX: (435) 797-3941
E-mail: honors@usu.edu
WWW: <http://honors.usu.edu/>

Honors Coordinator: Danene Dustin, (435) 797-3790,
danene.dustin@usu.edu
Staff Assistant: Amber Summers-Graham, (435) 797-2717,
amber.summers@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

The Utah State University Honors Program admits students based on application. Students are asked to complete an application that includes an essay, a questionnaire on academic achievement, and a resume. The application is available on the Honors Program website: <http://honors.usu.edu/>

Students will be selected on the basis of: (1) overall academic achievement and promise, (2) extra-curricular and leadership activities, and (3) an essay.

Current and transfer students are also invited to apply. There are Honors options appropriate for students with three to four semesters remaining in their degree programs. For an application, contact the Honors Program or visit the website at: <http://honors.usu.edu/>

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.

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://honors.usu.edu/>

Course Descriptions

Honors (HONR), page 581

Department of Instructional Technology and Learning Sciences

Department Head: Mimi Recker
Location: Emma Eccles Jones Education 215A
Phone: (435) 797-2692
FAX: (435) 797-2693
E-mail: mimi.recker@usu.edu
WWW: <http://itls.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 36-37. 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 and Learning Sciences

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 and Learning Sciences 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

Adjunct Associate Professor

Michael K. Freeman, educational leadership

Assistant Professors

Brian R. Belland, scaffolding, problem-based learning, psychometrics, STEM education, service learning, technology integration
Joanne P. Bentley, learning theory and evaluation
Anne R. Diekema, information retrieval, digital libraries, metadata, 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
Victor R. Lee, visual representations, curriculum design, cognitive science, everyday and intuitive reasoning, conceptual change
Brett E. Shelton, immersive technologies, cognitive studies
Andrew E. Walker, collaborative information filtering and problem-based learning, situated cognition
David A. Wiley, learning objects, instructional design theory

Adjunct Instructors

JaDene M. Denniston, school library media
Kevin L. Reeve, distance education

Lecturer

Sheri Haderlie, Instructional Technology and Learning Sciences
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 Professors Emeritus

J. Steven Soulier, message design, computer applications
Linda L. Wolcott, distance education, library media, and foundations

Course Descriptions

Instructional Technology and Learning Sciences (INST),
pages 584-589

Intensive English Language Institute

Director: Ann E. Roemer
Location: Main 071
Phone: (435) 797-2051
FAX: (435) 797-4050
E-mail: ann.roemer@usu.edu
WWW: <http://www.usu.edu/ieli/>

Assistant Director:
James E. Bame, Main 077, (435) 797-3908, jim.bame@usu.edu

IELI Undergraduate and Graduate Advisor:
Margaret Garr, Main 069A, (435) 797-2081, m.garr@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 500 paper/pencil or 61 on the iBT (Internet-based test); and graduate students applying without a minimum TOEFL score of 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. In lieu of the TOEFL, students can submit a minimum IELTS score of 5 (undergraduate students) or 6 (graduate students).

Note: The minimum TOEFL and IELTS scores acceptable for undergraduate students entering USU during the 2010-2011 academic year will be raised to 525 paper/pencil, iBT 71, and IELTS 6.0 (with a minimum of 5.0 on each sub-scale).

Curriculum

Four levels of study are offered each semester. The ability levels of classes range from high-beginning 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 Office of International Students and Scholars.

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 clubs, 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), page 583

Interdisciplinary Studies Major

Academic Advisement:

College of Agriculture

Lisa Allen, (435) 797-2215, lisa.allen@usu.edu

Emma Eccles Jones 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.wagner@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 Huntsman School of Business, the College of Engineering, or the Department of Computer Science. The Interdisciplinary Studies degree is also available through the University's Regional Campuses and Distance 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 opportunities 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.

Interdisciplinary Studies Major

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 an advisor in the Office of University Advising, (435) 797-3373.

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 589

Interior Design Program

Program Director: JoAnn Wilson
Location: Family Life 320A
Phone: (435) 797-1557
FAX: (435) 797-8245
E-mail: interiors@cc.usu.edu
WWW: <http://interiordesign.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 Interior Design (BID);
Bachelor of Science (BS) and Bachelor of Arts (BA) in Interior Design,
Sales and Marketing; Master of Science (MS) in Human Environments,
with a specialization in Interior Design

Overview

The program in interior design includes a Bachelor of Interior Design (BID); a BS and BA in Interior Design, Sales and Marketing; and an MS in Human Environments with a specialization in Interior Design. These degrees have been developed to prepare students for entry into the varied professions of interior design. Students identify, research, and creatively solve problems pertaining to the function and quality of the interior environment. Students 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 both commercial and residential spaces. These services include programming, design analysis, space planning, aesthetics, interior construction, drafting, building codes, equipment, materials, and furnishings, in order to protect the health, safety, and welfare of the public.

Undergraduate Programs

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 degree the student will pursue. The two available degrees are (1) **Bachelor of Interior Design (BID)** and (2) **BS or BA in Interior 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@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: Each student must submit an application packet during April of his or her freshman/first year, which will be used to determine which students may matriculate into the program. **Transfer students who desire to enter the program are also required to submit an application packet for review during April of the year they would like to matriculate.** All students desiring to continue into the sophomore/second year classes in the Interior Design Program are required to submit a portfolio for review to determine placement into either the BID degree or the BS or BA in Interior Design, Sales and Marketing.

Minimum GPA for Graduation: 2.5, major; 2.0, Career

Minimum Grade Accepted: C in major requirements:
BID Degree—MGT 2050, PHIL 3810, ID courses;
BS or BA in Interior Design, Sales and Marketing—
OSS 2800, MGT 2050, 3110, 3500, 3510, 3710, PHIL 3810,
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 1750 (BCA) Design in Everyday Living	3
ID 1770 History of Interior Furnishings and Architecture I	3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose	3
ART 1120 Two-dimensional Design (or Interior Design substitute course approved by advisor).....	3
University Studies Breadth course	3

Spring Semester (16 credits)

ID 1700 Interior Design Professional Seminar	1
ID 1780 History of Interior Furnishings and Architecture II	3
ID 1790 (BCA) Interior Design Theory	3
ART 1020 Drawing I (or Interior Design substitute course approved by advisor).....	3
University Studies Breadth course	3
University Studies Quantitative Literacy (QL) course	3

Submit first-year application packet.

Complete the CIL exams by the end of the freshman year.

Sophomore Year (26 credits)

Fall Semester (13 credits)

ID 1700 Interior Design Professional Seminar	1
ID 2710 Architectural Graphics I	3
ID 2750 Computer Aided Drafting and Design I	3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode.....	3
Creative Elective course(s) (see advisor for list of approved courses).....	3

Interior Design Program

Spring Semester (13 credits)

ID 1700 Interior Design Professional Seminar	1
ID 2730 Interior Space Planning and Human Dimensions	3
ID 2760 Computer Aided Drafting and Design II	3
ARTH 2720 (BHU) Survey of Western Art: Renaissance to Post-Modern	3
University Studies Breadth course	3

Bachelor of Interior Design (BID)

Junior Year (32 credits)

Fall Semester (14 credits)

ID 1700 Interior Design Professional Seminar	1
ID 3730 (QI) Interior Materials and Construction	3
ID 3760 Commercial Design Studio	4
ID 3790 Architectural Systems	3
University Studies Breadth course	3

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
University Studies Breadth course	3

Summer Semester (4 credits)

ID 4710 Interior Design Advanced Internship I	4
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Senior Year (31 credits)

Fall Semester (16 credits)

ID 1700 Interior Design Professional Seminar	1
ID 4750 Senior Design Studio I	3
MGT 2050 Legal and Ethical Environment of Business	3
Depth Communications Intensive (CI) course	3
Depth Life and Physical Sciences (DSC) course	3
Creative Elective course (see advisor for list of approved courses)	3

Spring Semester (15 credits)

ID 1700 Interior Design Professional Seminar	1
ID 4740 (CI) Business and Professional Practices in Interior Design	3
ID 4760 Senior Design Studio II	3
ID 4770 Senior Exhibit	1
Depth Social Sciences (DSS) course	3
Upper-division elective course(s)	4

BS or BA in Interior Design, Sales and Marketing

Junior Year (33 credits)

Fall Semester (16 credits)

ID 1700 Interior Design Professional Seminar	1
ID 3730 (QI) Interior Materials and Construction	3
ID 3790 Architectural Systems	3
MGT 2050 Legal and Ethical Environment of Business	3
MGT 3110 (DSS) Managing Organizations and People	3
University Studies Breadth course	3

Spring Semester (13 credits)

ID 1700 Interior Design Professional Seminar	1
MGT 3510 Fundamentals of Entrepreneurship	3
MGT 3710 Developing Team and Interpersonal Skills	3
PHIL 3810 Aesthetics	3
University Studies Breadth course	3

Summer Semester (4 credits)

ID 4710 Interior Design Advanced Internship I	4
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Senior Year (29 credits)

Fall Semester (14 credits)

ID 1700 Interior Design Professional Seminar	1
ID 4700 Topics in Interior Design	3
OSS 1550 (CI) Business Correspondence	3
Depth Life and Physical Sciences (DSC) course	3
Creative Elective course(s) (see advisor for list of approved courses)	3
Upper-division elective course	1

Spring Semester (15 credits)

ID 1700 Interior Design Professional Seminar	1
MGT 3500 Fundamentals of Marketing	3
OSS 2800 Principles of Selling	2
Upper-division elective courses	9

Freshman/First-Year Application Packet

All Interior Design students (i.e., freshmen and transfer students) must submit an application packet. The application packet assesses basic skills and creativity. Acceptance of students into the Interior Design Program will allow them to register for Architectural Graphics I (ID 2710) and Computer Aided Drafting and Design I (ID 2750). The application packet, detailed instructions, and submission information can be found online at: <http://interiordesign.usu.edu/>

Laptop Computer Requirement

It is *strongly recommended* that freshmen have a laptop computer. Students entering sophomore-level interior design courses must have their own laptop computer. Specifications for the laptop will be provided by the Interior Design Program. Computer specifications can be found at: <http://interiordesign.usu.edu/>. 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 submit projects from as many of the following courses as possible: ID 1740, 1760, 1790, 2710, 2720, 2730, 2750, 2760; ART 1020, 1120; and one elective art skills class.

Selection is based on a letter of intent; a portfolio demonstrating creative potential, problem solving skills, and graphic fluency; and cumulative GPA from ID required courses.

Students accepted into the advanced courses will be placed into *either* the Studio Interior Design (BID) degree *or* the Interior Design, Sales and Marketing (BS or BA) degree. The final selection of students to matriculate to the upper division is a decision of the ID faculty.

If a student who has been approved to take classes stops out of the program, he or she will be readmitted if space is available. Students may also be asked to resubmit their portfolio. Due to space limitations, first preference will be given to students with continuous registration in the program.

Interior Design Program

Tours

Students need to be more 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.

The Interior Design Program sponsors a national or international design tour every other year. These tours include a variety of learning and teaching opportunities, which include individual and group tutorials, projects, seminars, lectures, and visits to museums, galleries, and studios. Students receive credit for these tours through the Interior Design Travel Course (ID 4780). Students should participate in at least one travel event while enrolled in the program.

Interior Design Programmatic Learning Objectives

1. Students will research and apply elements and principles of interior design.
2. Students will interact and apply design skills in collaborative and professional environments.
3. Students will be given a base from which to specify appropriate materials and products for interior environments.
4. The program will prepare students for activities involving laws, codes, and best sustainability and environmental practices.
5. The program will provide educational and technical curriculum that addresses Council for Interior Design Accreditation (CIDA) standards.

Assessment

Every six years, the Interior Design Program undergoes a rigorous accreditation assessment by the program's national accreditation board, the Council for Interior Design Accreditation (CIDA). CIDA learning objectives are incorporated into course content, and are also explained and mapped in the accreditation section of the Interior Design website. See **Learning Objectives** link and **Mapping** link at: <http://interiordesign.usu.edu/assessment.htm>

The Interior Design Program's learning objectives are in accordance with national CIDA standards. Assessing whether or not objectives have been met involves analysis of curriculum, syllabi, project demonstrations or briefs, handouts, and blank exams, as well as reviews of student work.

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/>

Graduate Program

The Master of Science in Human Environments with a specialization in Interior Design allows students to pursue a variety of personal research interests, such as sustainability, LEED (Leadership in Energy and Environmental Design) certification, historic preservation, residential design, marketing and analysis of interior design products and services, etc.

Human Environments is the study of the circumstances, objects, or conditions by which one is surrounded. The MS program prepares students for the challenges of the human environmental needs of the future.

Interior Design Faculty

Associate Professor

JoAnn Wilson, Director of Interior Design Program

Assistant Professor

Darrin S. Brooks, residential design and interior history

Lecturers

Steven R. Mansfield, architecture and computer aided design

Susan Tibbitts, architectural graphics, sales and marketing

Course Descriptions

Interior Design (ID), pages 582-583

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://politicalscience.usu.edu/>

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, students must also complete an international experience component. Students may choose a traditional study abroad experience in an accredited program, which must be approved by the international studies advisor. Students may also choose an internship. The internship must have a clear international focus and must be supervised by the international studies advisor, who 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@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)

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

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
ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su) (3 cr) **or**
ECN 3400 (DSS) International Economics for Business (F,Sp,Su) (prereq: APEC/ECN 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 one course at the 3000 level *or* (if this is not possible) receive a waiver from the international studies advisor.

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/GEOG/SOC 5650 (DSS) Developing Societies (F)	3
ECN 5100 History of Economic Thought (Sp) (prereq: APEC/ECN 2010)	3
ECN 5150 (DSS) Comparative Economic Systems (F,Sp) (prereq: APEC/ECN 2010)	3
ECN 5400 International Trade Theory (F) (prereq: ECN 4020; ECN 3010 or 4010)	3
FIN 4300 International Finance (F,Sp)	3
HIST 4610 Themes and Methods in Economic History	3
MGT 3820 (DSS) International Management (F,Sp)	3
MGT 4590 Global Marketing Strategy (F,Sp) (prereq: MGT 3500, 4540, 4550)	3
MGT 4890 (CI) Business Strategy in a Global Context (F,Sp,Su) (prereq: senior standing; FIN 3400; MGT 3110, 3500, 3700)	3
MIS 4550 (CI) Principles of International Business Communications (Sp)	3
PHIL 3520 (DHA) Business Ethics	3
PLSC 4300 World Food Crops and Cropping Systems: The Plants That Feed Us (F even)	3
POLS 3100 Global Issues (F)	3
POLS 5120 Economics of Russia and Eastern Europe, 9th Century to 21st Century (F)	3
POLS 5210 Comparative Political Change/Development (F)	3
POLS 5480 International Trade Policy (Sp)	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 (Sp)	3
HIST 4821 (DHA) World War II in Asia (Sp)	3
PHIL 4610 (DHA) Social and Political Philosophy	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 3700 Terrorism and Counterterrorism (F)	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 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

APEC 5560 Natural Resource and Environmental Economics (Sp) (prereq: APEC/ECN 2010)	3
BIOL 3100 (CI) Bioethics (Sp)	3
ENVS 2340 (BSS) Natural Resources and Society (F,Sp)	3
ENVS 3330 Environment and Society (Sp)	3
ENVS 5550 Sustainable Development (Sp)	3

ENVS/SOC 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 (Sp)	3
POLS 3100 Global Issues (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/LING 4100 The Study of Language (F,Sp)	3
ANTH 4230 (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 1400 (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	3
LANG 3550 (DHA) Culture of East Asia	3
LATS 2200 Introduction to Latin America (F)	3
LING 4900 Analysis of Cross-Cultural Difference	3
PHIL 3700 (DHA) Philosophy of Religion (F)	3
PHIL 3710 Philosophies of East Asia (F)	3
PHIL 3750 Religion and Science in the Modern World (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 3200 (DSS) Population and Society (F,Sp)	3
SOC 4330 Religion, Science, and Society (Sp)	3
SOC 4370 Sociology of Gender (F)	3
SOC 4710 Asian Societies (Sp)	3
SPCH 3330 (DSS) Intercultural Communication (F,Sp)	3

International Studies Major and Minor

Sample Four-year Plan for International Studies Major

A sample semester-by-semester four-year plan for students working toward a Bachelor of Arts degree in International Studies can be found at: <http://www.usu.edu/degreeplans/>

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests.

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
ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su) (3 cr) **or**
ECN 3400 (DSS) International Economics for Business (F,Sp,Su) (prereq: APEC/ECN 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 (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

Interim Department Head: Bradford "J" Hall

Location: Animal Science 310

Phone: (435) 797-3292

FAX: (435) 797-3973

E-mail: jcom@aggiemail.usu.edu

WWW: <http://www.usu.edu/journalism>

Assistant Department Head:

Penny M. Byrne, Animal Science 108A, (435) 797-3289,
penny.byrne@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 151-152); Master of Science (MS) and Master of Arts (MA) in Communication

Note: Applications for admission to the MS and MA degrees in Communication are not currently being accepted. For information about when they may be accepted, contact the Department of Journalism and 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-thinking 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.

Department of Journalism and Communication

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. Passing scores on the Computer and Information Literacy (CIL) exams are also required prior to enrollment in JCOM 1130. 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).....	3
(prereq: min of C+ in JCOM 1130, 1500, and 2010)	
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)

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

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, 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 Journalism Emphasis (30-36 credits)

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

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, 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)

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

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, 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 Plans

Sample semester-by-semester four-year plans for students working toward a bachelor's degree within the Journalism and Communication Department can be found at: <http://www.usu.edu/degreeplans/>

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests.

Department of Journalism and Communication

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
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 majors. 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@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.

Note: Applications for admission to the MS and MA degrees in Communication are not currently being accepted. For information about when they may be accepted, contact the Department of Journalism and Communication.

Department of Journalism and Communication

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.

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

Professor

Edward C. Pease, journalism, media criticism

Professor Emeritus

Nelson B. Wadsworth, print journalism

Department of Journalism and Communication

Associate Professors

Cathy Ferrand Bullock, mass communication theory and research methods

Penny M. Byrne, broadcasting, media law

Brenda Cooper, media criticism, gender and mass communication

Associate Professor Emeritus

James O. Derry, international mass communication development

Assistant Professor

Nancy M. Williams, print journalism, Internet

Lecturers

R. Troy Oldham, public relations, corporate communications

Preston Parker, public relations, corporate communications

Video Lab Supervisor

S. Dean Byrne, broadcast and electronic media

Adjunct Instructors

Cami Boehme, Internet, corporate communications

Tim Vitale, public relations

Jay C. Wamsley, print journalism

Course Descriptions

Journalism and Communication (JCOM), pages 590-593

Department of Landscape Architecture and Environmental Planning

Interim Department Head: Sean E. Michael

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.laep.usu.edu/>

Undergraduate Program Director:

Michael L. Timmons, Fine Arts Visual 260, (435) 797-1510,

michael.timmons@usu.edu

Undergraduate Advisement:

HASS Advising Center, Taggart Student Center 302,

(435) 797-3883, mary.leavitt@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. 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.laep.usu.edu/>. 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, preferably a laptop, 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

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 LAEP prefix courses

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 3700 City and Regional Planning (Sp).....	3
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.

ENGL 3080 (CI) Introduction to Technical Communication (F,Sp).....	3
GEO 3100 (DSC) Natural Disasters (Sp).....	3
MATH 1010 Intermediate Algebra (F,Sp,Su).....	4
PLSC 2620 Woody Plant Materials: Trees and Shrubs for the Landscape (F).....	3
PLSC 3420 Landscape Irrigation Design (Sp).....	2
SOC 3610 (DSS) Rural Sociology (F) (3 cr) or	
SOC 4620 (DSS) Sociology of the Environment and Natural Resources (Sp) (3 cr).....	3
WATS 1200 (BLS) Biodiversity and Sustainability (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/>

Sample Four-year Plan for Landscape Architecture Major

A sample semester-by-semester four-year plan for students working toward a Bachelor of Landscape Architecture (BLA) degree can be found at: <http://www.usu.edu/degreepans/>

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests.

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 both 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 4350 Travel Course (F,Sp,Su).....	1-3
LAEP 4900 Special Problems (F,Sp,Su).....	1-5

Study Abroad

The department currently has a cooperative agreement with the University of Ljubljana, Slovenia 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 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 and 2008—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
LAEP 3700 City and Regional Planning (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

Department of Landscape Architecture and Environmental Planning

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@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.laep.usu.edu/>

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: *Community Planning*—Bell, Lavoie, Licon, Nicholson, Timmons; *Cultural and Historic Landscapes and Preservation*—Borecki, Timmons; *Design/Theory and Representation*—Lavoie; *Land Rehabilitation/Revegetation*—Ellsworth; *Open Space Conservation*—Bell, Licon; *Public Lands/ Recreation*—Borecki, Christensen, Ellsworth, Michael, Timmons; *Site Planning*—Bell, Christensen, Lavoie, Timmons; *Socially Equitable Design*—Christensen; *Sustainable Landscapes*—Bell, Licon; *Urban Regional Landscape Planning*—Licon, Nicholson; *Visual Resource Management*—Ellsworth; *Watershed Sustainability*—Borecki.

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.

Department of Landscape Architecture and Environmental Planning

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, preferably a laptop, 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 of all incoming students until they have selected a thesis topic. A major professor whose interests are closely aligned to those of the student (see *Areas of Faculty Expertise* on page 329 and *Areas of Concentration* on pages 330-332) then 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 330-332.

First Year (33 credits)

During the first year, coursework concentrates on basic professional competency.

Fall Semester (17 credits)

LAEP 1200 Basic Graphics in Landscape Architecture	4
LAEP 2600 (QI) Landscape Construction I	4
LAEP 6270 Site Analysis: Social, Behavioral, and Biophysical Dimensions	5
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 (16 credits)

LAEP 1300 Computer Applications in Landscape Architecture	3
LAEP 1350 Theory of Design	4
LAEP 2720 Site Planning and Design	5
LAEP 6230 History of Landscape Architecture	3
LAEP 6890 Seminar on Thesis Proposals and Procedures	1

Second Year (32-33 credits)

During the second year, students can begin to specialize in one or more areas of concentration.

Fall Semester (18 credits)

LAEP 3600 Landscape Materials	2
LAEP 6310 Recreation and Open Space Planning and Design (5 cr) or	
LAEP 6410 Redefining the Urban Landscape (5 cr)	5
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 (or equivalent elective)	3

Additional credits should be added as electives from the student's chosen area of concentration.

Spring Semester (14-15 credits)

LAEP 3610 Landscape Construction II	2
LAEP 6320 Residential Planning and Design	5
Or (LAEP 6320; or LAEP 4120 and 4130)	
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
PLSC 3420 Landscape Irrigation Design	2

Additional credits should be added as electives from the student's chosen area of concentration.

Third Year (18 credits)

Fall Semester (11 credits)

LAEP 4110 Construction Document Preparation	4
LAEP 6100 Regional Landscape Analysis and Planning	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 area of concentration.

Spring Semester (7 credits)

LAEP 6110 Landscape Planning for Wildlife	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 area of concentration.

Note: Recommended electives are listed on area of concentration 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.**

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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.

Supporting Coursework

LAEP 2700 (CI) Site Analysis: Social, Behavioral, and Biophysical Dimensions (F).....5

Electives

APEC 5560 Natural Resource and Environmental Economics (Sp).....3
APEC 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 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.nps.gov/history/hdp/>)

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.

Supporting Coursework

LAEP 6410 Redefining the Urban Landscape (F).....5

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.

Supporting Coursework

LAEP 2700 (CI) Site Analysis: Social, Behavioral, and Biophysical Dimensions (F).....5
LAEP 6410 Redefining the Urban Landscape (F).....5

Electives

APEC 5560 Natural Resource and Environmental Economics (Sp).....3
APEC 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.

Supporting Coursework

BIOL 2220 General Ecology (F,Sp).....3
LAEP 6310 Recreation and Open Space Planning and Design (F).....5
LAEP 6740 Planning Theory and Implementation Issues (F).....3

Department of Landscape Architecture and Environmental Planning

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 4700 Ecological Foundations of Restoration (Sp).....	3
WILD 7300/5300 Wildlife Damage Management Principles (Sp).....	3
WILD 7400 Plant Population Ecology (F).....	3

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 both of the following courses:

LAEP 6550 Travel Course (F,Sp,Su).....	1-3
LAEP 6900 Special Problems (F,Sp,Su).....	1-5

Study Abroad

The department currently has a cooperative agreement with the University of Ljubljana, Slovenia 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 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 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 and 2008—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.laep.usu.edu/>

Master of Science in Bioregional Planning (joint degree program with Environment and Society)

Informed 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.

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. A capstone course is required for all LAEP students. 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 (Shibley 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.

Department of Landscape Architecture and Environmental Planning

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 participate. The Environmental Field Service program engages students with community leaders and citizens and tests 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 student, in cooperation with the department and government agency or private firm, makes 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

Swaner Professor

Carlos V. Licon, sustainable landscapes, open space, community, urban and regional landscape planning

Professors

John C. Ellsworth, visual resources management, land rehabilitation/revegetation, public lands and recreation

Sean E. Michael, human-environment relationships, crime prevention through environmental design (CPTED), bioregional and recreation design

Professor Emeritus

Craig W. Johnson, wildlife habitat planning and design, riparian buffers, site planning, planting design

Associate Professors

David L. Bell, community planning and design, construction document preparation

Caroline Lavoie, urban design and cultural landscapes, design theory, landscape and planning theory

John K. Nicholson, urban and regional planning, computer applications, transportation, green building

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

Malgorzata (Margie) Ryzewicz-Borecki, graphics, design implementation, sustainable stormwater practices

Keith Christensen, socially equitable design, site analysis, site planning, public lands/recreation

Course Descriptions

Landscape Architecture and Environmental Planning (LAEP), pages 593-595

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Associate Department Head: Taira Koybaeva

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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, Latin American Studies, Medieval and Early Modern Studies, 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 30-35). 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.

For admission to the speech major, students must submit an application and meet the following prerequisites:

1. Students must have earned at least 25 semester credits at USU or at another college or university.
2. A cumulative GPA of 2.5 or higher must have been attained.
3. Either SPCH 1020 or 2110 (or an equivalent course) must have been completed with a grade of C+ or better.

Admission is limited to 25 students each year. 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 his or her intended career, (4) satisfactory speaking and writing competencies, and (5) motivation and creativity demonstrated by class performance, work experience, volunteer activities, and other means provided by the student during the application process.

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

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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. The **Harold J. Kinzer Scholarship** is awarded to a speech major who has earned a minimum of 9 upper-division USU credits toward the major or who is currently enrolled at USU. To qualify for the Kinzer Scholarship, the student must have at least one more semester remaining at USU and must have a 3.7 or higher GPA in the major courses. The **Jaime Cantarovici Memorial Scholarship** is awarded to an outstanding undergraduate senior majoring in Spanish. For further details about available scholarships, contact the departmental 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@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 Secondary Education Program of the School of Teacher Education and Leadership (TEAL) in the Emma Eccles Jones 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 30307).

French Major (33 credits) (2.5 GPA)

A. Required Course (3 credits)

LING 4100^{s,DE} The Study of Language (F,Sp).....	3
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^{DE}Available as a regular on-campus class or online through Regional Campuses and Distance Education (RCDE).

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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	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	3
FREN 3500 (DHA) Topics in French Literature in Translation (repeatable for credit)	3
FREN 3510 (CI) Business French (F)	3
FREN 3550 (DHA) French Civilization	3
FREN 3570 France Today	3
FREN 3600 ⁶ Textual Analysis	3
FREN 3820 ⁷ Advanced Independent Study: Experiencing Paris (Su)	2
FREN 3880 Individual Readings (F,Su)	1-4
FREN 3900 ¹ Topics in French and Francophone Studies	3
FREN 4060 (CI) ² Advanced French Conversation	3
FREN 4090 (CI) ³ Advanced Written Communication	3
FREN 4200 ⁵ Applied French Linguistics and Phonetics	3
FREN 4610 (DHA) ¹ Period Studies in French Literature	3
FREN 4620 (DHA) ¹ Genre Studies in French Literature	3
FREN 4880 Individual Readings (F,Sp)	1-4
FREN 4900 ¹ Seminar in French and Francophone Studies	3
FREN 4920 ^{1,4} French Language Tutoring (F,Sp)	1-2
LING 4900 Analysis of Cross-Cultural Difference (Sp) (3 cr) or SPCH 3330 (DSS) Intercultural Communication (F,Sp) (3 cr)	3

Students should note that *no more than two* upper-division French courses taught in English can be applied toward the French majors.

French Major—Teaching Emphasis with Secondary School Licensure (31 FREN credits & 31 SCED 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 Secondary Education Program. For more information, please contact the Secondary Education Program, Education Building 330, or review the supplementary section, entitled *Secondary Teacher Education Program (STEP) Level Outline* on page 341. 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,DE} The Study of Language (F,Sp)	3
FREN 4200 ^{5,9} Applied French Linguistics and Phonetics	3
FREN 3060 (CI) ² French Conversation (3 cr) or FREN 4060 (CI) ² Advanced French Conversation (3 cr)	3
FREN 3090 (CI) French Intermediate Written Communication (3 cr) or FREN 4090 (CI) ³ Advanced Written Communication (3 cr)	3
FREN 3550 (DHA) French Civilization (3 cr) or FREN 3570 France Today (3 cr)	3
FREN 3600 ⁶ Textual Analysis	3
FREN 4610 (DHA) ¹ Period Studies in French Literature	3
FREN 4620 (DHA) ¹ Genre Studies in French Literature	3
FREN 4920 ^{1,4} French Language Tutoring (F,Sp)	1-2

^{DE}Available as a regular on-campus class or online through Regional Campuses and Distance Education (RCDE).

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)	3
FREN 3510 (CI) Business French (F)	3
FREN 3900 ¹ Topics in French and Francophone Studies	3
FREN 4900 ¹ Seminar in French and Francophone Studies	3
LING 4900 Analysis of Cross-Cultural Difference (Sp) (3 cr) or SPCH 3330 (DSS) Intercultural Communication (F,Sp) (3 cr)	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
FREN 4880 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 341.

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 Secondary Education Program. For more information, please contact the Secondary Education Program, Education Building 330, or review the supplementary section, entitled *Secondary Teacher Education Program (STEP) Level Outline* on page 341. 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 (19 credits)

A. Required Courses (16 credits)

FREN 3090 (CI) ³ French Intermediate Written Communication (3 cr) or FREN 4090 (CI) ³ Advanced Written Communication (3 cr)	3
FREN 3550 (DHA) French Civilization (3 cr) or FREN 3570 France Today (3 cr)	3
FREN 3600 ⁶ Textual Analysis	3
FREN 4200 ⁹ Applied French Linguistics and Phonetics	3
LING 3300 ¹⁰ Clinical Experience I (F) (1 cr) or LING 4300 ¹⁰ Clinical Experience II (F) (1 cr)	1
LING 4400 ¹⁰ Teaching Modern Languages (F)	3

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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.....	3
FREN 4620 (DHA) ¹ Genre Studies in French Literature.....	3
LING 4900 Analysis of Cross-Cultural Difference (Sp) (3 cr) or	
SPCH 3330 (DSS) Intercultural Communication (F,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).....	3
FREN 3510 (CI) Business French (F).....	3
FREN 3820 ⁷ Advanced Independent Study: Experiencing Paris (Su)...	2
FREN 3880 Individual Readings (F,Su).....	1-4
FREN 4900 ¹ Seminar in French and Francophone Studies.....	3
FREN 4920 ^{1,8} French Language Tutoring (F,Sp).....	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 341.

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 3300¹⁰ or 4300¹⁰ (1 credit) and LING 4400¹⁰ (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 3300¹⁰ or 4300¹⁰ (1 credit) and LING 4400¹⁰ (3 credits), for a total of 19 credits.

¹This course requires FREN 3600 or instructor's permission. FREN 3900, 4900, and 4920 may be repeated for credit with different content.

²Students 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.

³Students 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.

⁴Only two credits of FREN 4920 may count toward the French Major or French Major—Teaching Emphasis.

⁵It is recommended that LING 4100 be taken before FREN 4200.

⁶This course may be repeated one time for credit with different content.

⁷Offered only through USU's Summer Study Abroad program in France.

⁸Only one credit of FREN 4920 may count toward the French Minor or French Minor—Teaching Emphasis.

⁹Students should take FREN 4200 near the end of their coursework. Please note that FREN 4200 is offered every other year.

¹⁰LING 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 ^{DE} The Study of Language (F,Sp).....	3

^{DE}Available as a regular on-campus class or online through Regional Campuses and Distance Education (RCDE).

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 cr) or	
SPCH 3330 (DSS) Intercultural Communication (F,Sp) (3 cr).....	3

Note: Credits obtained in lower-division German courses *cannot* be applied toward the German major programs.

Department of Languages, Philosophy, and Speech Communication

German Major—Teaching Emphasis with Secondary School Licensure (31 GERM credits & 31 SCED 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 Secondary Education Program. For more information, please contact the Secondary Education Program, Education Building 330, or review the supplementary section, entitled *Secondary Teacher Education Program (STEP) Level Outline* on page 341. 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,DE} The Study of Language (F,Sp).....	3
LING 4900 Analysis of Cross-Cultural Difference (Sp) (3 cr) or SPCH 3330 (DSS) Intercultural Communication (F,Sp) (3 cr).....	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 341.

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 (50 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 Secondary Education Program. For more information, please contact the Secondary Education Program, Education Building 330, or review the supplementary section, entitled *Secondary Teacher Education Program (STEP) Level Outline* on page 341. 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 (19 credits)

A. Required Courses (16 credits)

LING 4900 Analysis of Cross-Cultural Difference (Sp) (3 cr) or SPCH 3330 (DSS) Intercultural Communication (F,Sp) (3 cr).....	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
LING 3300 ¹⁵ Clinical Experience I (F) (1 cr) or LING 4300 ¹⁵ Clinical Experience II (F) (1 cr).....	1
LING 4400 ¹⁵ Teaching Modern Languages (F).....	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 341.

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.

Department of Languages, Philosophy, and Speech Communication

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 3300¹⁵ or LING 4300¹⁵ (1 credit) and LING 4400¹⁵ (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 3300¹⁵ or 4300¹⁵ (1 credit) and LING 4400¹⁵ (3 credits) for a total of 19 credits.

¹¹This course may be repeated for credit.

¹²Only 2 credits of GERM 4920 may count toward the German major.

¹³LING 4100 should be taken at the beginning of the student's coursework.

¹⁴GERM 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.

¹⁵LING 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.

^{DE}Available as a regular on-campus class or online through Regional Campuses and Distance Education (RCDE).

Spanish Major and Minor Requirements

Minimum Departmental Requirements

Total Credits:

Spanish Major	33
Spanish Major, Teaching Emphasis	34
SPAN & 31 SCED Spanish Minor	15
Spanish Minor, Teaching Emphasis	19
SPAN & 31 SCED Spanish Major, Teaching Emphasis without licensure.....	38
Spanish Minor, Teaching Emphasis without licensure.....	19
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 3300²³, 4300²³, 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 credit or language experience should take the department placement test before admission to the Spanish Major or Minor. Credits obtained in lower-division Spanish courses cannot be applied toward the Spanish major or minor programs.

Spanish Major (33 credits) (3.00 GPA)

A. Required Courses (24 credits)

LING 4100^{DE} The Study of Language (F,Sp)..... 3

Select at least *one* of the following two courses:

SPAN 3040^{DE} Advanced Spanish Grammar (F,Sp)..... 3

SPAN 3800¹⁷ Spanish III Study Abroad (Su)..... 1-4

Select at least *one* of the following three courses:

SPAN 3550 (DHA)^{DE} Spanish Culture and Civilization (F,Sp)..... 3

SPAN 3570 (DHA)^{DE} Latin American Culture and Civilization (F,Sp).... 3

SPAN 4800¹⁷ 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 3650¹⁷ Spanish Literature—Study Abroad (F,Sp)..... 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 3660¹⁷ Latin American Literature—Study Abroad (F,Sp)..... 1-4

Complete *both* of the following two courses:

SPAN 4900¹⁷ Topics of Spanish Literature (F,Sp)..... 3

SPAN 4910¹⁷ Topics of Latin American Literature (F,Sp)..... 3

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 3100 Spanish for Healthcare Professionals (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 4200²⁰ 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)..... 1

LING 4900 Analysis of Cross-Cultural Difference (Sp) (3 cr) **or**

SPCH 3330 (DSS) Intercultural Communication (F,Sp) (3 cr)..... 3

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 Secondary Education Program. For more information, please contact the Secondary Education Program, Education Building 330, or review the supplementary section, entitled *Secondary Teacher Education Program (STEP) Level Outline* on page 341. Information is also provided on the Web at: http://secondaryeducation.usu.edu/cs_admission.php

I. Spanish and Linguistics Courses (34 credits)

A. Required Courses (28 credits)

LING 4100^{DE} The Study of Language (F,Sp)..... 3

SPAN 4200²⁰ 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^{DE} Advanced Spanish Grammar (F,Sp)..... 3

SPAN 3800¹⁷ Spanish III Study Abroad (Su)..... 1-4

Select at least *one* of the following three courses:

SPAN 3550 (DHA)^{DE} Spanish Culture and Civilization (F,Sp)..... 3

SPAN 3570 (DHA)^{DE} Latin American Culture and Civilization (F,Sp).... 3

SPAN 4800¹⁷ Hispanic Culture and Civilization—Study Abroad (Su)..... 1-4

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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 3650¹⁷ 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 3660¹⁷ Latin American Literature—Study Abroad (Su)	1-4

Complete *both* of the following two courses:

SPAN 4900¹⁷ Topics of Spanish Literature (F,Sp)	3
SPAN 4910¹⁷ Topics of Latin American Literature (F,Sp).....	3

B. Elective Courses (6 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 (<i>P/F</i> 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 (<i>P/F</i> only) (F,Sp,Su).....	1-4
SPAN 4880^{17,21} Individual Readings (F,Sp)	1-4
LING 4900 Analysis of Cross-Cultural Difference (Sp)	3

Spanish Minor (15 credits) (3.00 GPA)

A. Required Courses (12 credits)

Select at least *one* of the following two courses:

SPAN 3040^{DE} Advanced Spanish Grammar (F,Sp).....	3
SPAN 3800¹⁷ 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)^{DE} Spanish Culture and Civilization (F,Sp).....	3
SPAN 3570 (DHA)^{DE} Latin American Culture and Civilization (F,Sp).....	3
SPAN 4800¹⁷ 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 3650¹⁷ Spanish Literature—Study Abroad (F,Sp)	1-4
SPAN 3660¹⁷ Latin American Literature—Study Abroad (F,Sp)	1-4

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 (<i>P/F</i> only) (F,Sp,Su).....	1-4
SPAN 3060 (CI) Advanced Spanish Conversation and Composition (F,Sp).....	3
SPAN 3100 Spanish for Healthcare Professionals (Sp).....	3
SPAN 3510 Business Spanish (F,Sp).....	3
SPAN 3520^{17,18,19} Business Spanish Practicum (<i>P/F</i> only) (F,Sp,Su)	1-4
SPAN 4200²⁰ Applied Spanish Linguistics and Phonetics (Sp).....	3
SPAN 4920^{17,18,19,22} Spanish Language Tutoring (<i>P/F</i> only) (F,Sp).....	1
LING 4100^{DE} The Study of Language (F,Sp).....	3
LING 4900 Analysis of Cross-Cultural Difference (Sp) (3 cr) or	
SPCH 3330 (DSS) Intercultural Communication (F,Sp) (3 cr).....	3

Spanish Minor—Teaching Emphasis (19 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 Secondary Education Program. For more information, please contact the Secondary Education Program, Education Building 330, or review the supplementary section, entitled *Secondary Teacher Education Program (STEP) Level Outline* on page 341. Information is also provided on the Web at: http://secondaryeducation.usu.edu/cs_admission.php

Required Courses (19 credits)

SPAN 4200²⁰ Applied Spanish Linguistics and Phonetics (Sp).....	3
LING 3300²³ Clinical Experience I (F) (1 cr) or	
LING 4300²³ Clinical Experience II (F) (1 cr).....	1
LING 4400²³ Teaching Modern Languages (F).....	3

Select at least *one* of the following two courses:

SPAN 3040^{DE} Advanced Spanish Grammar (F,Sp)	3
SPAN 3800¹⁷ 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)^{DE} Spanish Culture and Civilization (F).....	3
SPAN 3570 (DHA)^{DE} Latin American Culture and Civilization (Sp).....	3
SPAN 4800¹⁷ 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 3650¹⁷ Spanish Literature—Study Abroad (Su)	1-4
SPAN 3660¹⁷ Latin American Literature—Study Abroad (Su)	1-4

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 341.

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 3300²³ or LING 4300²³ (1 credit) and LING 4400²³ (3 credits), for a total of 38 credits.

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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 (15 credits), plus either LING 3300²³ or 4300²³ (1 credit) and LING 4400²³ (3 credits) for a total of 19 credits.

¹⁶Students desiring to apply study abroad credits toward these degrees must obtain approval from the Spanish faculty prior to participating.

¹⁷This course may be repeated for additional credit.

¹⁸Enrollment in this course is by permission of instructor only.

¹⁹Only 3 credits maximum in practicum courses may count toward a Spanish major or minor.

²⁰This course is required for a teaching emphasis in the Spanish major or minor.

²¹Permission of instructor is required. Instructor will give permission *only* to students who have completed *both* SPAN 4900 and 4910.

²²This practicum is required for a teaching emphasis in the Spanish major.

²³LING 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.

²⁴To obtain the packet to register for this 1-credit course, students should visit the departmental office in Main 204.

^{DE}Available as a regular on-campus class or online through Regional Campuses and Distance Education (RCDE).

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 (C/DSS) Educational and Multicultural Foundations (F,Sp) 3

LING 3300/4300^{25,27} Clinical Experience I and II (F) (P/F *only*) 1

LING 4400^{26,27} Teaching Modern Languages (F) 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

²⁵The Clinical Experience II course is taught under course number 4300 in various departments. Course title varies among departments.

²⁶The Special Methods II course is taught under course number 4400.

²⁷LING 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

Complete the following courses (13 credits):

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 (DHA) Brazilian Culture and Civilization (must be completed at USU) (F)	3
PORT 3630 (DHA) 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

²⁸This 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 ^{DE} The Study of Language (F,Sp)	3
ENGL 3020 (DHA) Perspectives in Linguistics (Sp)	3
ENGL 4200 Linguistic Structures (F,Sp,Su)	3

^{DE}Available as a regular on-campus class or online through Regional Campuses and Distance Education (RCDE).

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

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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.

Sample Four-year Plans

Sample semester-by-semester four-year plans for students working toward a Bachelor of Arts degree in French, German, or Spanish can be found at: <http://www.usu.edu/degreeplans/>

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests.

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, Spanish, and Russian) 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://lpsc.usu.edu/Default.asp?id=27>

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/studyabroad/>

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), pages 529-530

French (FREN), pages 566-567

German (GERM), pages 572-574

Italian (ITAL), page 589

Japanese (JAPN), pages 589-590

Korean (KOR), page 593

Language (LANG), page 595

Linguistics (LING), pages 596-597

Navajo (NAV), page 618

Portuguese (PORT), pages 640-641

Russian (RUSS), pages 650-651

Spanish (SPAN), pages 656-657

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

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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. The Bachelor of Science (BS) degree in philosophy can be awarded to philosophy majors who have taken 12 credits in math or science beyond the University Studies Requirements, as approved by an advisor.

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. The requirements are distributed as follows:

A. Required Courses (15 credits)

PHIL 1120 (BHU) Social Ethics (F) (3 cr) or	
PHIL 2400 (BHU) Ethics (Sp) (3 cr)	3
PHIL 1200 (BHU) Practical Logic (Sp) (3 cr) or	
PHIL 2200 (QI) Deductive Logic (F,Sp) (3 cr)	3
PHIL 3100 (CI) Ancient Philosophy (3 cr) or	
PHIL 3110 Medieval Philosophy (3 cr)	3
PHIL 3120 (CI) Early Modern Philosophy (3 cr) or	
PHIL 3150 (CI) Kant and His Successors (3 cr)	3
PHIL 4300 Epistemology (3 cr) or	
PHIL 4400 Metaphysics (F) (3 cr)	3

B. Elective Courses (15 credits)

Choose five other philosophy courses not already taken above, four of which must be at the upper-division level (3000 or higher).

PHIL 3160 (CI) Contemporary Philosophy	3
PHIL 3180 (CI) Contemporary European Philosophy	3
PHIL 3500 Medical Ethics (F)	3
PHIL 3510 Environmental Ethics (Sp)	3
PHIL 3520 ^{DE} Business Ethics	3
PHIL 3700 Philosophy of Religion (F)	3
PHIL 3710 Philosophies of East Asia (F)	3
PHIL 3720 Philosophical Theology after Kant (F)	3
PHIL 3730 (CI) Philosophy of the New Testament	3
PHIL 3800 Philosophy in Literature	3
PHIL 3810 Aesthetics (Sp)	3

PHIL 4310 Philosophy of Science	3
PHIL/HIST 4320 History of Scientific Thought	3
PHIL 4410 Philosophy of Mind	3
PHIL 4420 Philosophy of Language	3
PHIL 4500 Contemporary Ethical Theory	3
PHIL 4530 (DSC) Ethics and Biotechnology	3
PHIL 4540 Human Values and Information Technology	3
PHIL 4600 Philosophy of Law	3
PHIL 4610 Social and Political Philosophy	3
PHIL 4900 Special Topics (F,Sp)	3
PHIL 4910 Readings and Research (F,Sp)	1-4
PHIL 4920 Senior Honors Seminar (Sp)	3
PHIL 4930 Senior Honors Thesis (F,Sp,Su)	1-4
PHIL 4990 Philosophy Seminar	3
PHIL 5200 Symbolic Logic	3
PHIL 5510 Ethics and the Environment	3
PHIL 5600 Legal Ethics	3

^{DE}Available as a regular on-campus class or as a Face-to-Face or Interactive Broadcast course through Regional Campuses and Distance Education (RCDE).

C. Language Requirement

To receive a Bachelor of Arts (BA) degree, students must also complete the foreign language requirement.

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. The requirements are distributed as follows:

A. Required Courses (15 credits)

PHIL 1120 (BHU) Social Ethics (F) (3 cr) or	
PHIL 2400 (BHU) Ethics (Sp) (3 cr)	3
PHIL 1200 (BHU) Practical Logic (Sp) (3 cr) or	
PHIL 2200 (QI) Deductive Logic (F,Sp) (3 cr)	3
PHIL 3100 (CI) Ancient Philosophy (3 cr) or	
PHIL 3110 Medieval Philosophy (3 cr)	3
PHIL 3120 (CI) Early Modern Philosophy (3 cr) or	
PHIL 3150 (CI) Kant and His Successors (3 cr)	3
PHIL 4300 Epistemology (3 cr) or	
PHIL 4400 Metaphysics (F) (3 cr)	3

B. Elective Courses (15 credits)

Choose five other philosophy courses not already taken above, four of which must be at the upper-division level (3000 or higher). (See list of elective courses for Bachelor of Arts in Philosophy, shown in previous elective courses listing.)

C. Science Requirement

To receive a Bachelor of Science (BS) degree, students must take 12 credits in math or science beyond the University Studies Requirements, as approved by an advisor.

Bachelor of Arts in Philosophy with Concentration in Ethics (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. The requirements are distributed as follows:

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A. Required Courses (21 credits)

PHIL 1200 (BHU) Practical Logic (Sp) (3 cr) or	
PHIL 2200 (QI) Deductive Logic (F,Sp) (3 cr).....	3
PHIL 2400 (BHU) Ethics (Sp).....	3
PHIL 3100 (CI) Ancient Philosophy (3 cr) or	
PHIL 3110 Medieval Philosophy (3 cr)	3
PHIL 3120 (CI) Early Modern Philosophy (3 cr) or	
PHIL 3150 (CI) Kant and His Successors (3 cr).....	3
PHIL 4300 Epistemology (3 cr) or	
PHIL 4400 Metaphysics (F) (3 cr)	3

Select one of the following three courses:

PHIL 1120 (BHU) Social Ethics (F)	3
PHIL 4500 Contemporary Ethical Theory.....	3
PHIL 4610 (DHA) Social and Political Philosophy	3

Select one of the following four courses:

PHIL 3500 Medical Ethics (F).....	3
PHIL 3510 (DHA) Environmental Ethics (Sp).....	3
PHIL 3520 (DHA) Business Ethics.....	3
PHIL 4530 (DSC) Ethics and Biotechnology	3

B. Elective Courses (9 credits)

Choose three other philosophy courses not already taken above, at least two of which must be at the upper-division level (3000 or higher). (See list of elective courses for Bachelor of Arts in Philosophy, shown in previous elective courses listing.)

C. Language Requirement

To receive a Bachelor of Arts (BA) degree, students must also complete the foreign language requirement.

Bachelor of Science in Philosophy with Concentration in Ethics (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. The requirements are distributed as follows:

A. Required Courses (21 credits)

PHIL 1200 (BHU) Practical Logic (Sp) (3 cr) or	
PHIL 2200 (QI) Deductive Logic (F,Sp) (3 cr).....	3
PHIL 2400 (BHU) Ethics (Sp).....	3
PHIL 3100 (CI) Ancient Philosophy (3 cr) or	
PHIL 3110 Medieval Philosophy (3 cr)	3
PHIL 3120 (CI) Early Modern Philosophy (3 cr) or	
PHIL 3150 (CI) Kant and His Successors (3 cr).....	3
PHIL 4300 Epistemology (3 cr) or	
PHIL 4400 Metaphysics (F) (3 cr)	3

Select one of the following three courses:

PHIL 1120 (BHU) Social Ethics (F)	3
PHIL 4500 Contemporary Ethical Theory.....	3
PHIL 4610 (DHA) Social and Political Philosophy	3

Select one of the following four courses:

PHIL 3500 Medical Ethics (F).....	3
PHIL 3510 (DHA) Environmental Ethics (Sp).....	3
PHIL 3520 (DHA) ^{DE} Business Ethics.....	3
PHIL 4530 (DSC) Ethics and Biotechnology	3

^{DE}Available as a regular on-campus class or as a Face-to-Face or Interactive Broadcast course through Regional Campuses and Distance Education (RCDE).

B. Elective Courses (9 credits)

Choose three other philosophy courses not already taken above, two of which must be at the upper-division level (3000 or higher). (See list of elective courses for Bachelor of Arts in Philosophy, shown in previous elective courses listing.)

C. Science Requirement

To receive a Bachelor of Science (BS) degree, students must take 12 credits in math or science beyond the University Studies Requirements, as approved by an advisor.

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.

Sample Four-year Plans for Philosophy Major

Sample semester-by-semester four-year plans for students working toward a Bachelor of Arts or Bachelor of Science degree in Philosophy or Philosophy with a Concentration in Ethics can be found at: <http://www.usu.edu/degreeplans/>

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests.

Philosophy Course Descriptions

Philosophy (PHIL), pages 631-632

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.

Department of Languages, Philosophy, and Speech Communication

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.

Pre-Speech Major. Since admission to the speech major is limited to 25 students per year, students not yet admitted to the speech major will be allowed to enter a pre-speech major. While a student in the pre-speech major is waiting to be admitted into the speech major, he or she should complete SPCH 1020 (Public Speaking) and SPCH 2110 (Interpersonal Communication). For more information about the application process for the speech major, contact the Department of Languages, Philosophy, and Speech Communication. Each semester new applicants will be considered for admission to the speech major.

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) (C- or better required for all 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
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C. Thematic Area Courses (18 credits)

Two courses are required from each of the following three thematic areas:

1. Organization (6 credits)

SPCH 3050 (DSS) Technical and Professional Communication (Sp) ...	3
SPCH 3250 (CI) Organizational Communication (F).....	3
SPCH 3600 Communication and Conflict (F).....	3
SPCH 5090 Small Group Theory (Sp).....	3
MGT 3710 Developing Team and Interpersonal Skills (F,Sp).....	3

2. Society (6 credits)

SPCH 3330 (DSS) Intercultural Communication (F)	3
SPCH 4200 Language, Thought, and Action (Sp).....	3
SPCH 5000 Studies in Speech Communication:	
Visual Communication.....	3
SPCH 5250 Environmental Rhetoric (Sp)	3
MGT 3820 (DSS) International Management (F,Sp)	3
LING 4900 Analysis of Cross-Cultural Difference (Sp).....	3

3. Influence (6 credits)

SPCH 2270 Argumentation and Debate (F)	3
SPCH 3400 (CI) Persuasion (F).....	3
SPCH 4460 Communication Criticism (F)	3
SPCH 5000 Studies in Speech Communication:	
Advanced Persuasion (Sp).....	3
MIS 4350 Introduction to Performance Improvement Projects (Sp).....	3

D. Elective courses (3 credits)

Any course listed above in section C, *Thematic Area Courses* (or those listed below) may serve as an elective.

SPCH 2250 ²⁹ Introductory Internship/Co-op (F,Sp,Su).....	1-6
SPCH 2280 Listening (Sp)	2
SPCH 3000 Speech Communication Teaching	
Practicum (repeatable) (Sp)	1
SPCH 4250 ²⁹ Advanced Internship/Co-op (F,Sp,Su).....	1-6
SPCH 5000 Studies in Speech Communication (repeatable) (F,Sp).....	3
SPCH 5280 Communication Education Theory (Sp).....	3
LING 4100 The Study of Language (F,Sp).....	3

²⁹Internship project and number of credits must be approved by advisor.

Sample Four-year Plan for Speech Major

A sample semester-by-semester four-year plan for students working toward a Bachelor of Arts or Bachelor of Science degree in Speech can be found at: <http://www.usu.edu/degreeplans/>

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests.

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.

Department of Languages, Philosophy, and Speech Communication

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 Secondary Education Program. SPCH 5370 and *either* SPCH 3300 or 4300 are part of the STEP requirements. For more information, please contact the Secondary Education Program, Education Building 330, or review the supplementary section, entitled *Secondary Teacher Education Program (STEP) Level Outline* on page 341. 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), page 658

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

María-de Jesús Cordero, colonial Spanish-American literature
Sarah Gordon, medieval French
Charlie Huenemann, history of modern philosophy, Kant, metaphysics
Taira Koybaeva, Russian, Linguistics, intercultural relationships in business and politics
Jennifer A. Peeples, environmental rhetoric
J. P. Spicer-Escalante, 19th century Latin American literature
Maria Luisa Spicer-Escalante, Hispanic applied linguistics
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
Iлона Jappinen, German language, literature and culture, Nietzsche expressionism
Harold J. Kinzer, organizational communication
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
Christa Jones, French, contemporary francophone studies
Cacilda Rego, Portuguese
Matthew Sanders, organizational communication
Xenia Srebrinski Harwell, German and Russian literature

Visiting Assistant Professors

Harrison Kleiner, European philosophy
Kristi Krumnow, French

Assistant Professor Emeritus

Valentine Suprunowicz, Russian literature

Principal Lecturer Emeritus

Viva L. Lynn, Spanish literature

Lecturers

Gayle Houser, public speaking and speech communication
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:

William L. Furlong, Professor, Department of Political Science,
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Bonnie Glass-Coffin, Professor, Department of Sociology,
Social Work and Anthropology, bonnie.glasscoffin@usu.edu

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James Sanders, Assistant Professor, Department of History,
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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*.³

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 (DHA)¹ Brazilian Culture and Civilization (F) 3
PORT 3630 (DHA)¹ Survey of Brazilian Literature (Sp) 3
PORT 3800¹ Portuguese III Study Abroad (Su) 3

SPAN 3510 Business Spanish (F,Sp) 3
SPAN 3570 (DHA) Latin American Culture and Civilization (F,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 3660⁴ Latin American Literature—Study Abroad (Su) 1-4
SPAN 3800¹ Spanish III Study Abroad (Su) 1-4
SPAN 4800^{2,4} Hispanic Culture and Civilization—Study Abroad (Su) 1-4
SPAN 4910¹ Topics of Latin American Literature (F,Sp) 3

D. Major Courses Limitation

Only *two* courses completed as part of the student's major may be applied toward the Latin American Studies minor.

E. 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

¹Requires a proficiency in Spanish or Portuguese at the 3000 level or above.

²Requires a proficiency in Spanish at the 2000 level or above.

³A limit of 6 credits of overlapping courses from a pre-existing major or alternative minor may be counted toward this elective requirement.

⁴SPAN 3660 and 4800 can be counted as electives for the Latin American Studies Minor *only* when they are taken in a Latin American country.

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 596

Liberal Arts Major

Contact and Advising: College of HASS Advising Center

Location: Student Center 302

Phone: (435) 797-3883

FAX: (435) 797-2096

E-mail: susie.parkinson@usu.edu

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 67-75 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 or American Sign Language. 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 American Sign Language by successful completion of American Sign Language IV (COMD 4920) and Socio-Cultural Aspects of Deafness (COMD 4780), and by passing an exit interview.
Or

3. 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
4. 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

A sample semester-by-semester four-year plan for students working toward a Bachelor of Arts degree in Liberal Arts can be found at: <http://www.usu.edu/degreeplans/>

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests.

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

Interim Department Head: Alan P. Warnick

Location: Business 415

Phone: (435) 797-1789

FAX: (435) 797-1091

E-mail: suzette.alder@usu.edu

WWW: <http://www.huntsman.usu.edu/management/>

Undergraduate Advisors:

Lindsey Thurgood, Business 309, (435) 797-2272,
lindsey.thurgood@usu.edu

Peggy Buttars, Business 309, (435) 797-2272,
peggy.buttars@usu.edu

Graduate Program Director:

Steven H. Hanks, Business 414, (435) 797-2373,
steven.hanks@usu.edu

Graduate Program Advisor:

Megen Ralphs, Business 419, (435) 797-9159,
megen.ralphs@usu.edu

Degrees offered: Bachelor of Science (BS) and Bachelor of Arts (BA) in Marketing, Operations Management, International Business, Business Administration, Entrepreneurship, and Human Resource Management; Master of Science (MS) in Human Resources

The department also participates in the Huntsman School of Business Master of Business Administration (MBA) Degree. A description of the MBA degree and program requirements can be found on pages 194-195. 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 Department of Management 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 six areas: (1) **Marketing**, involving positions in sales, advertising, retailing, distribution, and other similar activities; (2) **Operations Management**, leading to careers related to supply chain management, operations planning and scheduling, project management, quality management, and consulting; (3) **International Business**, preparing leaders versed in business, social science, and cultural dimensions of a global marketplace; (4) **Business Administration**, providing broad cross-disciplinary experience in the core business areas of operations, finance, and marketing; (5) **Entrepreneurship**, focusing on the development of entrepreneurial and leadership capabilities; and (6) **Human Resource Management**, dealing with those processes which provide, develop, and maintain a productive workforce.

Departmental Honors

See *Honors in Business* description in the Huntsman School of Business section of this catalog (page 124).

Learning Objectives and Assessment

Assessment information for the Management Department can be found online at:

<http://www.huntsman.usu.edu/management/htm/assessment/>

Huntsman School of Business Admission Requirements

All students having majors within the Management Department must satisfy the Huntsman School of Business admission requirements, provided on pages 124-125. Academic advising about these requirements is available in the Huntsman School of Business Programs and Advising 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 67-75 of this catalog.

Matriculation Requirement and Transfer Limitation

No more than 15 USU Huntsman School of Business credits (ACCT, BUS, FIN, MGT, MIS), numbered 2000 and above, earned as a nonbusiness major (before acceptance into the Huntsman School) can be applied to a Huntsman School degree. More than 15 business credits can be transferred from other accredited institutions. However, additional USU Huntsman School 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 Huntsman School major, at least 50 percent of the required Huntsman School credits must be earned from coursework taken from the Utah State University Huntsman School.

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 Huntsman School of Business credits required for a Huntsman School degree must be taken from the Utah State University Huntsman School or its departments, which include: School of Accountancy, Economics and Finance, Management, and Management Information Systems.

Huntsman School of Business Core

All majors in the Department of Management 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 Huntsman School of Business.

Pre-Business Course Requirements (13 credits)

ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su)	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

All 3000-, 4000-, and 5000-level courses in the Huntsman School of Business are restricted to students admitted to the Huntsman School or another USU major with an overall GPA of at least 2.67 and completion of at least 40 credits.

Huntsman School 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
BUS 3250 Discussions With Business Leaders (F,Sp)	1
ECN 2010 (BSS) Introduction to Microeconomics (F,Sp,Su)	3
ECN 3400 International Economics for Business (F,Sp,Su)	3
FIN 3400 (QI) Corporate Finance (F,Sp,Su)	3
MGT 2050 Legal and Ethical Environment of Business (F,Sp,Su)	3
MGT 3110 (DSS) Managing Organizations and People (F,Sp,Su)	3
MGT 3500 Fundamentals of Marketing (F,Sp,Su)	3
MGT 3700 Operations Management (F,Sp,Su)	3
MGT 4880 (CI) Business Strategy in an Entrepreneurial Context (F,Sp,Su) (3 cr) or	
MGT 4890 (CI) Business Strategy in a Global Context (F,Sp,Su) (3 cr)	3
MIS 2100 Principles of Management Information Systems (F,Sp,Su)	3
MIS 2200 (CI) Business Communication (F,Sp,Su)	3

Requirements for Majors

Marketing (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 MGT 4590, students must complete the following courses: MGT 3500, 4540, and 4550. Before continuing with the following courses, students must receive a grade of B- or better in MGT 3500.

Required Courses (15 credits)

MGT 4510 Buyer Behavior (F,Sp)	3
MGT 4530 Marketing Research (F,Sp)	3
MGT 4540 Marketing Institutions (F) (3 cr) or	
MGT 4070 (CI) Retail Management (Sp) (3 cr)	3
MGT 4550 Promotion Management (F,Sp)	3
MGT 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
MGT 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
MIS 4550 (CI) Principles of International Business Communications (Sp)	3

Track 2: Research (Choose 2 courses)

ECN 3010 Managerial Economics (F,Sp)	3
ECN 4310 (QI) Mathematical Methods in Economics and Finance I (F)	3
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su)	3
MGT 4790 Supply Chain Management (F)	3

Track 3: 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 3000 Recreation Programming (F,Sp)	3
PRP 3200 Recreation Event Planning and Management (F,Sp)	3
PRP 3750 Commercial Recreation and Tourism (Sp)	3
PRP 4400 Recreation Facility Design and Management (F)	3

Operations Management (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 MGT 3700.

Required Courses (18 credits)

MGT 3080 (QI) Operations Research (F,Sp)	3
MGT 4720 Production Planning and Control (Sp)	3
MGT 4750 Production Simulation (Sp)	3
MGT 4790 Supply Chain Management (F,Sp)	3
MGT 4800 Independent Research and Readings (F,Sp,Su)	3
MGT 5730 Continuous Improvement (F)	3

Elective Course (3 credits)

Select one of the following two courses:

ACCT 3310 Strategic Cost Management (F,Sp,Su)	3
MGT 4630 Human Resource Management (F,Sp)	3

International Business (24 credits)

The international business major develops the skills and knowledge needed to provide leadership in the global marketplace. This requires not only being able to manage customers, products, and processes in global supply chains, but also understanding the social, political, and cultural dimensions of business in an international environment. Before continuing with the required courses, students must receive a grade of B- or better in FIN 3400, and MGT 3500, 3700. 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.

Department of Management

Or

- 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)

ECN 5150 Comparative Economic Systems (F)	3
FIN 4300 International Finance (F,Sp)	3
MGT 3820 International Management (F,Sp)	3
MGT 4590 Global Marketing Strategy (F,Sp)	3
MGT 4790 Supply Chain Management (F,Sp)	3

Supporting Coursework (6 credits)

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

Eastern Europe¹

POLS 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 Europe¹

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 America¹

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

Asia¹

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 Trade¹

ECN 5400 International Trade Theory (F)	3
POLS 5480 International Trade Policy (Sp)	3

Electives (select 3 credits)

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

BUS 4250 Advanced Internship (F,Sp,Su)	1-9
CHIN 3100 (DHA) Readings in Contemporary Chinese Culture (Sp)	3
CHIN 3510 Chinese Business Language (F)	3
FREN 3510 (CI) Business French (F)	3
FREN 3550 (DHA) French Civilization (F)	3
FREN 3570 France Today	3
GERM 3300 (DHA) Contemporary German Speaking Cultures (Sp)	3
GERM 3510 (CI) Business German (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
JAPN 3510 Japanese for the Business Environment (Sp)	3
MIS 4550 (CI) Principles of International Business Communications (Sp)	3
MIS 5700 Internet Management and Electronic Commerce (F,Sp)	3
POLS 3100 Global Issues (F)	3
PORT 3570 (DHA) Brazilian Culture and Civilization (F)	3

RUSS 3300 (DHA) Contemporary Russian Language and Culture	3
RUSS 3510 (CI) Business Russian	3
RUSS 3540 Russian Translation for Science, Business, and Culture	3
SPAN 3510 Business Spanish (F,Sp)	3
SPAN 3550 (DHA) Spanish Culture and Civilization (F,Sp)	3
SPAN 3570 (DHA) Latin American Culture and Civilization (F,Sp)	3
Any class from one of the supporting areas (if not already taken)	3

¹In the event that a course required for a supporting area is not offered or available, an approved alternative course may be substituted.

Business Administration (21 credits)

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 FIN 3400, and MGT 3500, 3700.

Required Courses (18 credits)

FIN 4410 Financial Institutions (F,Sp)	3
FIN 4450 Fundamentals of Valuation (F,Sp)	3
MGT 4530 Marketing Research (F,Sp)	3
MGT 4590 Global Marketing Strategy (F,Sp)	3
MGT 4790 Supply Chain Management (F,Sp)	3
MGT 5730 Continuous Improvement (F)	3
Additional approved elective course (4000- or 5000-level)	3

Entrepreneurship (15 credits)

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.

MGT 3510 Fundamentals of Entrepreneurship (F,Sp)	3
MGT 3520 Relationship and Organizational Competencies for Entrepreneurs (F,Sp)	3
MGT 3710 Developing Team and Interpersonal Skills (F,Sp)	3
MGT 3820 International Management (F,Sp)	3
MGT 4510 Senior Seminar in Entrepreneurship (F)	3

Students completing the Entrepreneurship major requirements must take **MGT 4880** as their senior capstone course in the Business Core requirements. Students should also note that **MGT 3510 and 3520** must be taken prior to **MGT 4510**.

Human Resource Management (15 credits)

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.

Required Courses (9 credits)

MGT 3710 Developing Team and Interpersonal Skills (F,Sp)	3
MGT 3820 International Management (F,Sp)	3
MGT 4630 Human Resource Management (F,Sp)	3

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Elective Courses (select 6 credits)

Students must complete at least **two** of the following:

ANTH 3200 (DSS/CI) Perspectives on Race (Sp)	3
MGT 3810 (DSS) Employment Law and Policy Development (F,Sp).....	3
MIS 4350 Introduction to Performance Improvement Projects (Sp).....	3
PHIL 3520 (DHA) Business Ethics.....	3
PUBH 3310 Occupational Health and Safety (F).....	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

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 Huntsman School of Business student elects to take a minor, he or she is encouraged to select one from outside the Huntsman School.

Business (General)

A general business major is administered by the Huntsman School of Business (see pages 125-126). For further information, contact the Huntsman School of Business Programs and Advising Center, Business 309, (435) 797-2272.

Four-Year Degree Plans (8 Semesters)

Four-year degree plans for majors in the Management Department can be found at: <http://www.usu.edu/degreepans/>

Requirements for Minors

Minors in Marketing, Operations Management, International Business, Management, and 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 minimum 2.50 GPA in the minor courses is required. Students having majors within the Huntsman School of Business are eligible to earn a minor in Marketing, Operations Management, International Business, Management, or Human Resource Management. Students would be expected to satisfy all course prerequisites as well, with a GPA of at least 2.50.

Minor in Marketing

Required Courses (10 credits)

MGT 3110 (DSS) Managing Organizations and People (F,Sp,Su).....	3
MGT 3500 Fundamentals of Marketing (F,Sp,Su) (B- or better grade required).....	3
STAT 2300 (QL) Business Statistics (F,Sp,Su)	4

Electives (6 credits)

Select two of the following courses:

MGT 4510 Buyer Behavior (F,Sp)	3
MGT 4530 Marketing Research (F,Sp).....	3
MGT 4540 Marketing Institutions (F).....	3
MGT 4550 Promotion Management (F,Sp).....	3

Minor in Operations Management

Required Courses (9 credits)

MGT 3500 Fundamentals of Marketing (F,Sp,Su).....	3
MGT 3700 Operations Management (F,Sp,Su) (B- or better grade required).....	3
MGT 4720 Production Planning and Control (Sp).....	3

Electives (6 credits)

Select two of the following courses:

MGT 3080 (QI) Operations Research (F,Sp).....	3
MGT 4750 Production Simulation (Sp).....	3
MGT 4790 Supply Chain Management (F,Sp).....	3
MGT 5730 Continuous Improvement (F).....	3

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

Minor in International Business

Required Courses (12 credits)

Select four of the following courses:

ECN 5150 (DSS)⁵ Comparative Economic Systems (F)	3
FIN 4300² International Finance (F,Sp)	3
MGT 3820 (DSS) International Management (F,Sp)	3
MGT 4590³ Global Marketing Strategy (F,Sp)	3
MGT 4790⁴ Supply Chain 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 Europe⁶

POLS 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	3

Western Europe⁶

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 (3 cr) or	
GERM 3300 (DHA) Contemporary German Speaking Cultures (Sp) (3 cr) or	
SPAN 3550 (DHA) Spanish Culture and Civilization (F,Sp) (3 cr).....	3

Latin America⁶

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 (F,Sp)	3

Asia⁶

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

Department of Management

International Trade⁶

ECN 5400 International Trade Theory (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.

²Prerequisite: Grade of B- or better in FIN 3400.

³Prerequisites: Grade of B- or better in MGT 3500; MGT 4540, 4550.

⁴Prerequisite: Grade of B- or better in MGT 3700.

⁵Prerequisite: ECN 2010.

⁶In the event a course required for a supporting area is not offered or available, an approved alternative class may be substituted.

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:

MGT 3110 (DSS) Managing Organizations and People (F,Sp,Su).....	3
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Select three courses from the following:

MGT 2050 Legal and Ethical Environment of Business (F,Sp,Su)	3
MGT 3510 Fundamentals of Entrepreneurship (F,Sp).....	3
MGT 3520 Relationship and Organizational Competencies for Entrepreneurs (F,Sp)	3
MGT 3710 Developing Team and Interpersonal Skills (F,Sp).....	3
MGT 3810 (DSS) Employment Law and Policy Development (Prerequisite: MGT 2050) (F,Sp)	3
MGT 3820 (DSS) International Management (F,Sp)	3
MGT 4520 New Venture Planning (Prerequisites: MGT 3510, 3520) (F).....	3
MGT 4630 Human Resource Management (F,Sp).....	3
MIS 4350 Introduction to Performance Improvement Projects (Sp).....	3
PHIL 3520 (DHA) Business Ethics.....	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:

MGT 3110 (DSS) Managing Organizations and People (F,Sp,Su).....	3
MGT 4630 Human Resource Management (F,Sp).....	3

Select two courses from the following:

ANTH 3200 (DSS/CI) Perspectives on Race (Sp)	3
MGT 2050 Legal and Ethical Environment of Business (F,Sp,Su)	3
MGT 3710 Developing Team and Interpersonal Skills (F,Sp).....	3
MGT 3810 (DSS) Employment Law and Policy Development (Prerequisite: MGT 2050) (F,Sp)	3
MGT 3820 (DSS) International Management (F,Sp)	3
MIS 4350 Introduction to Performance Improvement Projects (Sp).....	3
PHIL 3520 (DHA) Business Ethics.....	3
PUBH 3310 Occupational Health and Safety (F)	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.

Minor in Business

A Business Minor is administered by the Huntsman School of Business. For further information, students should contact the Huntsman School of Business Programs and Advising Center, Business 309, (435) 797-2272.

Graduation Requirements

To be recommended by the department for graduation, majors in the Department of Management must have a grade point average of at least 2.50 in their upper-division Huntsman School 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 the Huntsman School of Business award scholarships in addition to those available through the University Financial Aid Office. Information and application forms are available from the Huntsman School of Business Programs and Advising 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' Association (CEO) is the premier global entrepreneurship network serving more than 500 colleges and universities.

Department of Management

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 Department, can be found online at: <http://www.usu.edu/majorsheets/>

Further information about undergraduate programs in the Huntsman School of Business can be obtained from the Programs and Advising Center, Business 309, or found on the Web at: <http://www.huntsman.usu.edu/advising/>

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 program is competency based and prepares students to take a strategic role, assisting organizations in attracting, retaining, and developing human talent at all levels. Required subject areas include team and interpersonal effectiveness, talent acquisition and retention, total rewards and employee performance, training and organization development, employee relations and the labor movement, employment law, career and professional development, human capital management, human resource policy and strategy, and applied human resource research. Students are also required to demonstrate business acumen and complete an internship as part of the program.

Admission Requirements

See Admission Procedures on pages 36-37. Students from any accredited undergraduate major are invited to apply. Students are required to submit scores on the Graduate Management Admissions Test (GMAT) or the Graduate Record Examination (GRE). Applicants are expected to have strong written and oral communication skills.

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 to 46.5 credits, depending upon the undergraduate preparation of the student. Students entering the program without an undergraduate business degree will be required to complete a 10.5 credit sequence of courses to develop their foundation in business acumen as part of their program of study. This regimen is comprised of the following courses: ECN 6050, ACCT 6010, MGT 6075, 6410, 6510. Coursework beyond the Business Core includes MGT 6310, 6330, 6550, 6620, 6630, 6650, 6670, 6680, 6690, 6760; BUS 6250; and one 3-credit elective approved by the steering committee. Students may substitute

MGT 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 completing the program are strongly encouraged to take the Human Resource Certification Institute (HRCI) exam, leading to certification upon completion of the HRCI experience requirement.

Additional information about the MS in Human Resources degree may be obtained by contacting the Department of Management.

Financial Assistance and Assistantships

A limited number of graduate assistantships, scholarships, and other departmental awards are provided to outstanding 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/graduateschool/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 Huntsman School 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 194-195 of this catalog.

Management Faculty

Professors

Douglas D. Anderson, strategy, leadership, and change

Kenneth R. Bartkus, promotion management

Ronda R. Callister, management, organizational behavior, international management

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

Glenn M. McEvoy, human resources, organizational behavior, management

C. R. Michael Parent, marketing research and strategy

David B. Stephens, business strategy and labor relations

Professors Emeritus

Vernon M. Buehler

Howard M. Carlisle

John R. Cragun

Gary B. Hansen

Allen D. Kartchner

Eugene C. Kartchner

Leon R. McCarrey

Paul A. Randle

Y. Krishna Shetty

Associate Professors

J. Brian Atwater, "theory of constraints," quality management, lean manufacturing

Steven H. Hanks, business strategy, management, and entrepreneurship

Department of Management

Edwin R. Stafford, marketing management, strategy, environmental sustainability

Adjunct Associate Professor

Bradley A. Winn, organizational leadership

Associate Professors Emeritus

David R. Daines

Ross E. Robson

Assistant Professors

Carrie A. Belsito, strategic human resource management and ethics

Alison Cook, organizational behavior, human resource management

Daniel V. Holland, entrepreneurship

Haiyan Hu, retailing and consumer behavior, international retailing, visual merchandising and promotion

Konrad S. Lee, employment law, business law

Christopher R. Reutzel, strategic management

Brenda C. Sun, strategic and international management

Clinical Assistant Professors

Randall L. Cook, operations management and finance

Stacey B. Hills, marketing research, strategy, and product management

Senior Lecturers

David G. Herrmann, management and entrepreneurship

Janet P. Lyons, operations and marketing

Principal Lecturer

Alan P. Warnick, human resource management

Lecturers

Daniel D. Allen, entrepreneurship

Chester F. Brough, business law

David R. Woolstenhulme, entrepreneurship

Course Descriptions

Management (MGT), pages 603-607

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.huntsman.usu.edu/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

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 database administrators, worldwide web designers, electronic commerce developers, systems analysts, applications programmers, IS security managers, and systems trainers.

Departmental Honors

See *Honors in Business* description in the Huntsman School of Business section of this catalog (page 124).

Learning Objectives and Assessment

Assessment information for the Management Information Systems Department can be found online.

Requirements

Jon M. Huntsman School of Business Requirements

All bachelor's degree students majoring in Management Information Systems must satisfy the Huntsman School of Business entrance requirements provided on pages 124-125. Academic advising about these requirements is provided by the Huntsman School of Business Programs and Advising Center, Business 309. Management Information Systems majors must also follow Huntsman School prebusiness course requirements for admission to a major, detailed on page 125.

Matriculation Requirement and Transfer Limitation

No more than 15 USU Huntsman School of Business credits (ACCT, BUS, FIN, MGT, MIS), numbered 2000 and above, earned as a nonbusiness major (before acceptance into the Huntsman School) can be applied to a Huntsman School degree. No more than 15 business credits can be transferred from other accredited institutions. However, additional USU Huntsman School 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 Huntsman School major, at least 50 percent of the required Huntsman School credits must be earned from coursework taken from the Utah State University Huntsman School.

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 Huntsman School of Business credits required for a Huntsman School degree must be taken from the Utah State University Huntsman School or its departments, which include: School of Accountancy, Economics and Finance, Management, and 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 Huntsman School of Business: Pre-Business, Huntsman School of Business Core, MIS Department Core, and four MIS elective courses (12 credits).

Pre-Business Course Requirements (13 credits)

ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su).....	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

Huntsman School 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
BUS 3250 Discussions With Business Leaders (F,Sp).....	1
ECN 2010 (BSS) Introduction to Microeconomics (F,Sp,Su).....	3
ECN 3400 International Economics for Business (F,Sp,Su).....	3
FIN 3400 (QI) Corporate Finance (F,Sp,Su).....	3
MGT 2050 Legal and Ethical Environment of Business (F,Sp,Su).....	3
MGT 3110 Managing Organizations and People (F,Sp,Su).....	3
MGT 3500 Fundamentals of Marketing (F,Sp,Su).....	3
MGT 3700 Operations Management (F,Sp,Su).....	3
MGT 4880 (CI) Business Strategy in an Entrepreneurial Context (F,Sp,Su) (3 cr) or	
MGT 4890 (CI) Business Strategy in a Global Context (F,Sp,Su) (3 cr).....	3
MIS 2100 Principles of Management Information Systems (F,Sp,Su).....	3
MIS 2200 (CI) Business Communication (F,Sp,Su).....	3

MIS Department Core Requirements (10 credits)

MIS 3330¹ Database Management (F,Sp).....	3
MIS 3800¹ Information Technology Hardware and System Software (F,Sp).....	3
MIS 5900² Systems Design and Implementation (F,Sp).....	3
MIS 5910² Systems Design Laboratory (must be taken concurrently with MIS 5900) (F,Sp).....	1

Programming Requirement (3-4 credits)

Students must complete <i>either</i> MIS 3500 <i>or</i> both CS 1400 and 1405.	
MIS 3500 Introduction to Business Applications Programming (F,Sp).....	3

Or

CS 1400 Introduction to Computer Science—CS1 (F,Sp,Su) (3 cr) and	
CS 1405 Introduction to Computer Science—CS1 Lab (take concurrently with CS 1400) (F,Sp,Su) (1 cr).....	4

Department of Management Information Systems

Elective Courses (12 credits)

Students must select four elective courses from the following list:

MIS 3450 Designing Graphical User Interfaces for Electronic Commerce (F)	3
MIS 4330 ² Database Implementation (F,Sp)	3
MIS 4350 Introduction to Performance Improvement Projects (Sp)	3
MIS 4800 ¹ Security of Business Information Systems (Sp)	3
MIS 5050 ³ Advanced Web-Based Management Information Systems Development (F)	3
MIS 5150 Special Topics: Emerging Technologies in Management Information Systems (F)	3
MIS 5300 Advanced Data Communications (F)	3
MIS 5350 Quantitative Financial Modeling and Applications (Sp)	3
MIS 5650 ³ Advanced Website Development (Sp)	3
MIS 5700 (DSS) ⁴ Internet Management and Electronic Commerce (Sp)	3

Additional Electives

Students may complete *no more than one* of the following courses:

BUS 4250 Advanced Internship (F,Sp,Su)	1-9
MIS 5950 Independent Readings (F,Sp,Su)	1-5

Four-Year Degree Plan (8 Semesters)

A four-year degree plan for the Management Information Systems major can be found at: <http://www.usu.edu/degreplans/>

Management Information Systems Minor (15-16 credits)

A minimum 2.50 GPA is required in all courses counted toward the minor.

Required Courses (6-7 credits)

MIS 3330 ¹ Database Management (F,Sp)	3
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Complete either MIS 3500 or CS 1400 and 1405 (3-4 credits)

MIS 3500 Introduction to Business Applications Programming (F,Sp)	3
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Or

CS 1400 Introduction to Computer Science—CS1 (F,Sp,Su) (3 cr) and	
CS 1405 Introduction to Computer Science—CS1 Lab (take concurrently with CS 1400) (F,Sp,Su) (1 cr)	4

Elective Courses (9-10 credits)

Choose three of the following courses:

ACCT 4500 Accounting Information Systems (F,Sp)	3
MIS 3450 Designing Graphical User Interfaces for Electronic Commerce (F)	3
MIS 3800 ¹ Information Technology Hardware and System Software (F,Sp)	3
MIS 4330 ² Database Implementation (F,Sp)	3
MIS 4350 Introduction to Performance Improvement Projects (Sp)	3
MIS 4800 ¹ Security of Business Information Systems (Sp)	3
MIS 5050 ³ Advanced Web-Based Management Information Systems Development (F)	3
MIS 5150 Special Topics: Emerging Technologies in Management Information Systems (F)	3
MIS 5300 Advanced Data Communications (F)	3
MIS 5350 Quantitative Financial Modeling and Applications (Sp)	3
MIS 5650 ³ Advanced Website Development (Sp)	3
MIS 5700 (DSS) ⁴ Internet Management and Electronic Commerce (Sp)	3
MIS 5900 ² Systems Design and Implementation (F,Sp) (3 cr) and	
MIS 5910 ² Systems Design Laboratory (F,Sp) (1 cr)	4

¹MIS 2100 is a prerequisite for these courses.

²MIS 3330 is a prerequisite for these courses.

³MIS 3330 and 3500 are prerequisites for these courses.

⁴Passing scores on the Computer and Information Literacy (CIL) exams are prerequisites for this course.

Student Organizations

The Department of Management Information Systems sponsors a student organization that provides unique experiences to complement and enrich formal coursework. Leadership development and human relations skills are among the personal attributes enhanced by involvement in the various organization's various 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. More information is available at: <http://huntsman.usu.edu/acm/>

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/>

Graduate Programs

Master of Science

Students applying for admission to the Master of Science program in Management Information Systems must take the GMAT or GRE test. A score at the 40th percentile or better on the GMAT or GRE 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: MIS 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.

Department of Management Information Systems

Students are expected to have a background in management information systems. Required courses are MIS 6120, 6200, 6330, and 6700, in addition to the departmental core. Students who choose the *Plan A* option must complete 6 credits of MIS 6970. Students may take credits in Accounting, Computer Science, Economics and Finance, Instructional Technology and Learning Sciences, Management Information Systems, 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 MIS 6250, 6350, and 6450, in addition to the departmental core. Students must complete 15 credits of electives chosen from the following list: MIS 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.

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, and 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

Katherine M. Chudoba, management information systems
Jeffrey J. Johnson, management information systems
Yong Seog Kim, management information systems and data mining
Robert J. Mills, management information systems

Assistant Professors

Kelly Fadel, management information systems
Karina Hauser, lean manufacturing, artificial intelligence, and systems analysis and design
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 Bringham, microcomputer applications and business communication

Course Descriptions

Management Information Systems (MIS), pages 607-609

Department of Mathematics and Statistics

Department Head: D. Richard Cutler

Location: Lund Hall 211

Phone: (435) 797-0244

FAX: (435) 797-1822

E-mail: mathstat@cc.usu.edu

WWW: <http://www.math.usu.edu/>

Assistant Department Head:

Eric R. Rowley, Lund Hall 211B, (435) 797-2808,
eric.rowley@usu.edu

Undergraduate Program Director:

Daniel C. Coster, Lund Hall 310, (435) 797-2815,
dan.coster@usu.edu

Graduate Program Director:

James A. 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

Actuarial Science Program Coordinator:

Daniel C. Coster, Lund Hall 310, (435) 797-2815,
dan.coster@usu.edu

Undergraduate Advising:

Linda Skabelund, Lund Hall 201, (435) 797-0268,
linda.skabelund@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)**.*

Prerequisites for MATH 1030, 1050, 1060, 1100, 1210, 2020, and STAT 1040, 2300 *must* be completed **on or after** (not before) 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.

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. A student's score on the Math Placement Test will be used to determine his or her placement in appropriate mathematics or statistics course.

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 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

Department of Mathematics and Statistics

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

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

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)

Even if not required, students may opt to take the Math Placement Test through the Department of Mathematics and Statistics, strictly for advising purposes.

The calculus courses MATH 1210, 1220, and 2210 are designed for students majoring in mathematics, the sciences, and engineering. MATH 1100 (Calculus Techniques) is designed primarily for students majoring in business. 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 a sound understanding of trigonometry (MATH 1060).

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 67-75 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. Exact requirements in effect at any given time may be found in the USU online *General Catalog*. 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 2009 are given below.

Mathematics Major (53 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 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 5710 Introduction to Probability (F,Sp) 3

Department of Mathematics and Statistics

B. Elective Courses (9 credits)

Select at least three courses (9 credits) from the following:

MATH 5110 Differential Geometry (Alt F).....	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 5510 Introduction to Topology (Alt 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

Mathematics Education Major with a Teaching Minor

(73 credits, plus the number of credits required
by the teaching minor)

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 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 4400 History of Mathematics and Number Theory (Sp).....	3
MATH 5010 Capstone Mathematics, Statistics, and Technology for Teachers (F,Sp).....	3
MATH 5710 Introduction to Probability (F,Sp).....	3

B. Teaching Minor Content Courses (number of credits vary by minor)

C. Pedagogy Courses (22 credits¹)

SCED 3100 Motivation and Classroom Management (F,Sp).....	3
SCED 3210 (CI/DSS) Educational and Multicultural Foundations (F,Sp).....	3
SPED 4000 Education of Exceptional Individuals (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
Teaching Methods in Minor course ¹	3
Clinical Experience course ²	1

D. Student Teaching Semester (12 credits)

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

Note: Acceptance to teacher education is required prior to enrolling in SCED 3100, 3210, 4200, or 4210. This acceptance requires an overall GPA of at least 2.75, successful completion of a writing competency test, and passing a criminal background check.

Note: 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.

¹Students with a science teaching minor are required to take two science teaching methods courses (i.e., SCED 3400 and 4400), thus raising the total for pedagogy courses to 25 credits.

²The prefix for this course, numbered 3300, depends on the teaching minor.

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 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 4400 History of Mathematics and Number Theory (Sp).....	3
MATH 5010 Capstone Mathematics, Statistics, and Technology for Teachers (F,Sp).....	3
MATH 5710 Introduction to Probability (F,Sp).....	3
MATH 5720 Introduction to Mathematical Statistics (Sp) (3 cr) or 5000-level course with STAT prefix (other than STAT 5100) (3 cr).....	3

B. Pedagogy Courses (22 credits)

SCED 3100 Motivation and Classroom Management (F,Sp).....	3
SCED 3210 (CI/DSS) Educational and Multicultural Foundations (F,Sp).....	3
SPED 4000 Education of Exceptional Individuals (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 3300 School Laboratory for Mathematics Teachers Level I (F,Sp).....	1
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

C. Student Teaching Semester (12 credits)

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

Note: Acceptance to teacher education is required prior to enrolling in SCED 3100, 3210, 4200, or 4210. This acceptance requires an overall GPA of at least 2.75, successful completion of a writing competency test, and passing a criminal background check.

Note: 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.

Department of Mathematics and Statistics

Applied Mathematics Option (68 credits)

The Applied Mathematics Option is available in the Mathematics Major.

A. Required Mathematics Courses (41 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 5210 Introduction to Analysis I (F)	3
MATH 5220 Introduction to Analysis II (Sp)	3
MATH 5270 Complex Variables (Sp)	3
MATH 5410 Methods of Applied Mathematics (F)	3
MATH 5420 Partial Differential Equations (Sp)	3
MATH 5710 Introduction to Probability (F,Sp)	3
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su)	3

B. Required Physics and Computer Science Courses (12 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
PHYS 2110 The Physics of Living Systems I	4
PHYS 2120 (BPS) The Physics of Living Systems II	4

C. Elective Courses (6 credits)

Select two courses (6 credits) from the following:

MATH 5610 Computational Linear Algebra and Solution of Systems of Equations (F)	3
MATH 5620 Numerical Solution of Differential Equations (Sp)	3
MATH 5640 Optimization (Sp)	3

D. Additional Elective Courses (9 credits)

Select three courses (9 credits) from STAT courses numbered 5000 and above; or from MATH courses numbered 5000 and above, excluding courses listed above and excluding MATH 5570 and 5580 (Actuarial Math I and II) and MATH 5010.

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

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) Introduction to Software Engineering I (F,Sp)	3

C. Mathematics Elective Courses (6 credits)

Select two courses (6 credits) in mathematics numbered above 5010, 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: Students who complete the Computer Science coursework with a GPA of at least 2.5 automatically earn a minor in Computer Science.

Actuarial Science Emphasis (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

Department of Mathematics and Statistics

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, Economics, Finance, and Management Courses (15 credits)

ACCT 2010 Survey of Accounting I (F,Sp,Su).....	3
ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su).....	3
ECN/APEC 2010 (BSS) Introduction to Microeconomics (F,Sp,Su).....	3
FIN 3400 (QI) Corporate Finance (F,Sp,Su).....	3
MGT 2050 Legal and Ethical Environment of Business (F,Sp,Su).....	3

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.

Suggested Four-year Plans

Suggested semester-by-semester four-year plans for students working toward a Bachelor of Science or Bachelor of Arts degree within the Department of Mathematics and Statistics can be found at:
<http://www.usu.edu/degreepans/>

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests.

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, 5570, and 5580.

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 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 4400 History of Mathematics and Number Theory (Sp).....	3
MATH 4500 Methods of Secondary School Mathematics Teaching (F,Sp).....	3
MATH 5010 Capstone Mathematics, Statistics, and Technology for Teachers (F,Sp).....	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.

Note: Acceptance to teacher education is required prior to enrolling in SCED 3100, 3210, 4200, or 4210. This acceptance requires an overall GPA of at least 2.75, successful completion of a writing competency test, and passing a criminal background check.

Department of Mathematics and Statistics

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

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 (Sp).....	3
BIOL 5620 Medical Physiology (F).....	3
CLIM 5500 Land-Atmosphere Interactions (Sp odd).....	3
PUBH 5330 (QI) Industrial Hygiene Chemical Hazard Control (F).....	3
WILD 3810 Plant and Animal Populations (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@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/PDF/scholarshipappl.pdf>, and 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/matrices, 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.

Department of Mathematics and Statistics

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 department head and undergraduate research liaison, D. Richard Cutler, (435) 797-0244, richard.cutler@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 36-37 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.

Department of Mathematics and Statistics

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. This option is *only* for students simultaneously working on degrees in other departments.

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.

The Plan C option of the MS program in Statistics is *only* for students simultaneously working on a degree in another department. Students in this option must pass both MATH 5710 and 5720, or both STAT 6710 and 6720 with a grade of B+ or better.

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

Department of Mathematics and Statistics

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.

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 Emma Eccles Jones College of Education and Human Services. The GPA for the 36 credits and for the 21 math credits must be at least 3.0.

All students in the Master of Mathematics program must pass a qualifying exam. Students have the choice of taking their exam in Advanced Calculus, Applied Mathematics, or a synthesis of Mathematical Content and Pedagogy.

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 intermathematical 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.

Department of Mathematics and Statistics

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. Duties of graduate teaching assistants may include full responsibility as instructors for introductory mathematics or statistics courses, leading recitations, and (in rare situations) tutoring and paper grading. Stipends are competitive and may include health insurance benefits. 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. Mathematics and Statistics faculty members who have research grants may choose to partially or fully support students they are advising.

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
Piotr Kokoszka, probability and time series analysis
James A. Powell, applied mathematics, mathematical biology
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

Christopher D. Corcoran, computational biostatistics
Daniel C. Coster, experimental design, linear models
Mark E. Fels, differential geometry
Joseph V. Koebbe, numerical analysis, 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

Assistant Professors

David E. Brown, discrete mathematics, graph theory
Nathan Geer, low-dimensional topology, quantum and super algebras
Mevin B. Hooten, Bayesian methods; hierarchical models; ecological and environmental statistics; spatial, temporal, and spatio-temporal statistics
Peg Howland, numerical linear algebra
Brynja R. Kohler, mathematics education, mathematical biology
Nghiem V. Nguyen, partial differential equations, nonlinear evolution problems, fluid mechanics, nonlinear waves
Kady Schneider, mathematics education, statistics
John R. Stevens, bioinformatics, applied statistics, meta-analysis

Principal Lecturers

David D. Bregenzer, mathematics, statistics
Eric R. Rowley, mathematics, mathematics education

Lecturers

Bryan Bornholdt, mathematics, mathematics education
Claudia Mora Bornholdt, mathematics, mathematics education

Course Descriptions

Mathematics (MATH), pages 600-603

Statistics (STAT), pages 663-665

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 Educational 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)

Program outcomes are statements describing the units of knowledge or skill students are expected to acquire from the program to prepare them to achieve the program educational objectives. These are typically demonstrated by the student and measured by the program at the time of graduation.

The ABET 2008-2009 Criteria for Accrediting Engineering Programs states that each student graduating with a BS degree within the MAE program is expected to have:

- (a) an ability to apply knowledge of mathematics, science, and engineering.
- (b) an ability to design and conduct experiments, as well as to analyze and interpret data.
- (c) an ability to design a system, component, or process to meet desired needs within realistic constraints, such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- (d) an ability to function on multi-disciplinary teams.
- (e) an ability to identify, formulate, and solve engineering problems.
- (f) an understanding of professional and ethical responsibility.
- (g) an ability to communicate effectively.
- (h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
- (i) a recognition of the need for, and an ability to engage in, lifelong learning.
- (j) a knowledge of contemporary issues.
- (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
- (l) an ability to work professionally in both thermal and mechanical system areas, including the design and realization of such systems.

Department of Mechanical and Aerospace Engineering

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.

Department of Mechanical and Aerospace Engineering

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 130-134) and the Undergraduate Graduation Requirements (pages 76-79) 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	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

¹Students must select 15 credits of technical elective courses from the list of approved MAE Technical Elective Courses shown below.

²These courses are required for admission to the Professional Engineering Program (PEP).

Caution: Even though MAE 2200 and 2450 are lower-division courses and are sometimes taken by sophomores, they are not required for admission to the Professional Program. Hence, they are subject to the Professional Program "one repeat allowed" rule.

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/CEE 5020 Finite Element Methods in Solid Mechanics I (F).....	3
MAE/CEE 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/ECE 5240 Space System Design (Sp).....	3
MAE 5540 Propulsion Systems (Sp).....	3
MAE 5560 Dynamics of Space Flight (F).....	3
MAE 5580 Aircraft Design (F).....	3
MAE 5600 Reliability and Quality of Engineering Systems (F).....	3
MAE 5640 Design for Manufacturability (F).....	3
MAE 5650 Nontraditional and Additive Manufacturing Processes (Sp).....	3
MAE 5670 Fracture Mechanics (F).....	3
MAE 5900 Cooperative Practice (F,Sp).....	3
MAE 5930 ST: Kinematics (F).....	3
MAE 5930 ST: Nano Fabrication (Sp).....	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
MGT 5730 Continuous Improvement (F).....	3

Department of Mechanical and Aerospace Engineering

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
STAT 5300 (QI) Statistical Process Control.....	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

³During 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:** MAE 5420, 5500, 5510, 5520, 5530, 5540, 5560, 5580; **Group 2:** MAE 5020, 5060, 5310, 5440. This provides greater flexibility for students who want a more specific focus.

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.....	2
MAE 4800 (CI) Design II.....	3
MAE 5300 Vibrations.....	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/CEE 5020 Finite Element Methods in Solid Mechanics I (F).....	3
MAE 5310 Dynamic Systems and Controls.....	3
MAE 5600 Reliability and Quality of Engineering Systems (F).....	3
MAE 5640 Design for Manufacturability (F).....	3
MAE 5650 Nontraditional and Additive Manufacturing Processes (Sp).....	3
MAE 5670 Fracture Mechanics (F).....	3
STAT 5200 Design of Experiments (Sp).....	3
MGT 5730 Continuous Improvement (F).....	3

Professional Program in 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/CEE 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

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Spring Semester (17-18 credits)

MAE 4800 (CI) Design II	3
MAE 5440 Computational Fluid Dynamics	3
MATH 5620⁴ 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

⁴MATH 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. 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 at the end of their junior year. 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 133-134.)

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 can also work with faculty on research-type projects, adding to their educational experience. These projects provide 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@usu.edu. Additional information can be found online at: <http://www.usu.edu/honors/>

Students may also earn an Undergraduate Research Scholar designation on their transcripts. See page 109 for more information about the Undergraduate Research Program.

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 36-37, 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

Department of Mechanical and Aerospace Engineering

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 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 12 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 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 12 credits selected from any one of five declared areas of emphasis. 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 6 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.

The **PhD Degree beyond a BS degree** requires 24 credits of 6000-level (or above) MAE coursework, exclusive of MAE 6930, 6950, 6970, 6990, 7930, 7970, and 7990; and a minimum of 6 credits

of 5000-level (or above) coursework in approved mathematics. 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 must be submitted for publication in a refereed journal prior to scheduling the final defense. The paper must be related to the dissertation and have the student as first author.

The **PhD Degree beyond an MS degree** requires 12 credits of 6000-level (or above) MAE coursework, exclusive of MAE 6930, 6950, 6970, 6990, 7930, 7970, and 7990; and a minimum of 3 credits of 5000-level (or above) coursework in approved mathematics. A minimum of 60 credits is required beyond the MS, 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 must be submitted for publication in a refereed journal prior to scheduling the final defense. The paper must be related to the dissertation and have the student as first author.

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

Department of Mechanical and Aerospace Engineering

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
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 Professors

Dell K. Allen, manufacturing
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
Alma P. Moser, engineering mechanics, piping systems
Carl D. Spear, material science
Edward W. Vendell, Jr., cryogenics, heat transfer, thermal systems design

Associate Professors

Heng Ban, thermofluids, 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
Leijun Li, manufacturing, materials joining
Barton L. Smith, thermal/fluids, experimental fluid mechanics
Brent E. Stucker, advanced manufacturing and materials
Wenbin Yu, advanced structures, solid mechanics, computational solid mechanics (FEM)

Research Associate Professor

Thomas Hauser, computational fluid dynamics, thermal/fluids, numerical methods, high-performance computing

Adjunct Associate Professors

Ning Fang, manufacturing
Robert T. Pack, remote sensing, optoelectronics, lidar sensor systems

Assistant Professors

David K. Geller, spacecraft guidance and navigation
Dhirenda V. Kubair, solid mechanics, Computational Dynamic Fracture Mechanics (CDFM)
Leila J. Ladani, solid mechanics, fracture mechanics, materials
Stephen A. Whitmore, high-speed aerodynamics, astrodynamics
Yibin (Anna) Xue, solid mechanics, fatigue and fracture, design and optimizations

Adjunct Assistant Professors

Scott M. Jensen, thermal management of space systems
Angela Minichiello, heat transfer, thermodynamics
Steven R. Wassom, spacecraft instrumentation design

Adjunct Research Assistant Professor

Randy J. Jost, electromagnetic fields, solid state, microwaves

Lecturers

Peter G. Brunson, solid modeling and computer graphics
John Devitry, solid modeling, computer graphics

Course Descriptions

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Department of Military Science

Department Head: Major Paul J. Faletto

Location: Military Science 104

Phone: (435) 797-7058

FAX: (435) 797-3330

E-mail: armyrotc@usu.edu

WWW: <http://www.usu.edu/armyrotc/>

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 \$600-per-semester 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 National Leadership Development and Assessment 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 (11 credits)

MSL 1010 Leadership and Personal Development.....	2
MSL 1020 Foundation in Leadership	2
MSL 2010 Innovative Tactical Leadership.....	2
MSL 2020 Leadership in Changing Environments.....	2
MSL 2110 (BSS) Foundations of Leadership.....	3

Advanced Course Requirements (15 credits)

MSL 3010 Adaptive Team Leadership.....	3
MSL 3020 Leadership Under Fire	3
MSL 4010 Developing Adaptive Leaders	3
MSL 4020 Leadership in a Complex World.....	3
MSL 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 \$3,000-5,000 per year. The **Green to Gold scholarship** allows soldiers serving on active duty to leave the Army early and attend college/ROTC full time while receiving scholarship benefits. Other scholarship opportunities include: **room and book grants** and the **Western Undergraduate Exchange (WUE)** program. Call or visit the Department of Military Science for details.

Placement Credit For Veterans

Veterans may qualify for advanced course placement based on prior military experience. They can take full advantage of veteran's benefits and receive 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 up to \$4,500 per year, 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 31 (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)

MSL 3010 Adaptive Team Leadership.....	3
MSL 3020 Leadership Under Fire	3
MSL 4010 Developing Adaptive Leaders	3
MSL 4020 Leadership in a Complex World	3
HIST 4810 American Military History (3 cr) or	
MSL 4610 Military History Seminar (3 cr).....	3
Electives (must be approved by department head).....	6

Elective Course Offerings

MSL 2110 (BSS) Foundations of Leadership.....	3
MSL 2400 Physical Readiness (repeatable; take 1 credit per semester)	1
MSL 2420 Ranger Preparation.....	2
MSL 2430 Air Assault	2
MSL 2440 Airborne Operations	2
MSL 2510 Leader's Training Course.....	1-6
MSL 3110 Staff Organization and Operations.....	1-3
MSL 3210 Independent Study.....	1-3
MSL 4110 Advanced Staff Operations	1-3
MSL 4400 Advanced Physical Readiness.....	1
MSL 4510 ROTC Leader Development and Assessment Course ...	1-10
MSL 4520 Cadet Troop Leadership Training.....	2
MSL 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

Professor

Major Paul J. Faletto

Assistant Professors

Major Jeffrey A. Bruce

Captain Michael Rhinehart

Lt. Colonel Greg Stuart

Instructor

Sergeant First Class LaWrell D. Cook

Course Descriptions

Military Science Leadership (MSL), pages 609-610

Department of Music

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Cello/String Bass:

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Clarinet/Oboe:

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Flute and Elementary School Music Teaching Minor:

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Scoring and Arranging/Conducting:

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Christopher Scheer, Fine Arts 204, (435) 797-3000,
christopher.scheer@usu.edu

Basic Music Minor/Graduation Clearance:

Marilyn Kraft, Fine Arts 102, (435) 797-3632, marilyn.kraft@usu.edu

Degrees offered: Bachelor of Music (BM) in Music; Bachelor of Science (BS) and Bachelor of Arts (BA) in Music Therapy; Master of Music (MM) in Music

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

Graduate specialization: *MM degree in Music*—Piano Performance and 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.

Requirements

Admission Requirements

Admission requirements for the Department of Music include those described for the University in this catalog (see pages 30-35). 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 (29-34 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

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 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 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.

¹MUSC 1170 and 1180 are *not required* for the Music Education (General) Emphasis, nor for the Guitar Performance Emphasis.

²MUSC 2140 is *not required* for the Composite Major in Music Education, nor for the Guitar Performance Emphasis or the Wind/Brass/Drum Performance Emphasis.

³MUSC 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

Department of Music

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)

Piano or Keyboard Harmony Instruction..... 2

Choose one of the following three options:

MUSC 1150 Beginning Group Piano (Sp) (1 cr) **and**

MUSC 1160 Intermediate Group Piano (Sp) (1 cr)..... 2

Or

MUSC 1170 Keyboard Harmony I (F) (1 cr) **and**

MUSC 1180 Keyboard Harmony II (Sp) (1 cr)..... 2

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) (25 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 (6 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

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.

Department of Music

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
Level 1 Orff-Schulwerk Teacher Training (Su) ⁵	4

⁴Will fulfill the University Studies Breadth Social Sciences (BSS) requirement.

⁵The Orff-Schulwerk teacher training course, taught as a workshop through the Music Department, is offered *only* during summer semester. The prefix and course number for this course varies; see Music Department for further information. Prior to taking this course, students should complete MUSC 1110, 1130, and 3260.

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 (29-34 credits)

All of the Music Core Curriculum courses (shown on page 379) 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 (53 credits)

MUSC 2490 Individual Piano Instruction (Second Instrument) for Music Majors (F,Sp,Su)	2
MUSC 3500 Symphony Orchestra (F,Sp)	8
MUSC 3520 String Pedagogy and Solo Literature (F,Sp)	2
MUSC 4210 Advanced Music Form and Analysis (F)	3

MUSC 4500 String Ensemble (F,Sp)	8
MUSC 4920 Individual Recital (Junior) (F,Sp,Su)	2
MUSC 4920 Individual Recital (Senior) (F,Sp,Su)	2
MUSC 4930 Readings and Conference (F,Sp,Su)	4
Music Electives	6

Individual String Instruction⁶ (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 (58-64 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)	8

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 Instruction⁶ (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
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Large Ensembles⁷ (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

Department of Music

Small Ensembles (4 credits)

Select 4 credits from the following six 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
MUSC 4720	Saxophone Quartet (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 4730 (CI)	Directed Project in Instrumental Pedagogy (F,Sp,Su)	2
MUSC 4920	Individual Recital (Junior) (F,Sp,Su)	1-2
MUSC 4920	Individual Recital (Senior) (F,Sp,Su)	3-6
	Secondary Instrument Course ⁶	2
	Electives (at least 4 credits in Music) ⁹	9-13

⁶A student in this program will study privately each semester of residency.

⁷A student in this program will participate in a large ensemble for each semester of residency.

⁸Choose 2 credits from: MUSC 2470, 2490, 2750, 2760, 2770, 2780, 2790, 2850, 2860, 2870, 2880, 2890.

⁹At 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.

Guitar Performance (54 credits)

Piano or Keyboard Harmony Instruction2

Choose one of the following three options:

MUSC 1150	Beginning Group Piano (Sp) (1 cr) and	
MUSC 1160	Intermediate Group Piano (Sp) (1 cr)	2

Or

MUSC 1170	Keyboard Harmony I (F) (1 cr) and	
MUSC 1180	Keyboard Harmony II (Sp) (1 cr)	2

Or

MUSC 2490	Individual Piano Instruction (Second Instrument) for Music Majors (F,Sp,Su) (1 cr, repeatable)	2
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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

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 (29-34 credits)

Students in the Piano Pedagogy emphasis must complete the 29-34 credit music core curriculum as listed on page 379.

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

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 (32-33 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	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 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

Music Therapy Core Courses (32 credits)

MUSC 1310 Introduction to Music Therapy (F).....	2
MUSC 1320 Music Therapy Ensemble (F,Sp) (1 cr, repeatable).....	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
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

Additional Music Coursework (2 credits)

MUSC 3260 Elementary School Music (F,Sp,Su).....	2
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Ensemble Performance (2 credits)

Select from the following courses:

MUSC 2600 Women's Choir (F,Sp).....	1
MUSC 2610 American Festival Chorus (F,Sp).....	1
MUSC 2720 Marching Band (F).....	2
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 4550 Acoustic Guitar Ensemble (F,Sp).....	1
MUSC 4600 University Chorale (F,Sp).....	1
MUSC 4650 Chamber Singers (F,Sp).....	1

Individual Instruction (Major Instrument)

(Minimum Requirement: 4 semesters, 4 credits)

Guitar Requirements (with advisor approval) (1-4 credits)

Select from the following courses:

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 from the following courses:

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) (1-4 credits)

Select from the following courses:

MUSC 1600 Voice Techniques (F,Sp).....	1
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

Required Behavioral Health/Natural Sciences (12 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

Behavioral Health/Natural Sciences Electives

(9 credits minimum)

Electives must be chosen from the following courses or with approval of the student's area advisor.

COMD 2500 Language, Speech, and Hearing Development (F,Sp).....	3
COMD 2910 (CI) Sign Language I (F,Sp,Su).....	4
FCHD 1500 (BSS) Human Development Across the Lifespan (F,Sp).....	3
FCHD 2400 (BSS) Marriage and Family Relationships (F,Sp).....	3
FCHD 3100 Abuse and Neglect in Family Context (F,Sp).....	3
PSY 1100 Developmental Psychology: Infancy and Childhood (F,Sp).....	3
PSY 3120 (DSS) Abuse, Neglect, and the Psychological Dimensions of Intimate Violence (F,Su).....	3
PSY 3460 Physiological Psychology (Sp).....	3
PSY 3510 (DSS) Social Psychology (F,Su).....	3
PSY 4210 (DSS) Personality Theory (Sp).....	3
PSY 4230 (DSS) Psychology of Gender (Sp).....	3
SOC 1010 (BSS) Introductory Sociology (F,Sp).....	3
SOC 3010 Social Inequality (F,Sp).....	3
SOC 4370 Sociology of Gender (F).....	3

Sample Four-year Plans

Sample semester-by-semester four-year plans for students working toward a bachelor's degree within the Department of Music can be found at: <http://www.usu.edu/degreetplans/>

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests.

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.

Basic Music Minor (24 credits)

MUSC 1110¹⁰ Music Theory I (<i>music minor section</i>) (F).....	3
MUSC 1130¹⁰ Aural Skills I (<i>music minor section</i>) (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 (<i>nonmajor courses, primary instrument/voice</i>).....	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

Department of Music

Elementary School Music Teaching Minor (16 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 (<i>music minor section</i>) (F).....	3
MUSC 1130 ¹⁰ Aural Skills I (<i>music minor section</i>) (F)	1
MUSC 1170 Keyboard Harmony I (<i>music minor section</i>) (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
Level 1 Orff-Schulwerk Teacher Training (Su) ¹³	4
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
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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

¹⁰Offered during spring semester only. These courses must be taken concurrently.

¹¹It is recommended that students complete MUSC 1010 prior to enrolling in MUSC 3010 and 3020.

¹²Students 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.

¹³The Orff-Schulwerk teacher training course, taught as a workshop through the Music Department, is offered *only* during summer semester. The prefix and course number for this course varies; see Music Department for further information. Prior to taking this course, students should complete MUSC 1110, 1130, and 3260.

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://music.usu.edu/assessment.aspx>

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@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.

Graduate Programs

Master of Music Degree

The Music Department offers a Master of Music (MM) degree, with a specialization in Piano Performance and Pedagogy. The MM degree integrates instruction in piano pedagogy with advanced levels of piano performance, preparing graduates who will offer piano instruction from private studios, as well as those who will teach in a college environment. Graduates of this program will also be equipped to pursue Doctor of Musical Arts degrees at other institutions. Students in the program must complete a minimum of 36 approved semester credits, divided into three main areas: (1) 12 credits in performance, (2) 12 credits in pedagogy, and (3) 12 credits in history and theory. Selected students will be offered graduate instructorship positions.

To qualify for admission to the MM program, applicants must have a bachelor's degree in any field of study, with a GPA of at least 3.0. Students must have scores on the verbal and *either* the quantitative *or* analytical portions of the Graduate Record Examination (GRE) at or above the 40th percentile. International applicants must take the Test of English as a Foreign Language (TOEFL) and earn a minimum score of 213. Three satisfactory letters of recommendation are also required. An audition and interview is required for admission to the degree. If a live audition is impractical, applicants may send an audiovisual recording demonstrating their level of proficiency with regard to both piano performance and teaching. Candidates will also be required to pass diagnostic examinations in music theory and music history, ensuring their preparation for graduate-level study in these fields.

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
Craig D. Jessop, choral/orchestral conducting
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, diction
Mark A. Emile, string performance and pedagogy, violin/viola
Lynn Jemison-Keisker, opera, repertory, diction
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
Jason Gamer, theory, trumpet
Jon Gudmundson, jazz, saxophone
R. Dennis Hirst, piano, Youth Conservatory
Christopher Scheer, 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 610-618

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 Impact Analysis for NEPA Specialists	1
NEPA 6360 Overview of the Endangered Species Act	1
NEPA 6380 NEPA Process Management	1
NEPA 6390 NEPA Climate Change Analysis	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), pages 618-619

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/departments/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

Natural Resources and Environmental Education Graduate Certificate

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 personal and nonpersonal interpretive programs 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.

APEC 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
ENVS 5570 Sustainable Living..... 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 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 6730 Public Folklore..... 3

Natural Resources and Environmental Education Graduate Certificate

ENGL/HIST 6740 Folk Narrative.....	3
ENGL/HIST 6760 Cultural and Historical Museums.....	3
GEOG 5650 Developing Societies.....	3
HIST 6460 Seminar in Environmental History.....	3
LAEP 5400/6400 Low Water Landscaping.....	3
LAEP 6110 Landscape Planning for Wildlife.....	3
MGT 6620 Training and Organizational Development.....	3
MGT 6650 Team and Interpersonal Effectiveness.....	3
PLSC 5100/6100 Landscape Irrigation Management.....	3
POLS 5180 Natural Resource Policy.....	3
PSY 6660 Cognition and Instruction.....	3
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
Melody Graulich, English
Michael R. Kuhns, Wildland Resources
Terry L. Sharik, Wildland Resources
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
Michael Dietz, Environment and Society
Christopher Monz, Environment and Society
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
Darren J. McAvoy, Extension Program Associate, Wildland Resources
Jack Shea, Director, Teton Science School
Debra M. Spielmaker, Director, Utah Agriculture in the Classroom
Karla VanderZanden, Director, Canyonlands Field Institute

Master of Natural Resources (MNR)

Degree Coordinator: Judith A. Kurtzman

Location: Natural Resources 322

Phone: (435) 797-0922

FAX: (435) 797-4048

E-mail: judy.kurtzman@usu.edu

WWW: <http://www.cnr.usu.edu/htm/students/grad-students/mnr/>

Degree offered: Master of Natural Resources (MNR)

Objectives

The Master of Natural Resources (MNR) is a nonthesis, management-oriented degree designed specifically for natural resource professionals who are returning to school to advance their careers. The MNR prepares students to work in the interdisciplinary context of the twenty-first century. The MNR focuses on core areas important for natural resource professionals. Input from state and federal agencies, as well as from other professionals, has helped in the development of a degree program preparing students for the challenges of the future.

Admission Requirements

All students must be admitted into USU's School of Graduate Studies, following standard procedures and policies.

To be accepted into the MNR program, students must *either* have a bachelor's degree in a natural resources related field *or* must have demonstrated work experience in natural resources. Students accepted into the program may be required to fulfill prerequisites.

The degree is administered by the College of Natural Resources, rather than through any of the departments within the college. Prior to applying to the program, applicants are encouraged to contact the degree coordinator directly.

Course Requirements

The MNR degree program consists of 33 total semester credits. The degree is designed to develop competencies in several core areas, several electives, and a capstone experience. The MNR is tailored to the specific needs of each student. Students may choose the specific courses that meet core area requirements, as well as choose from a set of electives. Each student works with a degree coordinator and a graduate committee to identify a program of study that best meets his or her needs.

Core areas include:

1. Ecological foundations
2. Human dimensions of natural resource management
3. Natural resource policy
4. Natural resource economics
5. Quantitative methods
6. Spatial information management
7. Administration and leadership

The capstone experience is also tailored to each specific student's career objectives. Through this capstone experience, each student demonstrates the ability to apply and synthesize the knowledge gained through the MNR program.

Modes of MNR Delivery

Since flexibility is necessary for people with busy lives and full-time jobs, the MNR is available through several different delivery modes: entirely online, through short-courses, in a traditional classroom setting, or through a combination of these delivery options, in order to best meet the student's needs.

Cooperative Nursing Program

Coordinator: Jonny Kelly
Location: Lundberg Building 201
Phone: (435) 797-1515
FAX: (435) 797-3649
E-mail: jon.kelly@aggiemail.usu.edu
WWW: <http://weber.edu/nursing/>

Advisor:
Doug Watson, (801) 626-6128 or (800) 350-7042 (Utah only),
healthprofessions@weber.edu

Undergraduate Programs

Associate of Science Degree Program Objectives

Weber State University and Utah State University jointly offer an Associate of 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 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 of Science 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 Weber State University 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 Program

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 apply to the WSU Nursing Program.

All pre-nursing students should subscribe to the Pre-Nursing E-mail List. The purpose of this list is to keep pre-nursing students informed about meetings and activities which will support their progress toward admission into an RN program in Utah. To subscribe, visit: http://lists.usu.edu/mailman/listinfo/pre-nursing_list

USU Pre-Nursing Advisor: Yvonne Kobe, (435) 797 2577,
yvonne@biology.usu.edu

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 1100 Introduction to Microbiology (Home Study only) (3 cr) or	
BIOL 2060 Elementary Microbiology (4 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 Social Sciences (BSS)/Diversity	
elective course (SOC 1010)	3
Breadth Creative Arts (BCA) elective course	3
Computer and Information Literacy (CIL) competency exam	

Cooperative Nursing Program

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

Additional Information

For detailed information about course requirements for the Associate of Science degree in Nursing, see the major requirement sheet, available from the Nursing Program, or online at:
<http://www.usu.edu/majorsheets/>

Course Descriptions

Nursing (NURS), pages 623-624
Health Sciences (HS), page 581

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: marlene.israelsen@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

A degree in the Food Science emphasis applies principles of engineering, biology, and physical science to food. Students in this discipline focus on the production, selection, preservation, processing, packaging, distribution, and use of safe, nutritious, and wholesome food. Graduates receive an excellent background in chemistry, engineering, food processing, microbiology, sensory evaluation, and statistics. Students planning to apply to graduate school are encouraged to major in Food Science instead of Food Technology Management. The Food Science program is approved by the Institute of Food Technologists.

Food Technology Management

The Food Technology Management emphasis 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 have the option of *either* a **Business Minor** or an **Operations Management Minor** through the Huntsman School of Business. 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 aspects 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.

The **Nutrition Science Pre-Medical School** option is for students planning to pursue medical school, dental school, or another professional degree. The curriculum is based on undergraduate admission requirements for the University of Utah Medical School and meets most medical school admission requirements. Because nutrition is an applied science and offers research opportunities, completing a degree in this emphasis area may give students an advantage for admission to medical school, over applicants representing other science majors.

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

Students in the Dietetics emphasis prepare to become Registered Dietitians (RDs) and receive excellent instruction and experience in clinical nutrition, community nutrition, and food service management. USU offers two programs in Dietetics—the **Coordinated Program in Dietetics (CPD)** and the **Didactic Program in Dietetics (DPD)**. Both are accredited by the the Commission on Accreditation for Dietetics Education (CADE) of the American Dietetic Association, 20 South Riverside Plaza Suite 2000, Chicago IL 60606-6995, tel. (312) 899-0040.

The **CPD Program** includes coursework **and** a 1,200-hour supervised internship. The graduate is eligible to take the national registration exam to become an RD upon completion of the BS degree.

After completing requirements for a bachelor's degree, students in the **DPD Program** are eligible to apply for a supervised internship experience elsewhere. This includes the USU Distance Internship and others across the nation. Upon completion of a post-BS internship, graduates are eligible to take the national registration exam.

Admission into either Dietetics Program (CPD or DPD) requires formal application during spring semester of the sophomore year (or when prerequisite coursework is completed). Ten to twelve students are accepted into the CPD program each year and go through the program in unison. Other applicants who meet the minimum criteria for entry into the Dietetics Program (a GPA of 3.0 or higher and a grade of C or better in required prerequisite coursework) are eligible for entry into the DPD program. Selected applicants are expected to register for dietetics courses beginning the following fall semester.

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.

Department of Nutrition and Food Sciences

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 30-35. 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 five emphasis areas in the department and must meet the following minimum requirements:

1. Grade point average (GPA) must be 2.5 or higher in all courses required for the major.
2. A grade of C or better must be received in 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, unless approved by the department head or program director.
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, 3070, 3110, 5020 (or 5030), and 5560 with a minimum cumulative GPA of 2.5 for these courses. Prerequisite courses must also be completed.

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

CHEM 1210 Principles of Chemistry I	4
CHEM 1215 Chemical Principles Laboratory I	1
MATH 1050 (QL) College Algebra.....	4
NFS 1000 Food Science from Farm to Fork.....	3
USU 1340 (BSS)* Social Systems and Issues.....	3

Spring Semester

CHEM 1220 (BPS) Principles of Chemistry II	4
CHEM 1225 Chemical Principles Laboratory II	1
ENGL 1010 (CL1) Introduction to Writing: Academic Prose	3
MATH 1060 Trigonometry	2
NFS 1020 (BLS) Science and Application of Human Nutrition.....	3
USU 1300 (BAI)* U.S. Institutions.....	3

Sophomore Year

Fall Semester

BIOL 1610 Biology I	4
CHEM 2300 Principles of Organic Chemistry.....	3
CHEM 2315 Organic Chemistry Laboratory I	1
MATH 1210 (QL) Calculus I	4
NFS 3110 Food, Technology, and Health	3

Spring Semester

CHEM 3700 Introductory Biochemistry	3
CHEM 3710 Introductory Biochemistry Laboratory	1
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode	3
NFS 1250 Sanitation and Safety	3
NFS 3070 Science of Food Preparation.....	4
STAT 3000 (QI) Statistics for Scientists	3

Junior Year

Fall Semester

BIOL 3300 General Microbiology	4
NFS 5020 Meat Technology and Processing	4
NFS 5560 Food Chemistry	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	3

Senior Year

Fall Semester

NFS 4440 (QI) Fundamentals of Food Engineering	4
NFS 5030 Dairy Technology and Processing.....	4
NFS 5250 Occupational Experiences in Nutrition and Food Sciences.....	2
NFS 5920 (CI) Food Product Development.....	3
USU 3330 (DHA)* Arts Symposium	2

Spring Semester

NFS 4990 Nutrition and Food Sciences Seminar.....	1
NFS 5510 Food Laws and Regulations.....	2
SPCH 3050 (DSS)* Technical and Professional Communication.....	3
USU 1320 (BHU)* Civilization: Humanities	3
USU 1330 (BCA)* Civilization: Creative Arts.....	3

Food Technology Management Emphasis with Business Minor

Food Technology Management students must also fulfill requirements for a minor in *either* Business *or* Operations Management. The following four-year plan includes all courses required for a Business Minor.

Courses followed by an asterisk (*) are suggested for fulfilling University Studies Requirements.

Freshman Year

Fall Semester

CHEM 1110 (BPS) General Chemistry I.....	4
MATH 1050 (QL) College Algebra.....	4
NFS 1000 Food Science from Farm to Fork.....	3
USU 1340 (BSS)* Social Systems and Issues.....	3

Department of Nutrition and Food Sciences

Spring Semester

CHEM 1115 General Chemistry Laboratory	1
CHEM 1120 (BPS) General Chemistry II	4
MATH 1100 (QL) Calculus Techniques	3
NFS 1020 (BLS) Science and Application of Human Nutrition.....	3
USU 1300 (BAI)* U.S. Institutions.....	3

Sophomore Year

Fall Semester

BIOL 2060 Elementary Microbiology.....	4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose	3
NFS 1240 Culinary Basics.....	3
USU 1320 (BHU)* Civilization: Humanities	3
USU 1330 (BCA)* Civilization: Creative Arts.....	3

Spring Semester

ACCT 2010 ¹ Survey of Accounting I.....	3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode.....	3
NFS 1250 Sanitation and Safety	3
NFS 3070 Science of Food Preparation.....	4
STAT 3000 (QI) Statistics for Scientists	3

Junior Year

Fall Semester

MGT 3110 (DSS) ¹ Managing Organizations and People.....	3
MGT 3500 ¹ Fundamentals of Marketing.....	3
NFS 5020 Meat Technology and Processing	4
NFS 5560 Food Chemistry.....	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
SPCH 3050 (DSS)* Technical and Professional Communication.....	3

Senior Year

Fall Semester

NFS 4440 (QI) Fundamentals of Food Engineering	4
NFS 5030 Dairy Technology and Processing.....	4
NFS 5250 Occupational Experiences in Nutrition and Food Sciences	2
NFS 5920 (CI) Food Product Development.....	3

Spring Semester

FIN 3400 (QI) ² Corporate Finance (3 cr) or PFP 3460 ² Fundamentals of Personal Investing (3 cr).....	3
NFS 4990 Nutrition and Food Sciences Seminar.....	1
USU 3330 (DHA)* Arts Symposium	2
Business Minor elective courses ³	6

¹This course is required as part of the Business Minor.

²Students must complete *either* FIN 3400 *or* PFP 3460 as part of the Business Minor.

³Choose 6 credits from the *Business Minor Elective Courses*, shown below.

Business Minor Elective Courses

Students must select two of the following courses:

ACCT 2020 Survey of Accounting II (F,Sp,Su).....	3
ECN 3400 (DSS) International Economics for Business (F,Sp,Su).....	3
MGT 2050 Legal and Ethical Environment of Business (F,Sp,Su).....	3
MGT 3700 Operations Management (F,Sp,Su).....	3
MIS 2100 Principles of Management Information Systems (F,Sp,Su).....	3

Food Technology Management Emphasis with Operations Management Minor

Food Technology Management students must also fulfill requirements for a minor in *either* Business *or* Operations Management. The following four-year plan includes all courses required for an Operations Management Minor.

Courses followed by an asterisk (*) are suggested for fulfilling University Studies Requirements.

Freshman Year

Fall Semester

CHEM 1110 (BPS) General Chemistry I.....	4
MATH 1050 (QL) College Algebra.....	4
NFS 1000 Food Science from Farm to Fork.....	3
USU 1340 (BSS)* Social Systems and Issues.....	3

Spring Semester

CHEM 1115 General Chemistry Laboratory	1
CHEM 1120 (BPS) General Chemistry II	4
MATH 1100 (QL) Calculus Techniques	3
NFS 1020 (BLS) Science and Application of Human Nutrition.....	3
USU 1300 (BAI)* U.S. Institutions.....	3

Sophomore Year

Fall Semester

BIOL 2060 Elementary Microbiology.....	4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose	3
NFS 1240 Culinary Basics.....	3
STAT 3000 (QI) Statistics for Scientists	3
USU 3330 (DHA)* Arts Symposium	2

Spring Semester

MGT 3500 ⁴ Fundamentals of Marketing.....	3
MGT 3700 ⁴ Operations Management.....	3
NFS 1250 Sanitation and Safety	3
NFS 3070 Science of Food Preparation.....	4
USU 1330 (BCA)* Civilization: Creative Arts.....	3

Junior Year

Fall Semester

ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode	3
NFS 5020 Meat Technology and Processing	4
NFS 5560 Food Chemistry.....	4
Operations Management elective course ⁵	3

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

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
USU 1320 (BHU)* Civilization: Humanities	3

Department of Nutrition and Food Sciences

Spring Semester

MGT 4720* Production Planning and Control.....	3
NFS 4990 Nutrition and Food Sciences Seminar.....	1
NFS 5250 Occupational Experiences in Nutrition and Food Sciences.....	2
SPCH 3050 (DSS)* Technical and Professional Communication.....	3
Operations Management Minor elective course ⁵	3

⁴This course is required as part of the Operations Management Minor.

⁵Choose 6 credits from the *Operations Management Minor Elective Courses*, shown below.

Operations Management Minor Elective Courses

Students must select two of the following courses:

MGT 3080 (QI) Operations Research (F,Sp).....	3
MGT 4750 Production Simulation (Sp).....	3
MGT 4790 Supply Chain Management (F).....	3
MGT 5730 Continuous Improvement (F).....	3

Nutrition Science Emphasis

Courses followed by an asterisk (*) are suggested for fulfilling University Studies Requirements.

Freshman Year

Fall Semester

BIOL 1610 Biology I.....	4
CHEM 1210 Principles of Chemistry I.....	4
CHEM 1215 Chemical Principles Laboratory I.....	1
MATH 1050 (QL) College Algebra.....	4
NFS 1020 (BLS) Science and Application of Human Nutrition.....	3

Spring Semester

BIOL 1620 (BLS) Biology II.....	4
CHEM 1220 (BPS) Principles of Chemistry II.....	4
CHEM 1225 Chemical Principles Laboratory II.....	1
ENGL 1010 (CL1) Introduction to Writing: Academic Prose.....	3
MATH 1060 Trigonometry.....	2

Sophomore Year

Fall Semester

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
MATH 1210 (QL) Calculus I.....	4
USU 1320 (BHU)* Civilization: Humanities.....	3
USU 1330 (BCA)* Civilization: Creative Arts.....	3
Elective course(s).....	3

Spring Semester

CHEM 3700 Introductory Biochemistry.....	3
CHEM 3710 Introductory Biochemistry Laboratory.....	1
NFS 2020 Nutrition Throughout the Life Cycle.....	3
USU 1340 (BSS)* Social Systems and Issues.....	3
Elective course(s).....	3

Junior Year

Fall Semester

BIOL 2420 Human Physiology.....	4
FCHD 3350 (DSS)* Family Finance.....	3
STAT 3000 (QI) Statistics for Scientists.....	3
Elective course(s).....	3

Spring Semester

ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode.....	3
HIST 3850 (DHA/CI)* History of Utah.....	3
USU 1300 (BAI)* U.S. Institutions.....	3
Elective courses.....	6

Senior Year

Fall Semester

NFS 4020 Advanced Nutrition.....	3
NFS 4550 Nutrition Assessment/Clinical Nutrition I.....	4
NFS 5220 Endocrine Aspects of Nutrition.....	2
NFS 5250 Occupational Experiences in Nutrition and Food Sciences.....	2

Spring Semester

NFS 4990 Nutrition and Food Sciences Seminar.....	1
NFS 5210 Advanced Public Health Nutrition.....	2
NFS 5300 Advanced Micronutrient Nutrition.....	3
NFS 5410 Nutrient Gene Interactions.....	3
NFS 5420 Molecular Nutrition Laboratory.....	2

Electives

Students in the Nutrition Science Emphasis must select a minimum of 15 credits from the following courses to meet their career objectives. Alternative courses must be approved by the department head and program director.

BIOL 2320 Human Anatomy (Sp,Su).....	4
BIOL 3060 (QI) Principles of Genetics (F,Sp,Su).....	4
BIOL 3100 (CI) Bioethics (Sp).....	3
BIOL 3300 General Microbiology (F,Sp).....	4
BIOL 5210 Cell Biology (F).....	3
BIOL 5620 Medical Physiology (F).....	3
CHEM 2320 Organic Chemistry II (Sp).....	4
CHEM 2325 Organic Chemistry Laboratory II (Sp).....	1
MATH 1220 (QL) Calculus II (F,Sp,Su).....	4
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).....	1
NFS 4480 Community Nutrition (F).....	3
NFS 5200 Nutritional Epidemiology (F).....	2
NFS 5830 International Nutrition: Macronutrients (F).....	3
PHYS 2110 The Physics of Living Systems I.....	4
PHYS 2120 (BPS) The Physics of Living Systems II.....	4
PUBH 4030 Communicable Disease Control (F).....	3

Nutrition Science Emphasis Program Requirements for Pre-Medical School Option

Note: The Pre-Medical School Option will meet 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

BIOL 1610 Biology I.....	4
CHEM 1210 Principles of Chemistry I.....	4
CHEM 1215 Chemical Principles Laboratory I.....	1
MATH 1050 (QL) College Algebra.....	4
NFS 1020 (BLS) Science and Application of Human Nutrition.....	3

Department of Nutrition and Food Sciences

Spring Semester

BIOL 1620 (BLS) Biology II.....	4
CHEM 1220 (BPS) Principles of Chemistry II.....	4
CHEM 1225 Chemical Principles Laboratory II.....	1
ENGL 1010 (CL1) Introduction to Writing: Academic Prose.....	3
MATH 1060 Trigonometry.....	2

Sophomore Year

Fall Semester

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
MATH 1210 (QL) Calculus I.....	4
PHYS 2110 The Physics of Living Systems I.....	4
USU 1320 (BHU)* Civilization: Humanities.....	3

Spring Semester

BIOL 2320 Human Anatomy.....	4
CHEM 2320 Organic Chemistry II.....	4
CHEM 2325 Organic Chemistry Laboratory II.....	1
NFS 2020 Nutrition Throughout the Life Cycle.....	3
PHYS 2120 (BPS) The Physics of Living Systems II.....	4

Junior Year

Fall Semester

BIOL 2420 Human Physiology.....	4
FCHD 3350 (DSS) Family Finance.....	3
STAT 3000 (QI) Statistics for Scientists.....	3
USU 1330 (BCA)* Civilization: Creative Arts.....	3
Univ. Studies Communications Intensive (CI) Course.....	3

Spring Semester

BIOL 3300 General Microbiology (4 cr) or	
BIOL 5620 Medical Physiology (3 cr).....	3 or 4
CHEM 3700 Introductory Biochemistry.....	3
CHEM 3710 Introductory Biochemistry Laboratory.....	1
ENGL 2010 (CL2) Intermediate Writing: Research Writing	
in a Persuasive Mode.....	3
HIST 3850 (DHA/CI)* History of Utah.....	3

Senior Year

Fall Semester

NFS 4020 Advanced Nutrition.....	3
NFS 4550 Nutrition Assessment/Clinical Nutrition I.....	4
NFS 5220 Endocrine Aspects of Nutrition.....	2
NFS 5250 Occupational Experiences in Nutrition	
and Food Sciences.....	2
USU 1340 (BSS)* Social Systems and Issues.....	3

Spring Semester

NFS 4990 Nutrition and Food Sciences Seminar.....	1
NFS 5210 Advanced Public Health Nutrition.....	2
NFS 5300 Advanced Micronutrient Nutrition.....	3
NFS 5410 Nutrient Gene Interactions.....	3
NFS 5420 Molecular Nutrition Laboratory.....	2
USU 1300 (BAI)* U.S. Institutions.....	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

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
NFS 1000 Food Science from Farm to Fork.....	3
NFS 1020 (BLS) Science and Application of Human Nutrition.....	3

Spring Semester

CHEM 1220 (BPS) Principles of Chemistry II.....	4
CHEM 1225 Chemical Principles Laboratory II.....	1
ECN 1500 (BAI)* Introduction to Economic Institutions, History,	
and Principles.....	3
MATH 1100 (QL) Calculus Techniques.....	3
NFS 2040 Introduction to Biotechnology.....	1
USU 1320 (BHU)* Civilization: Humanities.....	3

Sophomore Year

Fall Semester

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
NFS 3110 Food, Technology, and Health.....	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
PHYS 2110 The Physics of Living Systems I.....	4
SPCH 3330 (DSS)* Intercultural Communication.....	3

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 5920 (CI) Food Product Development.....	3
USU 1330 (BCA)* Civilization: Creative Arts.....	3
USU 1340 (BSS)* Social Systems and Issues.....	3
Univ. Studies Depth Humanities and Creative Arts (DHA) Course.....	3

Department of Nutrition and Food Sciences

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
NFS 5420 Molecular Nutrition Laboratory.....	2
STAT 5200 Design of Experiments.....	3

Depth Training in Nutrition Science

Freshman Year

Fall Semester

BIOL 1610 Biology I.....	4
CHEM 1210 Principles of Chemistry I.....	4
CHEM 1215 Chemical Principles Laboratory I.....	1
MATH 1050 (QL) College Algebra.....	4
USU 1340 (BSS)* Social Systems and Issues.....	3

Spring Semester

BIOL 1620 (BLS) Biology II.....	4
CHEM 1220 (BPS) Principles of Chemistry II.....	4
CHEM 1225 Chemical Principles Laboratory II.....	1
MATH 1060 Trigonometry.....	2
NFS 1020 (BLS) Science and Application of Human Nutrition.....	3
NFS 2040 Introduction to Biotechnology.....	1

Sophomore Year

Fall Semester

BIOL 2420 Human Physiology.....	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

CHEM 3700 Introductory Biochemistry.....	3
CHEM 3710 Introductory Biochemistry Laboratory.....	1
ECN 1500 (BAI)* Introduction to Economic Institutions, History, and Principles.....	3
NFS 2020 Nutrition Throughout the Life Cycle.....	3
USU 1320 (BHU)* Civilization: Humanities.....	3
Univ. Studies Communications Intensive (CI) Course.....	3

Junior Year

Fall Semester

BIOL 5620 Medical Physiology.....	3
NFS 4020 Advanced Nutrition.....	3
PHYS 2110 The Physics of Living Systems I.....	4
STAT 3000 (QI) Statistics for Scientists.....	3
USU 1330 (BCA)* Civilization: Creative Arts.....	3

Spring Semester

BIOL 3060 (QI) Principles of Genetics.....	4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode.....	3
Univ. Studies Depth Humanities and Creative Arts (DHA) Course.....	3
Univ. Studies Depth Social Sciences (DSS) Course.....	3
Univ. Studies Communications Intensive (CI) Course.....	3

Senior Year

Fall Semester

BIOL 3300 General Microbiology.....	4
BIOL 5210 Cell Biology.....	3
NFS 5200 Nutritional Epidemiology.....	2
NFS 5260 Methods in Biotechnology: Molecular Cloning.....	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
NFS 5420 Molecular Nutrition Laboratory.....	2

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

CHEM 1210 Principles of Chemistry I.....	4
MATH 1050 (QL) College Algebra.....	4
NFS 1020 (BLS) Science and Application of Human Nutrition.....	3
NFS 1240 Culinary Basics.....	3
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
ECN 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
NFS 3600 Medical Terminology for Health Care Professionals.....	1
USU 1320 (BHU) Civilization: Humanities.....	3

Sophomore Year

Fall Semester

BIOL 2420 Human Physiology.....	4
CHEM 2300 Principles of Organic Chemistry.....	3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode.....	3
FCHD 3350 (DSS) Family Finance (3 cr) or	
MGT 3110 (DSS) Managing Organizations and People (3 cr).....	3
NFS 3020 Nutrition and Physical Performance.....	2
STAT 1040 (QL) Introduction to Statistics (acceptable) (3 cr) or	
STAT 2000 (QI) Statistical Methods (preferred) (3 cr) or	
STAT 3000 (QI) Statistics for Scientists (preferred) (3 cr).....	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
USU 1330 (BCA) Civilization: Creative Arts.....	3
Univ. Studies Depth Humanities and Creative Arts (DHA) Course.....	3

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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

CHEM 1210 Principles of Chemistry I	4
MATH 1050 (QL) College Algebra	4
NFS 1020 (BLS) Science and Application of Human Nutrition	3
NFS 1240 Culinary Basics	3
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
ECN 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
NFS 3600 Medical Terminology for Health Care Professionals	1
USU 1320 (BHU) Civilization: Humanities	3

Sophomore Year

Fall Semester

BIOL 2420 Human Physiology	4
CHEM 2300 Principles of Organic Chemistry	3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode	3
FCHD 3350 (DSS) Family Finance (3 cr) or	
MGT 3110 (DSS) Managing Organizations and People (3 cr)	3
NFS 3020 Nutrition and Physical Performance	2
STAT 1040 (QL) Introduction to Statistics (acceptable) (3 cr) or	
STAT 2000 (QI) Statistical Methods (preferred) (3 cr) or	
STAT 3000 (QI) Statistics for Scientists (preferred) (3 cr)	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
USU 1330 (BCA) Civilization: Creative Arts	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 4450 Clinical Nutrition I Lab	1
NFS 4480 Community Nutrition	3
NFS 4550 Nutrition Assessment/Clinical Nutrition I	4
NFS 4710 Quantity Food Preparation	2

Spring Semester

NFS 4060 (CI) Education and Counseling Methods in Dietetics II	2
NFS 4460 Clinical Nutrition II Lab	1
NFS 4560 (CI) Clinical Nutrition II	4
NFS 4720 (QI) Food Service Organization and Management	2
SPCH 1020 (CI) Public Speaking (3 cr) or	
SPCH 2110 (CI) Interpersonal Communication (3 cr) or	
SPCH 3330 (DSS) Intercultural Communication (3 cr)	3

(Note: SPCH 3330 is taught during fall semester *only*.)

Senior Year

Fall Semester

ACCT 2010 Survey of Accounting I	3
MGT 3500 Fundamentals of Marketing	3
NFS 4780 (CI) Maternal and Child Nutrition	3
NFS 5200 Nutritional Epidemiology	2
NFS 5750 Advanced Dietetics Practicum	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 5150 Clinical Nutrition Practice	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://nfs.usu.edu/htm/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

Department of Nutrition and Food Sciences

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@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/graduateschool/apply/>

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 Approval 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 Approval Form* is then forwarded to the dean of the School of Graduate Studies for final approval. (**Note:** The *Supervisory Committee Approval Form* may be found on the School of Graduate Studies website at: http://www.usu.edu/graduateschool/apply/pdf/Sup_Ctee_Form.pdf, 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 advice 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

Department of Nutrition and Food Sciences

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 116-119 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

Department of Nutrition and Food Sciences

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 her 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.

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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/htm/for-students/diet-graduate/>

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: ECN 6310; FIN 3400, 6440; INST 6490; MGT 6370, 6410, 6500, 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.

Department of Nutrition and Food Sciences

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
Michael Lefevre, nutrition
Donald J. McMahon, food science, dairy chemistry and technology
Ronald G. Munger, nutrition, epidemiology, and public health
Ilka Nemere, nutrition, molecular nutrition

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

Clinical Associate Professor

Tamara S. Vitale, dietetics, community nutrition

Adjunct Associate Professors

Barbara Chatfield, pediatric pulmonology
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 Professor

Dong Chen, molecular structure and biochemistry

Clinical Assistant Professor

Megan Bunch Smith, dietetics

Adjunct Research Assistant Professors

Thomas Jared Bunch, dietetics
Catherine McDonald, pediatric nutrition, clinical dietetics

Adjunct Clinical Assistant Professors

W. Daniel Jackson, pediatrics
Ann M. Mildenhall, dietetics, director of dietetic internship program
Julianne Steiner, dietetics, diabetes
Clinton Wasuita, dietetics

Adjunct Assistant Professor

Theodore Liou, nutrition, internal medicine, pulmonology

Assistant Professor Emeritus

Frances G. Taylor

Clinical Instructors

Marlene Israelsen, dietetics, nutrition
Janette Smith, dietetics, nutrition

Adjunct Clinical Instructors

Sarah Gunnell, dietetics
Kim McMahon, dietetics/food service management
Cynthia Mitchell, dietetics management
Jennie Oler, Assistant Director of Dietetic Internship Program; dietetics
Rachel T. Rood, dietetics
Pauline Williams, dietetics

Lecturers

Karin Allen, food science
Randall T. Bagley, dairy processing
Dick R. Whittier, meat processing

Adjunct Clinical Lecturer

Suzette Holt, dietetics

Course Descriptions

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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 67) for more information. OSS 1400 is designed to prepare students for these competency exams.

Breadth Requirements (9 credits)

Two of the following three classes <i>must</i> 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
BUS 2250 Introductory Internship (pre-approval required)	3
MIS 2100 Principles of Management Information Systems.....	3
MIS 2200 (CI) Business Communication.....	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
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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
BUS 3110 (DSS) Management Fundamentals.....	3
BUS 3710 Interpersonal and Team Skills.....	3
ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles.....	3
ECN 2010 (BSS) Introduction to Microeconomics.....	3
MGT 1350 Introduction to Business.....	3
MGT 2050 Legal and Ethical Environment of Business.....	3
PSY 1010 (BSS) General Psychology.....	3

English (ENGL Electives)

Other Courses Approved by Advisor

Course Descriptions

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Department of Physics

Department Head: Jan J. Sojka
Location: Science Engineering Research 250A
Phone: (435) 797-2857
FAX: (435) 797-2492
E-mail: physics@usu.edu
WWW: http://www.physics.usu.edu/

Assistant Department Head:
Charles G. Torre, Science Engineering Research 232,
(435) 797-3426, charles.torre@usu.edu

Academic Advisor:
Karalee Ransom, Science Engineering Research 250D,
(435) 797-4021, karalee.ransom@usu.edu

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) Calculus 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
<small>(PHYS 2210 and 2220 are preferred.)</small>	

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
PHYS 3870 (CI) Intermediate Laboratory I	2
PHYS 4900 (CI) Research in Physics	2

C. Required Mathematics Courses (7 credits)

MATH 2210 (QI) Multivariable Calculus (F,Sp,Su)	3
MATH 2250 (QI) Linear Algebra and Differential Equations (F,Sp,Su)	4

The specific requirements beyond this core for the various bachelor's degrees are:

1. Bachelor of Science Degree in Physics (11 credits)

PHYS 3710 Intermediate Modern Physics	3
PHYS 3700 Thermal Physics (3 cr) or	
PHYS 4650 Optics I (3 cr)	3
Elective courses in Physics at the 3500 level and above (<i>not</i> to include PHYS courses designated as University Studies depth courses)	5

2. Bachelor of Arts Degree in Physics (28 credits)

PHIL 4310 (DHA) Philosophy of Science (Sp)	3
PHIL 4320 (DHA) History of Scientific Thought	3
Elective courses in Physics at the 3500 level and above (<i>not</i> to include PHYS courses designated 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 (25 credits)

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 (20 credits)

PHYS 3700 Thermal Physics	3
PHYS 3880 (CI) Intermediate Laboratory II	2
PHYS 4650 Optics I	3
Elective courses in other technical departments at the 3000 level or above (<i>not</i> 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.

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
<small>(PHYS 2210 and 2220 are preferred.)</small>	

To obtain a physics minor, students must also select 10 additional credits from PHYS 2500, 2710, and/or PHYS courses at the 3000 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 with a Teaching Minor

In addition to the College of Science requirements, courses required for the Bachelor of Science in Physics Teaching with a Teaching Minor 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 8 credits in science, with 4 credits minimum 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 Secondary Education Program requirements.

Department of Physics

Note: 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.

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, IPS: Intelligent Life in the Universe) (3 cr) or	
PHYS 3030 (QI) The Universe (3 cr)	3
Elective courses in Physics from PHYS 2500, 2710, and/or PHYS courses at the 3000 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
CLIM 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 Secondary Education Program 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: 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 Plans

Suggested semester-by-semester four-year plans for students working toward a Bachelor of Science or Bachelor of Arts degree in majors within the Department of Physics can be found at:

<http://www.usu.edu/degreplans/>

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests.

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 1040 (BPS) Introductory Astronomy

PHYS 2210 (QI) General Physics—Science and Engineering I (4 cr) **and**

PHYS 2220 (BPS/QI) General Physics—Science and Engineering II (4 cr)

Or

PHYS 2110 The Physics of Living Systems I (4 cr) **and**

PHYS 2120 (BPS) The Physics of Living Systems II (4 cr)

Elective courses in Physics chosen from PHYS 2500, 2710, and/or courses above the 3000 level (including USU Depth courses)

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 (2-3 cr)

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 Secondary Education Program requirements.

Secondary Teacher Education Program (STEP) (35 credits)

Level 1 (11 credits)

SCED 3100 Motivation and Classroom Management (F,Sp)

SCED 3210 (CI/DSS) Educational and Multicultural Foundations (F,Sp)

SCED 3300 Clinical Experience I (40 hours minimum) (F,Sp)

SCED 3400 Teaching Science I (Sp)

INST 3500 Technology Tools for Secondary Teachers (F,Sp,Su)

Level 2 (12 credits)

SCED 4200 (CI) Reading, Writing, and Technology (F,Sp)

SCED 4210 Cognition and Evaluation of Student Learning (F,Sp)

SCED 4300 Clinical Experience II (40 hours minimum) (F,Sp)

SCED 4400 Teaching Science II (F)

SPED 4000 Education of Exceptional Individuals (may be taken at any time) (F,Sp,Su)

Level 3 (12 credits)

SCED 5500 Student Teaching Seminar (2 weeks) (F,Sp)

SCED 5630 Student Teaching in Secondary Schools (13 weeks, full-time) (F,Sp)

Note: The Teaching Science I and II courses (SCED 3400 and 4400) are *only* taught once per year. Therefore, it is important for students to consult with their advisor to fit these courses in the correct sequence into their plan of study.

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@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 level⁴
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 level¹
15. Knowledge of a foreign language to the undergraduate level¹

Programs:

The footnotes following each of the preceding learning objectives indicate which program(s) include that objective. The six undergraduate programs are as follows:

¹BA degree in physics

²BS degree in physics

³BS degree in physics with professional emphasis

⁴BS degree in physics with applied emphasis

⁵BS degree in physics teaching

⁶BS 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/>

Department of Physics

Graduate Programs

Admission Requirements

In addition to the general requirements for admission established by the School of Graduate Studies (see pages 36-37), the department admission committee bases its decisions for offering admission on the following criteria: review of applicants' undergraduate records, letters of recommendation, performance in graduate courses (if any), performance in research (if any), and scores on the General portion of the Graduate Record Examination. Students whose native language is not English are strongly encouraged to submit to the School of Graduate Studies results of the Test of Spoken English (TSE). Regardless, nonnative English speakers must submit a score for the Test of English as a Foreign Language (TOEFL). If a satisfactory score on the TSE is not provided, such students will be required to take a test given by the Intensive English Language Institute (IELI) at USU. The purpose of this test is to guide the selection of remedial language courses, if needed, to help with physics coursework comprehension. (See also *Financial Assistance*, page 413.)

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 commercial, state-of-the-art molecular beam epitaxy machine. Also, novel semiconductor quantum nanostructures are studied using an *in-situ* scanning tunneling microscope directly attached to the machine. The second theme is to use the most advanced surface science techniques to fabricate nanoscale structures on semiconductor surfaces. The interdisciplinary nature of this field provides a stimulating research environment for faculty and students with backgrounds in physics, electrical engineering, material sciences, and chemistry.

Fields, Astrophysics, and Spacetime Theory

The Fields, Astrophysics, and Spacetime Theory (FAST) group at USU is actively involved in the study of the most fundamental physics principles underlying the fabric of the Cosmos. The FAST group studies the theoretical underpinnings of gravitation and quantum field theory, while exploring how astrophysics plays a role in illuminating these theoretical frameworks. Theoretical research in the FAST group includes explorations of conformal and scale invariant gravity theories and unified field theories, classical and quantum dynamics of the gravitational field, symmetries and conservation laws in relativistic field theories, Lagrangian and Hamiltonian formulation of field theory, and geometrical methods in mathematical physics. Astrophysics research explores how gravitational wave astronomy is changing how we look at the Cosmos, and how observations of the Universe using gravitational waves can illuminate the fundamental structure of gravitational theory itself. The FAST group's research in this area includes simulation of galaxies and binary star systems, extraction of science results from analysis and signal processing of gravitational wave data, and laser interferometer characterization.

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 112).

Department of Physics

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
Tsung-Cheng Shen, surface physics, nanotechnology
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
Allen Q. Howard, electromagnetic theory
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
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
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 Professors

Shane L. Larson, gravitation and astrophysics
Ludger Scherliess, space physics
Haeyeon Yang, surface physics, nanotechnology

Adjunct Assistant Professor

Jeremy R. King, astrophysics

Lecturer

Tonya B. Triplett, physics education

Course Descriptions

Physics (PHYS), pages 632-635

Department of Plants, Soils, and Climate

Department Head: Teryl R. Roper
Location: Agricultural Science 322C
Phone: (435) 797-2233
FAX: (435) 797-3376
E-mail: teryl.roper@usu.edu
WWW: <http://psc.usu.edu/>

Undergraduate Off-Campus Advisor:

Donna B. Minch, Farmington, (801) 451-4604,
donna.minch@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; BS in Residential Landscape Design and Construction; 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, 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 30-35) are admitted to the Department of Plants, Soils, and Climate 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 Climate.

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 <https://www.agronomy.org/certifications/>. 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 four 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 landscape plant production and use); (3) **Environmental Soil/Water Science**, which deals with soil and water in relation to plant growth and environmental quality; and (4) **Residential Landscape Design and Construction**, which deals with design, construction, and maintenance of small-scale, residential landscapes. Science-oriented emphases prepare students for research or professional studies, and degree emphases emphasize a practical, applied approach to application of information. All courses

Department of Plants, Soils, and Climate

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 **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.

The **Residential Landscape Design and Construction (RLDC) Major** prepares students for careers in the design, construction, and maintenance of small-scale, residential landscapes. Within these career areas, students will foster sustainable water-conserving landscape development by consumers. The overall curriculum strives to balance both landscape horticulture and landscape design. The core curriculum includes preparatory courses in chemistry, mathematics, biology, design, and graphics. Required program courses emphasize the plant sciences (i.e., plant materials, landscape management, weed control, and turfgrass management), soil sciences (fundamentals of soil science, soil reclamation, and remote sensing), and design/construction (i.e., residential landscape design, irrigation design, bidding and estimating, landscape construction, computer-based design, and water conservation). The RLDC Major is complementary to the existing undergraduate program in Landscape Architecture and Environmental Planning.

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
ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su).....	3
MATH 1050 (QL) College Algebra (F,Sp,Su).....	4
PHYS 1200 (BPS) Introduction to Physics by Hands-on Exploration	4
PSC 1050 Plants, Soils, and Climate Orientation (F).....	1
PSC 3890 (CI) Preparation for Careers in Plants, Soils, and/or Climate (F)	1
PSC 4890 (CI) Senior Seminar (Sp).....	1
SOIL 3000 Fundamentals of Soil Science (F).....	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 (F,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 4430* Introduction to Plant Pathology (Sp).....	4
BIOL 4500* Applied Entomology (Sp).....	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 4280 Field Crops (F odd).....	3
PLSC 4320 Forage Production and Pasture Ecology (F even).....	3
PLSC 4600 (QI) Cereal Science (Sp even).....	3
PLSC 5200 Environmental Plant Physiology (Sp).....	2
PLSC 5550* Weed Biology and Control (F)	4
PLSC 5700 Principles of Plant Breeding (Sp odd).....	3

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PLSC 5750 Crop Biotechnology (Sp odd).....	2
PSC 4250 Internship in Plants, Soils, and/or Climate (F,Sp,Su)	1-4
PSC 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 4500 Soil Reclamation (Sp)	3
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).....	4
SOIL 5310 Soil Microbiology (F even).....	3
SOIL 5320 Soil Microbiology Laboratory (F even)	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)	4

B. Research/Biotechnology Emphasis (55 credits)

Students must complete *all* of the following courses for the Research/Biotechnology Emphasis (37 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)	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 Environmental Plant Physiology (Sp).....	2
PLSC 5750 Crop Biotechnology (Sp odd).....	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 3700 Plant Propagation (F).....	4
PLSC 4280 Field Crops (F odd).....	3
PLSC 4320 Forage Production and Pasture Ecology (F even).....	3
PLSC 4600 (QI) Cereal Science (Sp even).....	3
PLSC 5430 Plant Nutrition (F odd).....	2
PLSC 5440 Plant Molecular, Cellular, and Developmental Biology I (Sp even)	3
PLSC 5450 Plant Molecular, Cellular, and Developmental Biology II (Sp odd).....	3
PLSC 5550 Weed Biology and Control (F).....	4
PLSC 5600 Plant Water Relations (F).....	2
PLSC 5700 Principles of Plant Breeding (Sp odd).....	3
PSC 5160 Methods in Biotechnology: Cell Culture (Sp)	3
PSC 5240 Methods in Biotechnology: Protein Purification Techniques (Sp).....	3
PSC 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 4430 Introduction to Plant Pathology (Sp)	4
BIOL 4500 Applied Entomology (Sp)	3
BIOL 5210 Cell Biology (F)	3

BIOL 5230 Developmental Biology (Sp)	3
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 even).....	3
PLSC 5450 Plant Molecular, Cellular, and Developmental Biology II (Sp odd).....	3

ARCPACS Certification

For more information, students should refer to the American Society of Agronomy website at: <https://www.agronomy.org/> or <https://www.agronomy.org/certifications/>

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 required additional courses. For details, contact the department.

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 (22-25 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.....	3
PLSC 2250 Occupational Experience in Agronomy and Horticulture (F,Sp,Su) (1-4 cr) or	
PSC 4250 Internship in Plants, Soils, and/or Climate (F,Sp,Su) (1-4 cr)	1-4
PSC 1050 Plants, Soils, and Climate Orientation (F).....	1
PSC 3890 (CI) Preparation for Careers in Plants, Soils, and/or Climate (F)	1
PSC 4890 (CI) Senior Seminar (Sp).....	1
SOIL 3000 Fundamentals of Soil Science (F).....	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).....	3
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 (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)	3
PLSC 4800 Professional Turfgrass Management (Sp)	2
PSC 2800 Fundamentals of Organic Agriculture (Sp).....	3
SOIL 4500 Soil Reclamation (Sp)	3
SOIL 5550 (QI)* Soils and Plant Nutrient Bioavailability (Sp)	3

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Select two of the following courses:

BIOL 4430 Introduction to Plant Pathology (Sp)	4
BIOL 4500 Applied Entomology (Sp)	3
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 Environmental Plant Physiology (Sp)	2

B. Turfgrass Management Emphasis (48-52 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 (Sp)	3
PLSC 3800 Turfgrass Management (F)	3
PLSC 4400 Modern Vegetable Production (F) (3 cr) or	
PLSC 4500 Fruit Production (Sp) (3 cr)	3
PLSC 4800 Professional Turfgrass Management (Sp)	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 4430 Introduction to Plant Pathology (Sp)	4
BIOL 4500 Applied Entomology (Sp)	3
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 Environmental Plant Physiology (Sp)	2
PLSC 5430 Plant Nutrition (F odd)	2
SOIL 4000 Soil and Water Conservation (F)	4
SOIL 4500 Soil Reclamation (Sp)	3
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
ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su)	3
MGT 2050 Legal and Ethical Environment of Business (F,Sp,Su)	3

MGT 3110 (DSS) Managing Organizations and People (F,Sp,Su)	3
MGT 3500 Fundamentals of Marketing (F,Sp,Su)	3
MGT 3710 Developing Team and Interpersonal Skills (F,Sp)	3

C. 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)	3
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 (Sp)	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)	3
PLSC 5200 Environmental Plant Physiology (Sp)	2
PLSC 5550* Weed Biology and Control (F)	4
PSC 2800 Fundamentals of Organic Agriculture (Sp)	3
SOIL 4500 Soil Reclamation (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
MGT 2050 Legal and Ethical Environment of Business (F,Sp,Su)	3
MGT 3110 (DSS) Managing Organizations and People (F,Sp,Su)	3
MGT 3500 Fundamentals of Marketing (F,Sp,Su)	3
PFP 3460 Fundamentals of Personal Investing	3

Complete one of the following courses:

ACCT 2020 Survey of Accounting II (F,Sp,Su)	3
ECN 3400 (DSS) International Economics for Business (F,Sp,Su)	3
MGT 3700 Operations Management (F,Sp,Su)	3
MIS 2100 Principles of Management Information Systems (F,Sp,Su)	3

D. 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)	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

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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)	3
PLSC 5200* Environmental Plant Physiology (Sp)	2
PLSC 5430 Plant Nutrition (F odd).....	2
PLSC 5440 Plant Molecular, Cellular, and Developmental Biology I (Sp even).....	3
PLSC 5450 Plant Molecular, Cellular, and Developmental Biology II (Sp odd).....	3
PLSC 5600 Plant Water Relations (F).....	2
PLSC 5760 Crop Ecology (Sp).....	2
PSC 2800 Fundamentals of Organic Agriculture (Sp).....	3
SOIL 3200 (DSC) Microbes in Environmental Action (Sp)	3
SOIL 4500 Soil Reclamation (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 4430 Introduction to Plant Pathology (Sp)	4
BIOL 4500 Applied Entomology (Sp)	3
PLSC 5550 Weed Biology and Control (F).....	4

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,Sp) (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 (F,Sp).....	1
CHEM 1120 (BPS) General Chemistry II (Sp).....	4

Block 2 (13 credits)¹

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)¹

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)¹

PHYS 2210 (QI) General Physics—Science and Engineering I.....	4
PHYS 2220 (BPS/QI) General Physics—Science and Engineering II ..	4

Professional Core Courses (23 credits)

SOIL 3000 Fundamentals of Soil Science (F)	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) (3 cr) or	
SOIL 5550 (QI)² Soils and Plant Nutrient Bioavailability (Sp) (3 cr)	3
SOIL 5560 Analytical Techniques for the Soil Environment (Sp).....	2
SOIL 5650 Environmental Soil Physics (F)	4
SOIL 5750 Environmental Quality: Soil and Water (Sp).....	2
PSC 3890 (CI) Preparation for Careers in Plants, Soils, and/or Climate (F)	1
PSC 4890 (CI) Senior Seminar (Sp).....	1

¹Students in the **Water Emphasis** should take the **Block 2** courses in Chemistry, Mathematics, and Physics.

²Students 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

CEE 5190 Geographic Information Systems for Civil Engineers (Sp)...	3
CHEM 3000 (QI) Quantitative Analysis (F).....	3
CLIM/BIE/WATS 5250 Remote Sensing of Land Surfaces (Sp).....	4
GEO 3500 Mineralogy and Crystallography (F)	4
GEO 3550 (CI) Sedimentation and Stratigraphy (F).....	4
GEO/WATS 3600 Geomorphology (F)	4
GEO 5410³ Introduction to Clay Mineralogy (Sp).....	2
GEO 5600 Geochemistry (F).....	3
GEO 5630 Photogeology (Sp).....	3
PSC 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 4500 Soil Reclamation (Sp)	3
SOIL 5310 Soil Microbiology (F even).....	3
SOIL 5320 Soil Microbiology Laboratory (F even)	2
SOIL 5350 Wildland Soils (Sp).....	3
SOIL 5550 (QI) Soils and Plant Nutrient Bioavailability (Sp).....	3
WATS 4750³ Fundamentals of Remote Sensing Science (F)	3
WATS 4930 Geographic Information Systems (F)	4
WATS 5930 Geographic Information Analysis (Sp).....	3
WILD 5750 Applied Remote Sensing (F)	3

Water Emphasis

ASTE 5260 (CI) Environmental Impacts of Agricultural Systems (F)....	3
BIE 5010³ Principles of Irrigation Engineering (F, Sp online, Su).....	3
BIE 5110³ Sprinkle and Trickle Irrigation (F)	4
BIE 5150³ Surface Irrigation Design (F, Sp online, Su)	3
CEE 3430 Engineering Hydrology (Sp).....	3
CHEM 3000 (QI) Quantitative Analysis (F).....	3
CLIM 4300 General Meteorology (F).....	3
CLIM/BIE/WATS 5250 Remote Sensing of Land Surfaces (Sp).....	4
CLIM 5500 Land-Atmosphere Interactions (Sp odd).....	3
GEO/WATS 5150³ Fluvial Geomorphology (F).....	3
GEO 5510 (QI) Groundwater Geology (F).....	3
GEO 5520 (CI)³ Techniques of Groundwater Investigations (Sp).....	3
PLSC 5200 Environmental Plant Physiology (Sp).....	2
SOIL 4000 Soil and Water Conservation (F).....	4
SOIL 4700 Irrigated Soils (Sp, half semester).....	3

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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 (F)	3
WATS 5640³ 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
CLIM 5500 Land-Atmosphere Interactions (Sp odd).....	3
PLSC 2100 (BLS) Introduction to Horticulture (F).....	3
PLSC 2600 Annual and Perennial Plant Materials (F)	3
PLSC 2620 Woody Plant Materials: Trees and Shrubs for the Landscape (F)	3
PLSC 3400 Landscape Management Principles and Practices (Sp)....	3
PLSC 3800 Turfgrass Management (F)	3
PLSC 4280 Field Crops (F odd).....	3
PLSC 4320 Forage Production and Pasture Ecology (F even).....	3
PLSC 4400 Modern Vegetable Production (F).....	3
PLSC 4500 Fruit Production (Sp).....	3
PLSC 4800³ Professional Turfgrass Management (Sp).....	2
PLSC 5200³ Environmental Plant Physiology (Sp)	2
PLSC 5430³ Plant Nutrition (F odd)	2
PLSC 5550 Weed Biology and Control (F).....	4
PLSC 5760³ Crop Ecology (Sp)	2
PSC 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 4750 (CI) Monitoring and Assessment in Natural Resource and Environmental Management (F).....	3
WILD 4910 Assessment and Synthesis in Natural Resource Science (Sp).....	3

³Prerequisites are required for this course.

Residential Landscape Design and Construction Major (79-88 credits)

Required Core Courses (79 credits)

ASTE 3050 (CI) Technical and Professional Communication Principles in Agriculture (F,Sp)	3
BIOL 1010 (BLS) Biology and the Citizen (F,Sp,Su).....	3
CHEM 1110 (BPS) General Chemistry (F,Sp).....	4
ETE 1200 Computer-Aided Drafting and Design (F,Sp).....	3
LAEP 1030 (BCA) Introduction to Landscape Architecture (F,Sp,Su)	3
LAEP 1200 Basic Graphics in Landscape Architecture (F).....	4
LAEP 3600 Landscape Materials (F)	2
MATH 1050 (QL) College Algebra (F,Sp,Su).....	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)	3
PLSC 2620 Woody Plant Materials: Trees and Shrubs for the Landscape (F)	3
PLSC 3300 Residential Landscapes (Sp).....	3
PLSC 3310 Advanced Residential Landscape Design (F).....	3
PLSC 3400 Landscape Management Principles and Practices (Sp).....	3
PLSC 3420 Landscape Irrigation Design (Sp, half semester).....	2
PLSC 3430 Landscape Business Practices (Sp)	3
PLSC 3500 The Structure and Function of Economic Crop Plants (Sp).....	3
PLSC 3800 Turfgrass Management (F)	3
PLSC 5550 Weed Biology and Control (F).....	4

PSC 1050 Plants, Soils, and Climate Orientation (F).....	1
PSC 3890 (CI) Preparation for Careers in Plants, Soils, and/or Climate (F)	1
PSC 4250 Internship in Plants, Soils, and/or Climate (F,Sp,Su)	1-4
PSC 4890 (CI) Senior Seminar (F,Sp).....	1
PSC 5200 Site-Specific Agriculture and Landscape/Horticultural Management (Sp, half semester)	3
SOIL 3000 Fundamentals of Soil Science (F).....	4
SOIL 4500 Soil Reclamation (Sp)	3
WILD 2200 (BLS) Ecology of our Changing World (F,Sp)	3

Recommended Courses

ENVS 2340 (BSS) Natural Resources and Society (F,Sp).....	3
MGT 3110 (DSS) Managing Organizations and People (F,Sp,Su).....	3
PHIL 3510 (DHA) Environmental Ethics (Sp).....	3

Sample Four-year Plans

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests. Due to the many changes and new major options, degree plans are not published in this catalog. To obtain current information, students should visit the department.

Ornamental Horticulture Program One-year Certificate (27 credits)

The 27 credits are distributed as follows:

PLSC 2600 Annual and Perennial Plant Materials (F)	3
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	3
PSC 1050 Plants, Soils, and Climate 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)	3
PLSC 2620 Woody Plant Materials: Trees and Shrubs for the Landscape (F)	3
PLSC 3050 Greenhouse Management and Crop Production (Sp)	4

Department of Plants, Soils, and Climate

PLSC 3300 Residential Landscapes (Sp).....	3
PLSC 3400 Landscape Management Principles and Practices (Sp)....	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).....	3
SOIL 3000 Fundamentals of Soil Science (F).....	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, PSC 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, 4500, 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 3050, 3300, 3800, PSC 2800, SOIL 3000.

Undergraduate Research Opportunities

The Plants, Soils, and Climate 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 research website at: <http://research.usu.edu/>

Departmental Assessment

Review and assessment of departmental programs is a commitment of the Plants, Soils, and Climate 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://psc.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@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 Climate Department, or accessed online at: <http://www.usu.edu/majorsheets/>

Graduate Programs

Admission Requirements

See general admission requirements, pages 36-37. 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, climate, 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 Climate 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.

Department of Plants, Soils, and Climate

Graduate student candidates must have scores on the verbal and quantitative portions of the Graduate Record Examination (GRE) at or above the 40th percentile. A minimum TOEFL score of 550 on the paper test, 213 on the computer-based test, or 79 on the Internet-based test is 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 111-112 of this catalog. The Department of Plants, Soils, and Climate 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 112).

Career Opportunities

A broad range of career opportunities exists for students completing the MS or PhD degree from the Department of Plants, Soils, and Climate. 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://psc.usu.edu/>

Plants, Soils, and Climate Faculty

Professors

Janis L. Boettinger, soil genesis, classification and mineralogy
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. Kjølgrén, urban horticulture
H. Paul Rasmussen, horticulture
V. Philip Rasmussen, sustainable agriculture
Teryl R. Roper, pomology
Larry A. Rupp, ornamental horticulture
Ralph E. Whitesides, weed science

Research Professor

Stanford A. Young, seed production

Department of Plants, Soils, and Climate

Adjunct Professors

Michael C. Amacher, soil chemistry
Kevin B. Jensen, forage breeding
Edward J. Souza, plant breeding and genetics
John M. Stark, microbial ecology and biogeochemistry
Jack E. Staub, plant breeding and genetics
Helga Van Miegroet, forest soils

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
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

Brent L. Black, pomology
Grant E. Cardon, soil science
Robert R. Gillies, biometeorology
Paul R. Grossl, biogeochemist
Paul G. Johnson, turfgrass science
Scott B. Jones, soil physics
Kelly L. Kopp, water conservation/turfgrass science
Jennifer W. MacAdam, forage production and physiology
Jeanette M. Norton, soil microbiology

Research Associate Professor

Esmail Malek, biometeorology

Adjunct Associate Professor

Thomas A. Jones, plant genetics

Assistant Professors

Astrid Jacobson, soil chemistry
Heidi A. Kratsch, ornamental horticulture
Corey V. Ransom, weed science
Jennifer Reeve, organic and sustainable agriculture

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
Jianli Chen, plant breeding and genetics
Steven R. Larson, research geneticist
Susan Meyer, seed biology
Michael Peel, plant breeding
Joseph Robins, plant genetics
Blair L. Waldron, research geneticist

Senior Lecturer

D. Craig Aston, ornamental horticulture

Lecturer

William A. Varga, horticulture

Research Associates

Shyrl M. Clawson, plant breeding
Robert L. Newhall, soil conservation and sustainable agriculture

Director, Soil Testing Lab

Pamela Hole, soil chemistry

Course Descriptions

Plant Science (PLSC), pages 635-637

Soil Science (SOIL), pages 655-656

Climate (CLIM), page 530

Plants, Soils, and Climate (PSC), page 642

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

WWW: <http://politicalscience.usu.edu/>

Assistant Department Head: Michael S. Lyons, Main 330D,
(435) 797-1312, mike.lyons@usu.edu

Graduate Program Director: Peter McNamara, Main 324B,
(435) 797-1318, peter.mcnamara@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

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

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 3180 Introduction to Public Administration (F)	3
POLS 3810 Introduction to Public Policy (F)	3
POLS 4120 American Constitutional Law (F,Sp)	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

Department of Political Science

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 4890³ Special Topics (F,Sp)	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 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 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 4890³ 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

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 4890³ 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

¹Prerequisite: STAT 1040 or MATH 1030.

²POLS 3000 must be taken before POLS 4990.

³The subject matter of POLS 4890 determines the area to which it applies.

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 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. Students cannot 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,Sp)	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.

Department of Political Science

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

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 319-321.

Sample Four-year Plans

Sample semester-by-semester four-year plans for students working toward a bachelor's degree within the Political Science Department can be found at: <http://www.usu.edu/degreeplans/>

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests.

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 February and due back the first week of March) 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@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,

Department of Political Science

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.

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:

FIN 6420 Financial Problems (F)	
(for MSS in Public Administration students <i>only</i>)	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)	3

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:

ECN 5150 Comparative Economic Systems (F)	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:

ECN 5150 Comparative Economic Systems (F)	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

Yolanda Flores Niemann, Dean of the College of Humanities, Arts, and Social Sciences

Adjunct Professors

Larry Boothe, national security policy

Brian Theodore "Ted" Stewart, constitutional law

James L. Waite, European policy, comparative European government, methodology, public opinion

Professor Emeritus

Stanford Cazier, U.S. government, public law

Department of Political Science

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

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

Damon Cann, American politics of methodology

Huiyun Feng, Chinese politics, East Asian politics, comparative politics, international relations

V. James Strickler, public law

Senior Lecturer

Carol L. McNamara, political theory, presidency

Lecturer

Jeannie L. Johnson, international relations, comparative cultures

Course Descriptions

Political Science (POLS), pages 637-640

Latin American Studies (LATS), page 596

Department of Psychology

Interim Department Head (2008-2009): Gretchen Gimpel Peacock

Location: Emma Eccles Jones Education 487E

Phone: (435) 797-1633

Department Mailing Address:

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Utah State University, 2810 Old Main Hill,
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FAX: (435) 797-1448

E-mail: psydept@usu.edu

WWW: <http://www.usu.edu/psychology>

Program Coordinators:

Combined Clinical/Counseling/School PhD:

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susan.crowley@usu.edu

Experimental and Applied Psychological Science PhD:

Timothy Shahan, Education 482, (435) 770-7619,
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School Psychology EdS:

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Amy L. Odum, Education 496, (435) 797-5578, amy.odum@usu.edu

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Tressa M. Haderlie, Education 477, (435) 797-0097,
tressa.haderlie@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 Counseling; *EdS*—School Psychology; *PhD*—Combined Clinical/Counseling/School Psychology, Experimental and Applied Psychological Science

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, 2950, 4250, 4910, 4920, 4950, 4960, 5500, 5720, 5900, 5910, 5930); 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,

Department of Psychology

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 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 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.

Final approval of each student's application for graduation is 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.

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. Most classes are available online. 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 30-35). 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 Regional Campuses and Distance Education (RCDE) 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 RCDE or Extension programs or sites must contact the Psychology Department Advising Office on the 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) RCDE 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	3
PSY 1400 Analysis of Behavior: Basic Principles (F,Sp,Su).....3	3
PSY 1410 Analysis of Behavior: Basic Principles Lab (F,Sp,Su).....1	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	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	3
Drugs and Behavior course (number and approval pending).....3	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/REH 1010 (BSS) Society and Disability (F,Sp).....	3

D. Required Apprenticeship Course (3 credits)

PSY 4950 (CI) Undergraduate Apprenticeship (F,Sp,Su).....	3
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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 Program of the School of Teacher Education and Leadership.)

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 429-430).

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

A suggested semester-by-semester four-year plan for students working toward a bachelor's degree in Psychology can be found at:
<http://www.usu.edu/degreplans/>

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests.

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	3
PSY 1400 Analysis of Behavior: Basic Principles (F,Sp,Su).....3	3
PSY 1410 Analysis of Behavior: Basic Principles Lab (F,Sp,Su).....1	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

Department of Psychology

complete 35 credits of the Secondary Teacher Education Program (STEP) in the Secondary Education Program of the School of Teacher Education and Leadership. 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) ¹	3
Clinical Experience I Course (major or minor) ¹	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) ¹	3
Clinical Experience II Course (major or minor) ¹	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

¹Students 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 Secondary Education Program of the School of Teacher Education and Leadership.

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, and anger management: PSY 1210, 3210, 3510, 4210, 4510, 5200; MGT 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. 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 643-647).

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.

Department of Psychology

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 conjunction 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@usu.edu. Additional information can be found online at: <http://www.usu.edu/honors/>

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. Therefore, applicants should review program web pages for more details. 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 Experimental and Applied Psychological Science PhD program are reviewed starting **January 31**. The application deadline for the EdS School Psychology program is **February 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 the MS program in School Counseling, following completion of a bachelor's degree. Prospective EdS students in School Psychology and prospective PhD program students in the Combined Clinical/Counseling/School program or the Experimental and Applied Psychological Science program can possess either a bachelor's or a master's degree.

Prerequisites for Admission to Graduate Programs

Applicants to the Master of Science (MS), Educational Specialist (EdS), and Doctor of Philosophy (PhD) programs 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 Program

School Counselor Education (Accreditation: Candidate Member, TEAL)

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 originates on the campus of USU and is broadcast live via Interactive Video Conferencing to 10 sites within Utah's boundaries or through face-to-face instructorship in Kaysville, Utah. The program is a candidate member in good standing of the Teacher Education Accreditation Council (TEAL).

Absolute undergraduate course prerequisites for admission to the MS in School Counseling are as follows: (1) *Analysis of Behavior*, (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 (Su).....	3
PSY 6150 Evidence-Based Practice I: Children and Adolescents (F).....	2
PSY 6220 Group Counseling (Sp).....	3
PSY 6240 Introduction to School Counseling and Guidance (Sp).....	3
PSY 6250 Internship in School Counseling and Guidance (F,Sp,Su).....	10
PSY 6260 Career Development: Theory and Practice (Su).....	3
PSY 6290 Diversity Issues in Treatment and Assessment (F).....	3
PSY 6330 Psychometrics (F).....	3
PSY 6340 Psychological and Educational Consultation (Su).....	3
PSY 6350 Introduction to Theories of Intervention in Psychology (Su).....	3
PSY 6370 Practicum in School Counseling (Sp).....	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

Educational Specialist (EdS) Program

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 a research thesis (Graduate School Plan A option).

Absolute undergraduate course prerequisites for admission to the EdS specialization in School Psychology are as follows: (1) *Abnormal Psychology*, and (2) *Theories/Research in Personality*.

The following courses are required:

PSY 6150 Evidence-Based Practice I: Children and Adolescents (F)	2
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 6600 Research Design and Analysis I (F,Sp,Su)	3
PSY 6340 Psychological and Educational Consultation (F)	3
PSY 6350 Introduction to Theories of Intervention in Psychology (F) ...	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 6810 Seminar: Advanced Academic and Behavioral Interventions (F)	3
PSY 6810 Seminar: Theory and Practice in School Psychology (F,Sp)	2
PSY 6950 Internship in School Psychology (F,Sp,Su) (Students must earn 3 credits during each of two consecutive semesters.)	6
PSY 6970 Thesis (F,Sp,Su)	6
PSY 7250 Professional Ethics and Standards (Sp)	3
PSY 7270 Lifespan Psychopathology (F)	3
PSY 7820 Neuropsychology: Principles and Assessment (Sp)	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. A research thesis and dissertation are required of all students. The combined program provides generalized training, along with three areas of emphasis. 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 concentration mirror faculty interest and expertise and include: health psychology/neuropsychology, child

clinical (school psychology), and rural and multicultural 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 **105-107 total semester credits**, including the following:

A. MS Counseling Psychology Degree Curriculum

PSY 6100 History and Systems of Psychology (Sp)	3
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 Theories of Intervention in Psychology (F,Su)	3
PSY 6360 Introduction to the Practice of Professional Psychology (Sp)	3
PSY 6530 Developmental Psychology (F)	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
PSY 7270 Lifespan Psychopathology (F)	3

B. PhD Program Courses

PSY 6150 Evidence-Based Practice I: Children and Adolescents (F)	2
PSY 6510 Social Psychology (Sp)	3
PSY 6650 Theories of Learning: The Behavioral Perspective (F) (3 cr) or	
PSY 6660 Cognition and Instruction (Sp) (3 cr)	3
PSY 6750 Evidence-Based Practice II: Adults (Sp)	2
PSY 7100 Biological Basis of Behavior (Sp)	3
PSY 7230 Theory and Research in Personality (Sp)	3
PSY 7250 Professional Ethics and Standards (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 cr) or	
Other approved research course (2-3 cr)	2-3
PSY 7850 Internship and Professional Development Seminar (Sp)	1
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
One supervision/consultation course	1-3
Electives	6

Note: The MS counseling psychology degree is available *only* to students matriculated into the PhD Clinical/Counseling/School program.

Department of Psychology

Experimental and Applied Psychological Science (EAPS)

The department offers a PhD program in Experimental and Applied Psychological Science. The program is designed to prepare students for careers in research, data analysis, and/or teaching in academic, public, or private settings. While satisfying the department's general requirements, students may design their programs to become specialists in a variety of areas, such as program evaluation, behavior analysis, health psychology, statistics, or similar areas. A research thesis and/or dissertation are required of all students.

Undergraduate prerequisites for admission to the PhD program in Experimental and Applied Psychological Science include:

(1) Elementary Statistics, (2) Psychometrics, and (3) History and Systems of Psychology.

A. MS Degree Curriculum

The Experimental and Applied Psychological Science MS requires a minimum of 32 credits, as follows:

PSY/EDUC 6010 Introduction to Program Evaluation: Evaluation Models and Practical Guidelines (F,Sp).....	3
PSY/EDUC 6570 Introduction to Educational and Psychological Research (F,Sp,Su).....	3
PSY/EDUC 6600 Research Design and Analysis I (F,Sp,Su)	3

Content Requirements (12 credits):

Students must complete four of the following six 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
PSY 7230 Theory and Research in Personality (F).....	3

Other Requirements (3 credits):

PSY 7090 Experimental and Applied Psychological Science Program Seminar (F).....	1
PSY 7250 Professional Ethics and Standards (F).....	2
PSY 6970 Thesis (F,Sp,Su).....	8 or more

B. PhD Degree Curriculum

The Experimental and Applied Psychological Science PhD requires a minimum of 63 total credits past the MS degree, including:

PSY 7090 Experimental and Applied Psychological Science Program Seminar (F).....	1
PSY 7610 Research Design and Analysis II.....	3
PSY/EDUC 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 Experimental and Applied Psychological Science 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-Rodriguez*—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; *Gallagher*—social and dating relationship processes and dynamics in adolescence and rural mental health service delivery; *Gilbertson*—early intervention and prevention of behavior problems, school psychology; *Johnson*—health psychology; *Jordan*—cognitive development, multi-sensory perception; *Gimpel Peacock*—ADHD, behavioral disorders of children; *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*—central auditory system; *Stein*—addictive behaviors and models, drug and alcohol prevention/treatment; *J. Tschanz*—neuropsychology of Alzheimer's disease and other dementias; *Twohig*—behavior therapy, acceptance and commitment therapy, anxiety; *White*—educational research, hearing loss detection in infancy, and program evaluation.

Graduate Student Financial Assistance

Financial support for students enrolled in the MS and EdS programs is limited. These 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 or EdS 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

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
Melanie M. Domenech-Rodriguez, counseling, child clinical
Renee V. Galliher, clinical psychology
Donna M. Gilbertson, school psychology
Amy L. Odum, behavior analysis
Gretchen Gimpel Peacock, school psychology
Timothy Shahan, behavior analysis
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, child clinical psychology
Christopher Johnson, health psychology
Kerry Jordan, psychology and neuroscience
Kerstin E. E. Schroder, health psychology
Michael Twohig, clinical 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
Mary E. Doty, 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
Steve Lehman, educational 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
Brian Tschanz, social psychology
Beth Walden, research and evaluation methodology

Course Descriptions

Psychology (PSY), pages 643-647

Religious Studies Major and Minor

Program Director: Charles S. Prebish

Location: Main 331

Phone: (435) 797-1529

FAX: (435) 797-3899

TTY: (435) 797-1290

E-mail: charles.prebish@usu.edu

WWW: <http://www.usu.edu/history/rels/>

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 one lower-division course (RELS 1010, Introduction to Religious Studies).

Students must take 30 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 lower-division course as the major, as well as 12 additional credits with 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

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

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 (6 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 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 (30 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* 30 credits.

Religious Studies Major and Minor

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 (Sp).....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 ARTH 3110.
- HIST 3150 (CI)** Roman History (Sp).....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, 500-15003
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 Europe3
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 East3
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 History3
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)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 West3
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: 1450-16883
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 History3
Varieties of American religious experience from settlement to the present.

RELS 3010 Introduction to Buddhism3
General survey of historical development, basic doctrine, and practice of Hinayana and Mahayana Buddhism. Also taught as HIST 3010.

RELS 3020 Introduction to Hinduism3
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. Also taught as HIST 3020.

RELS 3990 Introduction to Religious Studies Methodology3
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 4010 Buddhism in the West3
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. Also taught as HIST 4010.

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 4230 (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.

Religious Studies Major and Minor

PHIL 3750 Religion and Science in the Modern World (F)..... 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 (CI/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 Religion, Science, and Society (Sp) 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 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..... 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 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 (DHA) 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 3
Historical and intellectual context of the development of the New Testament. Character, ideas, and historical setting of the various documents.

PHIL 4300 Epistemology 3
Study of foundations of knowledge and belief systems, and related topics in epistemology, including perception, certainty, and skepticism.

In consultation with the program advisor, students may receive approval to fulfill division elective requirements with courses other than those shown above.

Minor in Religious Studies

The minor in Religious Studies requires 15 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 (required)..... 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.

In addition to the RELS course listed above, students must also complete 12 additional credits, with *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

A suggested semester-by-semester four-year plan for students working toward a bachelor's degree in Religious Studies can be found at: <http://www.usu.edu/degreeplans/>

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests.

Course Descriptions

Religious Studies (RELS), page 650

Secondary Education Program, School of Teacher Education and Leadership

Associate Dean/Department Head of School of Teacher Education and Leadership (TEAL): Martha T. Dever

Location: Emma Eccles Jones Education 385

Phone: (435) 797-2225

FAX: (435) 797-0372

E-mail: teal@usu.edu

WWW: <http://www.teal.usu.edu/htm/seced/>

Associate Department Head, Doctoral Program:

Deborah A. Byrnes, Education 399, (435) 797-0396,

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Associate Department Head, Secondary Education Program:

Martha L. Whitaker, Education 384, (435) 797-0384,

martha.whitaker@usu.edu

Director, Secondary Education Student Teaching:

Mary Bedingfieldsmith, Education 330C, (435) 797-0958,

mary.bedingfieldsmith@usu.edu

Undergraduate Advisor:

Shelly Wiegand, Education 375, (435) 797-0383,

shelly.wiegand@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 School of TEAL administers the Doctor of Education (EdD) and Doctor of Philosophy (PhD) programs, with a Curriculum and Instruction specialization.

Graduate Concentrations: *MEd*—Administration and Leadership (admission to A/SC program required); Gifted and Talented; English as a Second Language (MEd only); Second Language Teaching; English/Language Arts; Mathematics; Reading; Science; Social Studies; *PhD/EdD*—Early Childhood Education; Reading/Writing; Schooling, Culture, and Society; Instructional Leadership

Undergraduate Programs

Objectives

The Secondary Education Program coordinates state-approved programs for secondary teacher licensure across campus. The program 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 is a member of the Teacher Education Accreditation Council. 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

Program 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, (6) successful completion of Computer and Information Literacy (CIL) exams, and (7) completion of fingerprinting for a background check (a legislative mandate). Application forms are available from advisors; from the Office of Graduation, Educator Licensing, and Accreditation, Room 103, Emma Eccles Jones Education Building; and from the Secondary Education Program, Room 385, Emma Eccles Jones Education Building.

Students must submit copies of University transcripts, including transfer coursework, verifying a minimum total GPA of 2.75. Verification of fingerprinting for criminal background check must also be submitted at this time. Application for initiating the background check process with the Utah State Office of Education can be accessed online at the following site:

<https://secure.utah.gov/elr/ebc/welcome.html>

Students are required to attend an orientation meeting prior to beginning the program. Questions about 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 School of TEAL. 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 additional courses approved by the student's advisor. Requirements for the History Teaching Minor can be found by clicking on the History link at: <http://www.usu.edu/majorsheets/>

Secondary Education Program, School of Teacher Education and Leadership

B. Geography (16-19 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 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)

ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles (F,Sp,Su).....	3
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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

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 the Secondary Education Program and the Department of Special Education and Rehabilitation.

ESL Teaching Endorsement or Minor

The School of Teacher Education and Leadership offers a K-12 English as a Second Language (ESL) endorsement and minor. Elementary education majors and those already in possession of a teaching certificate complete 18 credits to obtain the ESL Endorsement (TEAL 4730 or LING 4100; SCED 4710; TEAL 4745, 4760, 4770, and 4780). Those already possessing a teaching certificate take the 6000-level versions of these courses. The ESL Minor for secondary education students is 24 credits and, in addition to the courses needed for the endorsement, requires LING 4400, a clinical field experience (SCED 3300 and 4300; or LING 3300 and 4300), and student teaching (SCED 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 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 School of TEAL 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

Secondary Education Program, School of Teacher Education and Leadership

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

¹The Special Methods I course is taught by various departments under various course numbers. Course title varies among departments.

²The Special Methods II course is taught by various departments under various course numbers. Course title varies among departments.

³The Student Teaching Seminar course is taught under course number 5500 in various departments. Course title varies among departments.

⁴The 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 Application Session (STAS) one year in advance of their student teaching semester. Applications for student teaching and each semester's deadlines will be discussed at the STAS. 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 live 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.

Suggested Four-year Course of Study for Social Studies Composite Teaching Major

A suggested semester-by-semester four-year plan for students working toward the Social Studies Composite Teaching Major can be found at: <http://www.usu.edu/degreeplans/>

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests.

Assessment

The Secondary Education Program 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 program can be found at:

http://secondaryeducation.usu.edu/a_home.php

Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in 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 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 honors enhances students' chances for obtaining fellowships and admission to graduate school. Minimum GPA requirements for participation in 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@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 School of TEAL 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 36-37).

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.

Secondary Education Program, School of Teacher Education and Leadership

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 concentration in Secondary Education include the following: Administration and Leadership (admission to A/SC program required); Gifted and Talented; English as a Second Language (MEd only); Second Language Teaching; English/Language Arts; Mathematics; Reading; Science; and Social Studies. 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 concentration, students work with a faculty advisor and select graduate courses from the University-wide curriculum.

MEd Degree Plan B (36 credits)

The MEd Plan B offers a Portfolio Project Option or Creative Project Option which culminates in the presentation of the project in a final exam setting. Students take a common core of courses from college and department curricula, then courses in areas of concentration in relation to their teaching specialties. The research course for the MEd focuses on issues of application as well as action research. Creative projects are diverse and range from action research to curriculum development. The professional portfolio project provides the context for a personal knowledge base. Although portfolios share certain structural features, each student's portfolio is unique.

MEd Degree Plan C (40 credits)

The MEd Plan C is a coursework-only program. Students take a common core of courses from college and department curricula, then courses in areas of concentration in relation to their teaching specialties; additional coursework is taken in the area of concentration. At the conclusion of the program, a culminating experience to meet the needs of the student is developed. Options for the experience can be an interview with the advisor, oral comprehensive examination under the supervision of the advisor, written comprehensive examination under the supervision of the advisor, or other culminating experience developed by the student and advisor and approved by the department head.

MS and MA Degrees Plan A (30 credits)

The MS/MA option culminates in a formal defense of a thesis. This option is for teachers whose long-term goals require a traditional, research-oriented degree. The MS thesis involves either an experimental or qualitative research study. The MA thesis involves development of a scholarly literature review. The MA degree also requires foreign language competency.

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 concentration in the School of TEAL 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.

Doctoral Degree Programs

The School of TEAL administers the Doctoral Program in Education, which includes the Doctor of Philosophy (PhD) and the Doctor of Education (EdD). Areas of concentration include: Early Childhood Education; Reading/Writing; Schooling, Culture, and Society; and Instructional Leadership. For information about admission requirements, procedures to follow, and research sponsored, as well as other information, visit: <http://www.coe.usu.edu/idp/index.php>

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 School of TEAL no later than February 1 for the following academic year. Acceptance to graduate study does not guarantee financial assistance.

Secondary Education Program 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 Professor Emeritus

Varnell A. Bench, extension, administration, supervision

Associate Professors

Kay Camperell, content area reading/writing, learning theory, literacy education

Martha L. Whitaker, Associate Department Head for Secondary Education Program

Secondary Education Program, School of Teacher Education and Leadership

Clinical Associate Professors

Steven Laing, Coordinator of Administrative/Supervisory
Certificate Program; educational leadership
Susan Turner, instructional leadership

Assistant Professors

Todd Campbell, science
George G. Hruby, literacy/reading
Kimberly Lott, science
Patricio Ortiz, English-as-a-second-language
Sherry Marx, ESL/bilingual/multicultural

Lecturers

Barbara Cangelosi, classroom management
Fawn C. Groves, multicultural education

Director, Secondary Education Student Teaching

Mary Bedingfieldsmith

Undergraduate Advisor

Shelly Wiegand

RCDE Faculty

Vini Exton, assistant professor—Uintah Basin/Vernal
Marilyn Hetzel, lecturer—Uintah Basin/Roosevelt
Gary Ockey, assistant professor—Ephraim
Janey Stoddard, RCDE Advising Coordinator
David Vernon, lecturer—Salt Lake City

Course Descriptions

Secondary Education (SCED), pages 651-652
Teacher Education and Leadership (TEAL), pages 667-671

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: robert.h.schmidt@gmail.com

Service-Learning Scholar Advisor: Lisa Vaughn
Location: Taggart Student Center 326
Phone: (435) 797-1740
FAX: (435) 797-2919
E-mail: lisa.vaughn@usu.edu

WWW: <http://www.usu.edu/asusu/servicecenter/learning/>

Program Description

The Academic Service-Learning 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. 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

A Service-Learning Certificate, which is recorded on a student's official transcript, is awarded to students who participate in the Service-Learning Scholars Program. This certificate enables 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. Applications may be found on the Service-Learning website.

Certificate Requirements

To receive a Service-Learning Certificate, a student must:

1. Apply for and be accepted to the Service-Learning Scholars Program. Applications may be found on the Service-Learning website.
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 contract 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:

Yolanda Flores Niemann, 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 36-37. 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:

E. (Eddy) Helen Berry, Main 224J, (435) 797-1245,
eddy.berry@usu.edu

Social Work:

Terry L. Peak, Main 239D, (435) 797-4080, terry.peak@usu.edu

Anthropology:

Bonnie L. Pitblado, Main 245F, (435) 797-1496,
bonnie.pitblado@usu.edu

Sociology Graduate Program Director:

John C. Allen, Main 224F, (435) 797-0310
john.allen@usu.edu

Social Work Graduate (MSW) Program Coordinator:

Derrick R. Tollefson, Main 239, (435) 722-1752
derrick.tollefson@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; BS and BA in Social Work; Master of Social Work (MSW); BS, BA, and MS in Anthropology; participates in Master of Social Sciences (MSS)

Graduate Specializations: *PhD in Sociology*—Demography, Environmental Sociology/Sociology of Natural Resources, Social Problems and Inequality, and Social Change and Development; *MS in Anthropology*—Archaeology and Cultural Resource Management

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 (Available in Sociology and Anthropology)

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@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: E. (Eddy) Helen Berry
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;

Department of Sociology, Social Work and Anthropology

- Pursue careers in sociological areas, business, government, and/or graduate study; and
- 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

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

Sociology majors must meet the following course requirements:

- 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.
- Complete a minimum of 36 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.
- A minor outside the program is encouraged but not required.
- Complete the following required courses (18 credits):

SOC 1010 (BSS) Introductory Sociology (F,Sp).....	3
SOC 3010 Social Inequality (F,Sp).....	3
SOC 3110 (CI) ¹ Methods of Social Research (F,Sp).....	3
SOC 3120 (QI) ² Social Statistics I (F,Sp,Su).....	3
SOC 4010 Contemporary Sociological Theory (F,Sp).....	3

Capstone Course:

SOC 4600³ Senior Research Capstone Seminar (F,Sp) (3 cr) **or**
SOC 4720 Applied Community Development (Sp) (3 cr)..... 3

- 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

b. Groups and Institutions

FCHD 2400 (BSS) Marriage and Family Relationships (F,Sp)..... 3
SOC 3320 Sociology of Work and Organization (Sp)..... 3
SOC 3330 Medical Sociology (F)..... 3
SOC 3500 Social Psychology (F,Sp) (3 cr) **or**
PSY 3510 (DSS) Social Psychology (F,Su) (3 cr)..... 3
SOC 4330 Religion, Science, and Society (Sp)..... 3
SOC 4350 Political Sociology (Sp)..... 3
SOC 4370 Sociology of Gender (F)..... 3

c. Population, Environment, and Development

SOC 3200 (DSS) Population and Society (F,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
SOC 4710 Asian Societies (Sp)..... 3
SOC 4720/6720 Applied Community Development (Sp)..... 3
SOC 4730 Women in International Development (Sp)..... 3
SOC 5650/6650 Developing Societies (F)..... 3

¹Prerequisites: Six credits of departmental courses.

²Prerequisites: Six credits of departmental courses; and STAT 1040 or equivalent.

³Prerequisites: SOC 1010, 3010, 3110, 3120, 4010, or permission of instructor.

Sample Four-year Plan for Sociology Major

A sample semester-by-semester four-year plan for students working toward a bachelor's degree in Sociology can be found at:
<http://www.usu.edu/degreetplans/>

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests.

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 or SOC 1020, and a C- or better in all courses to be counted toward the minor. At least 50 percent of coursework for the minor must be completed at USU. None of the credits counted toward the minor may be taken *pass-fail*.

SOC 1010 (BSS) Introductory Sociology (F,Sp) (3 cr) **or**
SOC 1020 Social Problems (F,Sp) (3 cr)..... 3
 Additional credits with a SOC prefix..... 9

Department of Sociology, Social Work and Anthropology

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 Maki Hatanaka, maki.hatanaka@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:

ECN 5500 Public Finance (prereq: ECN 1500).....	3
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 1010) (3 cr).....	3
JCOM 4030 (DSS) Mass Media Law (F,Sp).....	3
MGT 2050 Legal and Ethical Environment of Business (F,Sp,Su).....	3
MGT 3810 Employment Law and Policy Development (F,Sp).....	3
PHIL 1120 (BHU) Social Ethics (F).....	3
PHIL 3520 (DHA) Business Ethics.....	3
POLS 3120 Law and Politics (F).....	3
POLS 3130 United States Legislative Politics (Sp).....	3
POLS/ECN 3170 Law and Economics (Sp).....	3
POLS 3320 The Foundations of American Constitutionalism.....	3
POLS 3810 (DSS) Introduction to Public Policy (F).....	3
POLS 4120 American Constitutional Law (F,Sp).....	3
POLS 4130 Constitutional Theory (Sp) (prereq: POLS 1100).....	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 2100 Human Behavior in the Social Environment (Sp) (prereq: SW 1010).....	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. Jason Leiker, (435) 797-7123, in the Sociology, Social Work and Anthropology Department.

Gerontology Program

The Department of Sociology, Social Work and Anthropology is one of several departments sponsoring an interdisciplinary gerontology program, which prepares students for careers in the field of aging. Students may earn a certificate in gerontology by completing a selected list of course requirements, including supervised field practicum in a gerontological setting.

More information concerning the gerontology certification program may be obtained from the Department of Family, Consumer, and Human Development.

American Studies Major

The Department of Sociology, Social Work and Anthropology is one of several departments offering an area of concentration for the American Studies program. Students who wish to focus their work in American culture should refer to the American Studies program description (pages 263-265).

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, as well as responsible citizenship in the areas of service and research.**

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.

Department of Sociology, Social Work and Anthropology

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
Tel. (801) 530-6628
Fax (801) 530-6511
<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 67-75), 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.

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 at the end of their sophomore year. Application requirements include: a C or better (C+ in SW 1010) in all prerequisite Social Work courses and specific University Studies courses, an essay, and a passing score (70 percent or higher) on the Advanced Placement Test (APT). At the end of the junior year, social work majors apply for the practicum, which requires a passing score (70 percent or higher) on the Generalist Practice Test (GPT) and a B- or better in all practice classes.

Minimum GPA for Graduation: 2.75, major; 2.0, USU; 2.0, Career

Minimum Grade Accepted: C+ in SW 1010; B- in SW 3050, 4150, and 4160; C in remaining major courses

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 1010⁴ 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)⁵ Introduction to Statistics (F,Sp,Su).....	3

⁴Students must take SW 1010 before taking SW 2100 and 2400.

⁵Students 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 2100⁶ Human Behavior in the Social Environment (Sp)	3
SW 2400⁶ Social Work with Diverse Populations (Sp)	3
One elective enrichment course.....	3
Students should apply for advanced standing during their second year.	

⁶Since SW 2100 and 2400 are only offered during spring semester each year, students should plan accordingly.

Department of Sociology, Social Work and Anthropology

Third year:

SW 3050 ⁷ 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) ⁸ Social Statistics I (F,Sp,Su).....	3
Two elective enrichment courses	6

Students should apply for the practicum during their third year.

⁷Prior to taking SW 3050, students must apply for advanced standing, to qualify to enroll in practice courses.

⁸STAT 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 (Sp).....	3
SW 3550 Social Gerontology (Sp).....	3
SW 3650 Mental Health.....	3
SW 3750 Medical Social Services.....	3
SW 3850 Spirituality and Social Work (F)	3
SW 4900 Topical Issue Seminar.....	3
SW 5550 Family Violence: Interpersonal and Intergroup Conflict (F)	3

Optional Elective (does *not* fulfill elective requirement)

SW 4950 ⁹ Directed Readings (F,Sp)	1-5
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Fourth year:

SW 4870 ¹⁰ Beginning Field Practicum (F).....	6
SW 5350 (CI) Social Welfare Policy (F)	3
SW 5870 Advanced Field Practicum (Sp)	6

⁹SW 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.

¹⁰Prior 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

A sample semester-by-semester four-year plan for students working toward a bachelor's degree in Social Work can be found at:

<http://www.usu.edu/degreepans/>

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests.

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. Students who *do not* receive advanced standing are *not allowed* to enroll in upper-division practice courses; they may retake courses to improve their GPA and reapply for advanced standing during the following year.

Leave of Absence

After admission to Advanced Standing, students may request a leave of absence from the Social Work program. They must contact the program and reapply in March of the year preceding the requested reinstatement.

To be considered for advanced standing, students must meet the following minimum criteria:

- 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
- Completion of SW 1010 (Introduction to Social Welfare) with a grade of C+ or better.
- Junior status (61-90 credits) upon application.
- Maintenance of a minimum overall GPA of 2.5 and a minimum GPA of 2.75 in social work classes.
- No *Pass-D-Fail* grades in courses required for the major.

Students applying for advanced standing will be evaluated on the following criteria:

- Social Work GPA of 2.75 or higher and minimum overall GPA of 2.5.
- Personal statement and self-assessment that includes commitment to and enthusiasm for extracurricular and volunteer activities, career goals, interests, aspirations, and congruence with the NASW values and purposes.
- Quality of written material.
- A satisfactory score (70 percent or higher) on the Advanced Placement Test (APT).
- Faculty evaluation, as indicated by participation, class attendance, and use of self in the classroom and in program-associated activities.

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.

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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 III).
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 score (70 percent or higher) on the Generalist Practice Test (GPT).

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.

Department of Sociology, Social Work and Anthropology

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/sw.htm>

Anthropology

Program Director: Bonnie L. Pitblado

Program Office:

Main 245F, (435) 797-1496; (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 both to encourage broad exploration across anthropology and more in-depth learning of one subspecialty. Students who major in anthropology examine a wide range of peoples and cultures, both past and present. They study 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 management 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. Majors with an interest in museums may pursue a 24-credit "Museum Studies" certification, also administered by the Anthropology Program.

Major Requirements

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

A minimum of 39 credits is required for the anthropology major. All students must take five required courses, including an introduction to program resources, a three-semester sequence in the basic areas of anthropology, and an 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 culminating in a final capstone course. Additional graduation requirements include:

Department of Sociology, Social Work and Anthropology

Anthropology Tracks

Each student must select a track from among the three specialties in anthropology listed below and complete a minimum of three upper-division courses (these may include ANTH 2010 and 2330) and the capstone course in that specialization. Capstone courses are offered every other year, so students should schedule their coursework accordingly.

1. Cultural/Applied Anthropology
2. Biological/Biomedical Anthropology
3. Archaeology/Cultural Resource Management

Methods Component

Majors must complete one "Methods" course (3 credits) 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, with the exception of those listed below.

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 HASS advisor, and complete the following major courses:

Required Courses (13 credits)

ANTH 1010 (BSS) Cultural Anthropology (F; or F,Sp,Su online)	3
ANTH 1020 (BLS) Biological Anthropology (F)	3
ANTH 1030 (BSS) World Archaeology (F; or Sp online)	3
ANTH 1099 Resources in Anthropology at USU (F)	1
ANTH 4980 History and Theories of Anthropology (F,Sp)	3

Anthropology Tracks

1. Cultural/Applied Anthropology (6 credits minimum/12 for Cultural/Applied Track)

ANTH 2010 (BSS) Peoples of the Contemporary World (Sp)	3
ANTH 3110 North American Indian Cultures (F) (Distance)	3
ANTH 3130 (CI) Peoples of Latin America (F)	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 (Sp) (Distance)	3
ANTH 4120 (CI/DSS) Anthropology of Childhood (Methods) (Sp)	3
ANTH 5100/6100 (DSS) Anthropology of Sex and Gender (F)	3
ANTH 5130/6130 Ethnographic Field School (Methods) (Su)	3-6
ANTH 5190/6190 Applied Anthropology Practicum	1-5

Cultural Applied Capstone:

ANTH 4990 Contemporary Issues in Anthropology (Sp)	3
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2. Biological/Biomedical Anthropology (6 credits minimum/12 for Biological/Biomedical Track)

ANTH 3200 (CI/DSS) Perspectives on Race (Sp)	3
ANTH 3250 Osteology (Methods) (F)	3
ANTH 4230 (DSS) Medical Anthropology: Matter, Culture, Spirit, and Health (Sp)	3
ANTH 4800 ST: Evolution of Disease (F)	3
ANTH 5210 Physical Anthropology Lab (Methods)	1-3

Biological/Biomedical Anthropology Capstone:

ANTH 5250/6250 (QI) Problems in Bioarchaeology (Methods) (Sp)	3
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3. Archaeology/Cultural Resource Management (6 credits minimum/12 for Archaeology/CRM Track)

ANTH 2330 Principles of Archaeology (required for Archaeology Track) (Sp)	3
ANTH 3300 (DSS) Archaeology in North America (Sp)	3
ANTH 3350 (DSS) Archaeology of Ancient Civilizations (Sp)	3
ANTH 3360 Utah Archaeology (F)	3
ANTH 3370 Archaeology of Prehistoric Europe (F) (Distance)	3
ANTH 5320/6320 Zooarchaeology (Methods) (Sp) (Brigham City)	3
ANTH 5330/6330 Geoarchaeology (Methods) (Sp)	3

Archaeology/CRM Capstone:

ANTH 5380/6380 Peopling of the New World (Sp)	3
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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 3550 (DHA) Culture of East Asia (online)	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 5300/6300 Archaeology Field School (Methods) (Su)	3-5
ANTH 5310/6310 Archaeology Lab (Methods) (F,Sp,Su)	1-3
ANTH 5650/6650 (DSS) Developing Societies (Sp) (Distance)	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
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

A sample semester-by-semester four-year plan for students working toward a bachelor's degree in Anthropology can be found at:

<http://www.usu.edu/degreeplans/>

Students should consult with both their major advisor and their HASS advisor to develop a plan of study tailored to their individual needs and interests.

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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; or F,Sp,Su online).....3
ANTH 1020 (BLS) Biological Anthropology (F).....3
ANTH 1030 (BSS) World Archaeology (F; or Sp online) (3 cr) or
ANTH 2330 Principles of Archaeology (Sp) (3 cr).....3

Breadth-in-Anthropology Structured Track Electives (Groups 1, 2, or 3) (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 Track Electives** in: (1) Cultural/Applied Anthropology; (2) Biological/Biomedical Anthropology; or (3) Archaeology/Cultural Resource Management. **Departmental electives do not count toward minor requirements.**

Sociology Graduate Program

Graduate Program Director: John C. Allen
Program Office: Main 224F, (435) 797-0310

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.

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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

Department of Sociology, Social Work and Anthropology

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.

Social Work Graduate Program

Graduate (MSW) Program Coordinator: Derrik R. Tollefson
Program Office: Main 239, (435) 797-1286

The Department of Sociology, Social Work and Anthropology offers graduate work leading to the Master of Social Work (MSW) degree. The mission of the MSW program is to serve the public by preparing graduates as professionals in advanced generalist practice and by equipping them with skills necessary for leadership roles within the social work profession. The MSW program emphasizes the advanced generalist practice knowledge and skills essential to the tasks of promoting social welfare, especially among vulnerable populations, in institutions such as education, health, employment, housing, and criminal justice. The program is dedicated to the development of professional social workers who understand the need to advocate for vulnerable populations, and to work toward the establishment of societies free from poverty, violence, oppression, and discrimination. Specifically, the MSW program prepares graduates to:

1. Understand the values, concepts, and skills that constitute the framework of generalist and advanced generalist practice.
2. Apply the knowledge and skills of a generalist and advanced generalist social work perspective to practice with systems of all sizes.
3. Understand biopsychosocial theory and the person-in-environment perspective as viewed within the context of agency practice, and as relating to legislative and policy issues.
4. Utilize evaluative methods in practice.
5. Practice with cultural competence.
6. Utilize advocacy and administrative skills as a means to promote social change in communities and organizations.

The Graduate Program in Social Work has developed an *MSW Program Handbook* providing more details about the application process, financial assistance decisions, and graduation requirements. An electronic copy of this handbook is available on the departmental website at: <http://www.usu.edu/sswa/grad.htm>

Application Requirements

The MSW application has six 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. Letters of reference from faculty members or scholars who can attest to the applicant's abilities to succeed in graduate school;
4. A written personal statement;
5. A resume; and
6. Passing scores from one or more of the following examinations (contact program coordinator for details):
 - a. Graduate Record Examination (GRE);
 - b. Miller Analogies Test (some students may not be required to submit test scores);
 - c. MSW Admissions Test; and
 - d. 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.

All applicants must have successfully completed a research methods or statistics course, as well as *at least one* introductory social or behavioral science course prior to enrolling in the program. TOEFL scores are required for international candidates, with a minimum score of 600 (paper test) or 250 (computer-based test) deemed acceptable. The TSE examination 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 MSW 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 MSW program.

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Applications are screened by the MSW Admissions Committee beginning February 1 of the year before which a new cohort will be admitted. Full-time and part-time cohorts are admitted every two years and every three years, respectively. To determine when the next full-time and part-time cohorts will be admitted, contact the program coordinator. No application will be considered until *all* required information arrives in the School of Graduate Studies *or* until a formal petition to review a nearly complete file is made and approved. Students having an undergraduate degree in social work from a CSWE-accredited program may be permitted to substitute elective courses for select foundation year courses, provided they obtained their degree within five years of enrolling in the MSW program.

All application materials should be sent directly to: **School of Graduate Studies, 0900 Old Main Hill, Utah State University, Logan UT 84322-0900.**

Degree Requirements

Foundation Courses

The foundation courses for the MSW degree include the following:

SW 6000 Principles and Philosophy of Social Work (F).....	3
SW 6050 HBSE I: Individuals and Families in Their Environment (F)...	3
SW 6100 Generalist Practice I: SW Practice with Individuals, Families, and Groups (F).....	3
SW 6150 Generalist Practice II: SW Practice with Groups, Organizations, and Communities (Sp)	3
SW 6200 Social Work Research Methods (F,Su).....	3
SW 6250 HBSE II: Groups, Organizations, and Communities (Sp)	3
SW 6300 Social Policy Analysis (Sp)	3
SW 6400 Field Practicum I (F) (4 cr) and	
SW 6450 Field Practicum II (Sp) (5 cr)	9
Or	
SW 6475 Foundation Block Field Practicum (F,Sp,Su)	9

Advanced Courses

The advanced courses for the MSW degree include the following:

SW 6600 Policy and Administration (Sp).....	3
SW 6650 Advanced Research Methods (Sp,Su).....	3
SW 6700 Advanced Generalist Practice I: Individuals and Families (F)	3
SW 6750 Advanced Generalist Practice II: Groups (Sp).....	3
SW 6800 Law and Ethics for Social Workers (F,Su)	3
SW 6850 Advanced Clinical Practice with Individuals and Families (Sp,Su).....	3
SW 6900 Field Practicum III (F,Sp) (6 cr) and	
SW 6950 Field Practicum IV (Sp) (6 cr)	12
Or	
SW 6975 Advanced Block Field Practicum (F,Sp,Su)	12

Elective Courses

Students having an undergraduate degree in social work from a CSWE-accredited program may be permitted to substitute elective courses for select foundation courses, provided they obtained their degree within five years of enrolling in the MSW program. Elective courses include the following (check with the Social Work program coordinator for information about availability):

SW 6500 Advanced Child Welfare Practice in Rural Settings (F)	3
SW 6550 Advanced Practice with Victims and Perpetrators of Family Violence (Sp,Su).....	3
SW 6575 Social Work Practice with Substance Abusing Clients (F,Sp,Su)	3

SW 6775 Forensic Social Work Practice (F,Sp,Su).....	3
SW 6875 Clinical Practice with Women	3
SW 6990 Independent Study (F,Sp,Su).....	1-3
SW 6993 Research Project (F,Sp,Su)	1-3
SW 6995 Special Topics on Social Work Practice (F,Sp,Su).....	1-3

Financial Assistance

Some financial assistance is available. These funds are distributed through a competitive process, based on student qualifications, performance, and interests. In order to be considered for financial assistance for the next academic year, complete applications must be **received no later than February 1**. Decisions on graduate student funding are usually based on an overall evaluation of all six components of the application.

Career Opportunities

There are many career opportunities for social workers, particularly for those having a Master of Social Work degree. MSW graduates practice in a wide variety of public and private agency settings, such as child welfare, youth services, mental health/counseling, schools, criminal justice, and medical settings such as hospitals and long-term care facilities, to name just a few. Social workers interact with diverse client populations and seek to improve quality of life, particularly for those who exist on the margins of society. Career opportunities are abundant as the job market for professional social workers is expanding, both locally and nationally.

An MSW degree can also unlock the door to upward career mobility. In the human services field, the MSW degree is more and more frequently required for supervisory or management-level positions. The MSW degree also brings higher salaries, as well as qualifying the graduate to pursue licensure as a Certified Social Worker (CSW) and/or a Licensed Clinical Social Worker (LCSW).

Anthropology Graduate Program

Graduate Program Director: Steven R. Simms
Program Office: Main 245, (435) 797-1277

The Department of Sociology, Social Work and Anthropology offers graduate work leading to the Master of Science degree in Anthropology with a Specialization in Archaeology and Cultural Resource Management.

Cultural Resource Management (CRM) archaeology provides industry and government agencies with an evaluation of heritage resources that by law must be "taken into account" prior to the alteration of our public landscapes. CRM is now an institutionalized element of the environmental management industry in the United States and in many other countries. Archaeologists identify and record all prehistoric and historic cultural resources, from ancient villages and camps, to pioneer cabins, 19th century gold mines, and human skeletons. Archaeologists help industry and agencies to find ways to protect what is of value by avoidance and occasionally by mitigation, and they facilitate land management. Federal and state laws and regulations govern the practice of archaeology by issuing permits, and a national Register of Professional Archaeologists certifies professional standards. The minimum degree requirement for the permits and the professional registry is a master's degree.

Department of Sociology, Social Work and Anthropology

Senior archaeologists working in CRM realize the need for graduate training to be more than applied archaeology. In order to produce career-path archaeologists, graduate training needs to include adequate knowledge of the scientific research contexts of archaeology, as well as experience in the conduct of research, to prepare students for careers, and not just as technicians in a transient labor force. The graduate program in Anthropology at Utah State University responds to the changing needs of archaeology and to recommendations of archaeologists in the CRM industry. The master's degree will also prepare students intending to pursue a PhD degree at another institution.

Following the recommendations of the 2006 SAA forum on graduate training in CRM, the program has been designed around the following performance goals:

1. The curricula should recognize the much broader scope of CRM and should incorporate business, ecology, and the legal/regulatory environment in which CRM archaeology exists.
2. Written and verbal communication skills should be gained.
3. Students should gain experience in the preparation of proposals and research design.
4. Basic applied field techniques, including survey, mapping, GPS, and sampling, should be taught.
5. Students should master basic applied techniques in data analysis, collections processing, and collections management.
6. Experience should be given in report preparation.
7. The graduate curricula should provide structured mentorships or internships with CRM companies and/or government agencies.

The Graduate Program in Anthropology has developed an *MS Anthropology Program Handbook* providing more details about the application process, financial assistance decisions, and graduation requirements. An electronic copy of this handbook will be posted on the Anthropology Program website during Spring 2009 at: <http://www.usu.edu/anthro/ms.htm/>

Application Requirements

The MS Program in Anthropology application has six main components:

1. A formal application form, available online at: <http://www.usu.edu/graduateschool/>
2. Transcripts from the applicant's undergraduate and graduate studies
3. Letters of reference from faculty or scholars who can attest to the applicant's abilities to succeed in graduate school
4. A resume
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 archaeology and cultural resource management is important to the applicant

6. 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

TOEFL scores are required for international candidates, with a minimum score of 600 (paper test) or 250 (computer-based test) deemed acceptable. The TSE examination 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 MS 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 MS Degree Program in Anthropology.

Students requesting financial support should apply *no later than* March 15. Applications to the program will be accepted through June 15. No application will be considered until all required information arrives in the School of Graduate Studies or until a formal petition to review a nearly complete file is made and approved.

All application materials should be sent directly to the School of Graduate Studies, 0900 Old Main Hill, Utah State University, Logan UT 84322-0900.

Degree Requirements

A minimum of 33 credits is required for the MS degree. Six credits for the Plan A Thesis or Plan B Professional Paper/CRM Report are included in the 33 minimum credits. A minimum overall GPA of 3.0 is required.

Core Courses (26 credits minimum)

The core courses for the MS degree in Anthropology with a Specialization in Archaeology and Cultural Resource Management include:

ANTH 6300 Archaeology Field School (Su) (3 cr) or	
ANTH 6700 Archaeology Internship (F,Sp,Su) (3 cr).....	3
ANTH 6310 Archaeology Lab (F,Sp,Su).....	1-3
ANTH 6340 Archaeology of the Western United States (F)	3
ANTH 6350 Archaeological Theory (F)	3
ANTH 6360 Research Design and Quantitative Methods in Archaeology (F)	3
ANTH 6370 GIS in Archaeology (Sp).....	3
ANTH 6390 Cultural Resources Management Policy (F).....	3
ANTH 6410 Writing for Archaeologists (F,Sp)	3
Collections Management course (under development)	

Elective Courses

ANTH 6250 Problems in Bioarchaeology (Sp).....	3
ANTH 6320 Zooarchaeology (Sp).....	3
ANTH 6330 Geoarchaeology (Sp)	3
ANTH 6380 Peopling of the New World (Sp).....	3
ANTH 6420 Lithic Analysis (F)	1
ANTH 6700 Archaeology Internship (F,Sp,Su) (if not taken in Core Courses).....	3
ANTH 6900 Independent Studies.....	1-3
GEO 6120 Advanced Geomorphology (Sp)	3
GEO 6680 Paleoclimatology (Sp).....	3

Thesis Preparation

ANTH 6970 Thesis Research (F,Sp,Su).....	1-12
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Department of Sociology, Social Work and Anthropology

Museum Certificate Program

An additional opportunity is available to students enrolled in the master's degree program. The Museum of Anthropology is a teaching unit under the program's umbrella that already offers a certificate in Museum Studies. The certificate program is unique among offerings at Utah's public and private institutions, in that a certificate can be earned as a complement to a bachelor's, master's, or PhD degree in any field. The 24-credit certification program, which features supporting coursework from nearly two dozen departments and programs across the USU campus, educates students in museum administration, collections management and care, and interpretation and exhibition skills.

Financial Assistance

Some financial assistance is available in the form of graduate assistantships. These funds are distributed through a competitive process, based on student qualifications, performance, and interests. In order to be considered for financial assistance for the next academic year, complete applications must be received no later than March 15. Decisions on graduate student funding are usually based on an overall evaluation of all six components of the application.

Career Opportunities

Nationwide the CRM industry is valued at several billion dollars per year. By the late 1990s, "60-70 percent of the membership of the Society for American Archaeology (SAA), and the Society for Historical Archaeology are engaged in cultural resources management." (SAA Bulletin 1997:20). An inventory of job listings on the SAA website during summer 2007 reveals that 82 percent of the advertised positions are in private or government sector CRM. In Utah there are more than 50 private companies holding archaeological permits, with 18 firms maintaining offices in the state. The Utah Division of State History reports that more than 1,700 archaeological field projects are conducted in the state each year. CRM is a thriving industry looking for qualified individuals, and the MS program in Anthropology at USU is specifically designed to provide the training and degree qualifications sought after by employers in both the public and private sectors.

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 "Eddy" Berry, demography, ecology, methods, urban
Raymond T. Coward, Provost of Utah State University; social gerontology, health care delivery, rural sociology
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
Richard S. Krannich, environmental, community, and rural sociology; research methods
Patricia M. Lambert, biological anthropology, bioarchaeology, paleopathology
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
Joseph A. Tainter, environmental anthropology, sustainability

Professors Emeritus

H. Bruce Bylund, social change, methods
Richley H. Crapo, religion, sex, and gender; sexuality and homosexuality
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
Terry L. Peak, social policy, health care, gerontology
Bonnie L. Pitblado, archaeology, lithics, peopling of the New World, museum studies

Clinical Associate Professor

Derrick Tollefson, MSW Program Coordinator, child welfare, family violence, research methods

Adjunct Associate Professor

Joanna L. Endter-Wada, cultural anthropology and natural resource policy and sociology

Assistant Professors

Carol M. Albrecht, educational attainment, research methods, social justice
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
Emily L. Jones, zooarchaeology, subsistence change, evolutionary ecology, environmental anthropology
David C. Kondrat, mental health, research methods, social justice
Susan E. Mannon, social inequality, sociology of development, gender
Sandra T. Marquart-Pyatt, environmental sociology, political sociology, methods
Christopher T. Morgan, archaeology, hunter-gatherers, evolutionary ecology, cultural geography, lithics
Peggy Petrzalka, environmental sociology, rural sociology, social change and development
Eric Reither, demography, health

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Clinical Assistant Professors

Shannon T. Browne, Assistant Practicum Director, child welfare, generalist practice

Sean H. Camp, foster care, adoption, gay and lesbian issues

Susan C. Egbert, child welfare, foster care, adoption

LaShawn C. Schultz, criminal justice, diversity, social justice

Adjunct Assistant Professors

Nazih T. Al-Rashid, sociology of work

Krista Lynn Minnotte, family sociology, gender

Lecturer

Jason Leiker, criminology and juvenile delinquency

Course Descriptions

Sociology (SOC), pages 652-655

Social Work (SW), pages 665-667

Anthropology (ANTH), pages 496-499

Department of Special Education and Rehabilitation

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Location: Emma Eccles Jones Education 313A
Phone: (435) 797-2382
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Graduate Program Coordinators:

Special Education Master's Programs:

Charles L. Salzberg, Education 326, (435) 797-3234,
c.salzberg@usu.edu

Rehabilitation Counseling Program:

Julie F. Smart, Education 322, (435) 797-3269, julie.smart@usu.edu

Doctoral Program:

Timothy A. Slocum, Education 314, (435) 797-3212,
tim.slocum@usu.edu

Multi-university Consortium in Sensory Impairments Coordinator:

Judith M. Holt, Center for Persons with Disabilities 196,
(435) 797-7157, judith@cpd2.usu.edu

Advising:

Advising and Student Teaching Coordinator:

Darcie L. Peterson, Education 371, (435) 797-3252,
darcie.peterson@usu.edu

Advisor:

Becky Morgan, Education 376, (435) 797-7575,
becky.morgan@usu.edu

Distance Education and Extension Program Coordinator:

Nancy K. Glomb, Education 327, (435) 797-3911,
nancy.glomb@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 Doctorate of Education (EdD) administered by the School of Teacher Education and Leadership (TEAL).

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 Elementary Education Program in the School of Teacher Education and Leadership (TEAL). A dual licensure program is available with secondary education content majors in the School of TEAL.

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. These programs are also approved candidate members of the Teacher Education Accreditation Council (TEAL).

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 Elementary Education Program and dual teaching majors with the Secondary Education Program, both of which are part of the School of TEAL. 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 3 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 30-35). 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 Emma Eccles Jones College of Education and Human Services Teacher Education Program (see page 128); (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 1 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.

Department of Special Education and Rehabilitation

GPA Requirement

A minimum GPA of 2.75 is required to apply for admission, to remain in good standing, and to graduate from the program. All required special education classes must be completed with a grade of C or better.

Bachelor's Degree in Special Education

Undergraduate study leads to the Bachelor of Science or Bachelor of Arts degree in Special Education with licensure to teach students with mild/moderate disabilities, severe disabilities, or early childhood special education. The degree requires a total of **120 credits**. The requirements are as follows:

A. University Studies Requirements

Competency Requirements (9-13 credits), Breadth Requirements (21 credits), and Depth Education Requirements (5 courses). For more information, see pages 67-75.

B. Professional Education Requirements (16-20 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 2600 Seminar in Early Childhood Education (Sp)	(2)
FCHD 2630 Practicum in Early Childhood Education (Sp)	(2)

(FCHD 2600 and 2630 are required *only* for students completing the Birth to Age 5 Certificate)

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. Most of the Special Education courses are presented in a hybrid format. Hybrid is a combination of live (face-to-face) classes and online classes. Courses vary in terms of how much content is online. For example, students may attend class every other week, and during the in-between weeks complete work using an online tool (e.g., Blackboard).

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. Students are encouraged to take courses which will prepare them for the PRAXIS exam.

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. Students are required to earn a grade of C or better in *all* teacher licensure courses. Students must retake any licensure course for which a grade of less than a C was received. Each student will be allowed to repeat a *maximum of only one* didactic, practica, or student teaching course.

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

Department of Special Education and Rehabilitation

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

¹After acceptance to the Special Education major and before beginning the practica, students are required to complete a background check for conviction of violating any law (except traffic violations).

²SPED 5200 should be taken during the senior year.

³Students 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.

Suggested Four-year Plans

Suggested semester-by-semester four-year plans for students working toward bachelor's degrees offered through the Department of Special Education and Rehabilitation can be found at:

<http://www.usu.edu/degreepans/>

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests.

Assessment and Accreditation

Information about assessment within the Department of Special Education and Rehabilitation, as well as information about TEAL and CORE accreditation, can be found at:

<http://sped.usu.edu/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@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 371). 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 36-37). In addition, the committee considers experience, academic record and curriculum, formal recommendations, and test scores. Special Education master's and doctoral program admission requires GRE scores. Rehabilitation Counseling master's program admission requires GRE or MAT 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.

Deadlines for application to the Special Education master's program and the Rehabilitation Counseling 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.

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, 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

Department of Special Education and Rehabilitation

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. Students may obtain an endorsement in Education Administration with their MEd program.

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 52-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.

Mission

The mission of the Master of Rehabilitation Counseling program is to promote quality rehabilitation services for individuals with disabilities through the education of rehabilitation professionals, provision of rehabilitation continuing education, and through research related to rehabilitation.

Objectives

Program objectives include:

1. Preparation of master's level counselors,
2. Promotion of the code of Professional Ethics, and
3. Advancement of the basic philosophical tenets of rehabilitation, including the value and worth of all individuals, a belief in human dignity, and the right of all persons to fully participate in society.

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, disabilities studies, and speech-language pathology. 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 services, rehabilitation services, and speech-language pathology.

Doctorate of Education (EdD)

The department participates in the Doctorate of Education (EdD) degree program administered by the School of Teacher Education and Leadership (TEAL). 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 admission requirements, procedures to follow, and research sponsored, as well as other information, see pages 234-235 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

For additional information regarding the Special Education and Rehabilitation graduate programs, 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

Charles L. Salzberg, applied behavioral analysis, single-subject research design, research on teacher training, employment preparation for persons with disabilities, video assisted training programs, paraeducator training, and students with disabilities in higher education

Julie F. Smart, rehabilitation counseling, disability studies, Hispanics with disabilities, Spanish translation of rehabilitation instruments, multicultural rehabilitation

Richard P. West, behavior analysis in education, computer-based decision making, parent training, school organization and administration

Adjunct Professors

Ron Gillam, language development, language assessment and intervention, narrative development, memory, phonological representation

Stephanie Peterson, applied behavior analysis, problem behavior, functional analysis, choice making, concurrent operants, functional communication training, teacher training, developmental disabilities

Professors Emeritus

Garth M. Eldredge, rehabilitation counseling

Alan M. Hofmeister, technology, school reform, reading and math instruction

Sarah Rule, early intervention, developmental disabilities, technology and teacher education

Associate Professors

Thomas S. Higbee, early childhood, severe disabilities, autism

Judith M. Holt, early childhood and visually impaired

Ronda R. Menlove, special education, educational leadership, special education law, distance education

Department of Special Education and Rehabilitation

Timothy A. Slocum, reading, mild/moderate disabilities, behavior analysis, research methods

Research Associate Professor

Marilyn Likins, paraeducators, mild/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

Sarah Bloom, applied behavior analysis, functional analysis of severe behavior disorders, assessment and treatment of problem behavior, verbal behavior, early childhood, single-subject research design
Nancy K. Glomb, mild/moderate disabilities, distance education
Thomas S. Higbee, early childhood, severe disabilities, autism
Alan Lott, rehabilitation counseling
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
Andrew Samaha, functional assessment, descriptive analysis, caregiver training, autism, translational research, and treatment fidelity

Adjunct Assistant Professors

Melina Alexander, mild/moderate special education, math education, distance education
Martin E. Blair, special education policy, assistive technology, disability policy research, disability and health
Norman Corson, job placement of persons with disabilities
Janice Neibaur Day, educational issues for children with visual impairments including early literacy, family issues and needs, and assistive technology
David E. Forbush, mild/moderate disabilities, reading, behavior analysis in schools, assessment, educational systems change, educational leadership
Karen T. Kowalski, special education law, behavior, issues in social justice

Julie Landeen, legal issues in special education, special education administration

Martell Menlove, special education administration

Lowell K. Oswald, response to intervention, behavior and emotional problems in school settings, assistive technology, school district administration

Randy Schelble, mild/moderate disabilities

Bruce Schroeder, collaboration, special education administration, special education personnel development

Clinical Instructors

Barbara J. Fiechtl, preschool and infant service delivery

Tami W. Pyfer, severe and preschool special education, development

Kimberly H. Snow, curriculum development

Adjunct Clinical Instructors

Kirk Allen, emotionally disturbed, special education administration

Deanna Avis, paraeducators, curriculum and assessment

Deb Bowen, vocational rehabilitation and transition

Alma Brown, classroom/behavior management and emotional behavior disorders, effective classroom instruction

Marlene Deer, preschool special education, naturalistic instruction

disorders, effective classroom instruction

Cindy Myers, moderate and severe disabilities, alternative teacher preparation

Lois Naegele, American Sign language, deaf culture, rehabilitation counseling

Tammy Pettigrew, mild/moderate disabilities, direct instruction, new special education teacher induction, effective classroom instruction/classroom management

Adjunct Lecturers

Gayle Baker, severe disabilities

Glenn Dyke, behavior disorders, mild/moderate disabilities

Jeri Rigby, mild/moderate disabilities

Clinical Instructor Emeritus

Joan F. Forsgren-White

Course Descriptions

Special Education (SPED), pages 658-663

Rehabilitation Counseling (REH), pages 648-650

Department of Theatre Arts

Interim Department Head: Craig D. Jessop

Location: Chase Fine Arts Center 232

Phone: (435) 797-3046

FAX: (435) 797-0086

E-mail: luann.baker@usu.edu

WWW: http://theatre.usu.edu/

Undergraduate Advisors:

General Theatre Arts Studies Program:

Colin Johnson (history, literature), University Reserve 129,
(435) 797-3046, colin.johnson@usu.edu

Theatre Design and Technology Emphasis:

Bruce L. Duerden (light design, tech), Fine Arts Center 148,
(435) 797-3026, bruce.duerden@usu.edu

Shawn Fisher (set design), Fine Arts Center 139D, (435) 797-2120,
shawn.fisher@usu.edu

Dennis Hassan (set design), Fine Arts Center 138, (435) 797-3024,
dennis.hassan@usu.edu

Nancy E. Hills (costume design), Fine Arts Center 229A,
(435) 797-3049, nancy.hills@usu.edu

Acting Emphasis:

Kevin Doyle, Fine Arts Center 139A, (435) 797-3022,
kevin.doyle@usu.edu

Lynda Linford, Fine Arts Center 226A, (435) 797-3050,
lynda.linford@usu.edu

Adrienne Moore, Fine Arts Center 230, (435) 797-3023,
adrienne.moore@usu.edu

Theatre Education Emphasis:

Robbin C. Black, University Reserve 125, (435) 797-0087,
robbin.black@usu.edu

Graduate Program Coordinator:

Shawn W. Fisher, Fine Arts Center 139D, (435) 797-2120,
shawn.fisher@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 prepare students for advanced study and training;
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 sponsor public performances in which students can practice
the art and craft of theatre and interpretive/narrative performance.
These productions enhance the cultural life of the University
community and region;
5. To teach appreciation and service courses contributing to the
University Studies Program.

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 370-seat proscenium Caine Lyric Theatre in downtown
Logan, and a flexible 90-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 30-35. Students in good standing may apply for
admission or transfer to the program. Students wishing to transfer into
the department must first meet with and be officially accepted by the
department head, and 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 early in the
semester, as the professional BFA degree requires a minimum of three
full years to complete. All students enter the department as BA degree
majors. 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 *B-* is accepted in any required 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. (**Note:** Courses may not be taught during every semester
listed.)

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 (CI) 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 major and minor students are expected to work on all
Utah State Theatre productions. All Theatre Arts majors are required
to complete 6 credits of production practicum. Production work will
be assigned based on the needs of productions and to give students
a variety of practical experience. Lower-division students register for

Department of Theatre Arts

THEA 2555/2556, while upper-division students register for THEA 4750/4850. Students should register for one production practicum each semester, except for the semesters they take THEA 1513 and their Senior Project semester. **Note:** Additional production work is required for some emphasis areas.

THEA 2555/4750/4850 Production Practicum (F,Sp,Su)	1
THEA 2555/4750/4850 Production Practicum (F,Sp,Su)	1
THEA 2555/4750/4850 Production Practicum (F,Sp,Su)	1
THEA 2555/4750/4850 Production Practicum (F,Sp,Su)	1
THEA 2555/4750/4850 Production Practicum (F,Sp,Su)	1
THEA 2556/4750/4850 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 pages 76-77). 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)

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 all courses required for major and emphasis area

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)	2
THEA 2420 Intermediate Acting: Scene Study (F,Sp)	3
THEA 2430 Movement for Actors II (F,Sp)	2
THEA 2440 Introduction to Dance for Theatre: Jazz, Ballet, and Tap (F,Sp)	2
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 3410 Dance for Theatre: Tap (F,Sp)	1
THEA 3420 Dance for Theatre: Jazz (F,Sp)	1
THEA 3440 Dance for Theatre: Ballet (F,Sp)	1
THEA 5410 Advanced Directing (F,Sp)	3

Required Design Courses (select 3 credits minimum)

THEA 2540 Lighting Design (F,Sp)	3
THEA 3050 Period Styles/Historic Interiors (F,Sp)	3
THEA 3510 Scene Design (F,Sp)	3
THEA 3520 Stage Costume Design (F,Sp)	3
THEA 3570 Historic Clothing (F,Su)	3

Required Dramatic Literature/History Courses (9 credits)

ENGL 2300 (BHU) Introduction to Shakespeare (F)	3
THEA 5240 (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 and related art disciplines, as well as strengthen their practice of theatre. (See minor department for specific requirements.)

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 (CI) 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,Su) (1-3 cr, repeatable) or

THEA 2556 Production Run Crew (F,Sp) (1 cr, repeatable) or

THEA 4850 Advanced Production Projects (F,Sp,Su) (1-3 cr, repeatable)

Department of Theatre Arts

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 pre-professional training in their selected discipline. Students in these programs also complete a capstone recital or project during their senior year. Inquiries about specific requirements and expectations should be directed to the Theatre Arts Office.

Acting Emphasis (AE) (77 Credits) (2.75 GPA) BFA Degree in Theatre Arts

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 all courses required for the emphasis area and *B-* in all other required courses required for the major

Candidates are accepted into this performance program through an audition and interview conducted by a BFA committee. Freshmen audition during their second semester, and transfer students audition during their first semester. All students *must* be declared Theatre Arts majors to be admitted to the BFA program. 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 required 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.

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 (21 credits)

THEA 1113 Beginning Voice (F).....	3
THEA 1430 Movement for Actors I (F,Sp).....	2
THEA 2420 Intermediate Acting: Scene Study (F,Sp).....	3
THEA 2440 Introduction to Dance for Theatre: Jazz, Ballet, and Tap (F,Sp).....	2
THEA 2480 Intermediate Voice for Theatre (Sp).....	3
THEA 2490 Intermediate Acting: Shakespeare (F,Sp).....	3

Students must complete 5 credits of performance practicum chosen from any of the following courses:

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

(select 9 credits minimum)

THEA 5400 Advanced Acting: Period Styles I (F,Sp).....	3
THEA 5420 Advanced Acting: Period Styles II (F,Sp).....	3
THEA 5430 Advanced Acting: Acting for the Camera (F,Sp).....	3
THEA 5440 Advanced Acting: Musical Theatre Auditions (F,Sp).....	3
THEA 5470 Advanced Acting: Modern Methods (F,Sp).....	3

Elective Movement Courses (select 4 credits minimum)

THEA 2430 Movement for Actors II (F,Sp).....	2
THEA 2470 Movement: Stage Combat (F,Sp).....	3
THEA 3410 Dance for Theatre: Tap (F,Sp).....	1
THEA 3420 Dance for Theatre: Jazz (F,Sp).....	1
THEA 3440 Dance for Theatre: Ballet (F,Sp).....	1

Elective Advanced Performance Courses

(select 6 credits minimum)

THEA 3450 (DHA) Dialects (F,Sp).....	3
THEA 4400 Company Workshop (F,Sp) (repeatable).....	3
THEA 4450 Advanced Voice for Theatre (Sp).....	3
THEA 5410 Advanced Directing (F,Sp).....	3

Required Design/Technical Course (2 credits)

THEA 1223 Stage Makeup (F,Sp).....	2
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Elective Theatre History/Literature

(select 12 credits minimum)

THEA 4250 Playwriting (Sp).....	3
THEA 5240 (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 Senior Project Requirements (2 credits)

All BFA Acting Emphasis majors must complete a senior project during their final year. Project material must be submitted in a written proposal to, and be approved by, the BFA performance faculty the semester prior to the project date. Students must be enrolled in THEA 5910 for 2 credits during the semester in which the project is to be presented.

Recitals should be 30-45 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. Acting students are required to attend all acting senior projects.

Required Senior Project

THEA 5910 Senior Project (BFA Performance Recital) (F,Sp).....	2
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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. To be accepted, 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.

Department of Theatre Arts

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

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 all courses required for the emphasis area and B- in all other required courses required for the major

Candidates are accepted into the design and technology emphasis by interview and review of a portfolio by a BFA committee. All students *must* be declared Theatre Arts majors to be admitted to the BFA program. 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 Period Styles/Historic Interiors (F,Sp)	3
THEA 3510 Scene Design (F,Sp)	3
THEA 3520 Stage Costume Design (F,Sp)	3
THEA 3570 Historic Clothing (F,Su)	3

Required Performance Courses (select 3 credits minimum)

THEA 2420 Intermediate Acting: Scene Study (F,Sp)	3
THEA 2470 Movement: Stage Combat (F,Sp)	3
THEA 2490 Intermediate Acting: Shakespeare (F,Sp)	3
THEA 2666 Performance Practicum I (F,Sp) (repeatable)	1
THEA 2667 Performance Practicum II (F,Sp) (repeatable)	1
THEA 4740 Advanced Performance Practicum I (F,Sp) (repeatable)	1-2
THEA 4840 Advanced Performance Practicum II (F,Sp) (repeatable)	1-2

Required Dramatic Literature/History Courses (select 6 credits minimum)

THEA/ENGL 4250 Playwriting (Sp)	3
THEA 5240 (C) 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 Design and Technology Senior Project Requirements (2 credits)

All students must complete a design/stage management project during their senior year. Students must be enrolled in THEA 5910 for 2 credits during the semester in which the project is presented. All design/project assignments will be chosen in consultation with the student's advisor and approved by the design faculty during the spring semester of the student's junior year.

THEA 5910 Senior Project (F,Sp)	2
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Specialization Requirements (25-31 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 (17-20 credits)

ARTH 2720 (BHU) Survey of Western Art: Renaissance to Post-Modern (Sp)	3
THEA 2510 Scene Painting (F,Sp)	3
THEA 4520 Advanced Costume Design (F,Sp)	3
THEA 5590 Design Studies for Theatre (F,Sp) (repeatable)	2
THEA 5900 Special Projects I (specialty courses) (F,Sp,Su) (repeatable)	6-9

Required Production Courses (8 credits)

THEA 4750 Advanced Production Practicum: Project in Costume Construction (F,Sp,Su) (repeatable)	1
THEA 4850 Advanced Production Projects: Project in Costume Construction (F,Sp,Su) (repeatable)	1
THEA 5750 Repertory Theatre Production (Su) (2-8 cr, repeatable) or	
THEA 5930 Special Projects III (F,Sp,Su) (1-4 cr, repeatable)	3
THEA 5920 Special Projects II: Assistant Design (F,Sp,Su) (repeatable)	3

Elective Art Courses (select 3 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
FCSE 2040 Clothing Production Principles (F,Sp)	3
FCSE 3040 Advanced Clothing Production Principles (F)	3

Lighting Design

Required Theatre Design/Technical Courses (14 credits)

THEA 2510 Scene Painting (F,Sp)	3
THEA 4540 Advanced Lighting Design (Sp)	3
THEA 5510 Computer-Aided Design for Theatre (F)	3
THEA 5590 Design Studies for Theatre (F,Sp) (repeatable)	2
THEA 5900 Special Projects I (specialty courses) (F,Sp,Su) (1-4 cr, repeatable)	3

Required Production Courses (8 credits)

THEA 4750 Advanced Production Practicum: Project in Lighting (F,Sp,Su) (repeatable)	1
THEA 4850 Advanced Production Projects: Project in Lighting (F,Sp,Su) (repeatable)	1
THEA 5750 Repertory Theatre Production (Su) (2-8 cr, repeatable) or	
THEA 5930 Special Projects III (F,Sp,Su) (1-4 cr, repeatable)	3
THEA 5920 Special Projects II: Assistant Design (F,Sp,Su) (repeatable)	3

Department of Theatre Arts

Elective Technology Courses (select 6 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 (Sp)	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

Scenic Design

Required Theatre Design/Technical Courses (14 credits)

THEA 2510 Scene Painting (F,Sp)	3
THEA 4510 Advanced Scene Design (F,Sp)	3
THEA 5510 Computer-Aided Design for Theatre (F)	3
THEA 5590 Design Studies for Theatre (F,Sp) (repeatable)	2
THEA 5900 Special Projects I (specialty courses) (F,Sp,Su) (1-4 cr, repeatable)	3

Required Production Courses (8 credits)

THEA 4750 Advanced Production Practicum: Project in Props, Scene Painting (F,Sp,Su) (repeatable)	1
THEA 4850 Advanced Production Projects: Project in Props, Scene Painting (F,Sp,Su) (repeatable)	1
THEA 5750 Repertory Theatre Production (Su) (2-8 cr, repeatable) or THEA 5930 Special Projects III (F,Sp,Su) (1-4 cr, repeatable)	3
THEA 5920 Special Projects II: Assistant Design (F,Sp,Su) (repeatable)	3

Elective Art Courses (select 3-6 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 (F)	3

Stage Management/Technician

Required Theatre Design/Technical Courses (14 credits)

HEP 2000 First Aid and Emergency Care (F,Sp,Su)	2
(or First Aid and CPR Certification)	
THEA 2510 Scene Painting (F,Sp)	3
THEA 2550 Stage Management (F,Sp)	3
THEA 2560 Theatre and Studio Sound (F,Sp)	3
THEA 5510 Computer-Aided Design for Theatre (F)	3

Required Production Courses (8 credits)

THEA 4750 Advanced Production Practicum: Project in Props, Run Crew (F,Sp,Su) (repeatable)	1
THEA 4850 Advanced Production Projects: Project in Props, Run Crew (F,Sp,Su) (repeatable)	1
THEA 5750 Repertory Theatre Production (Su) (2-8 cr, repeatable) or THEA 5930 Special Projects III (F,Sp,Su) (1-4 cr, repeatable)	3
THEA 5920 Special Projects II: Assistant Stage Management (F,Sp,Su) (repeatable)	3

Elective Courses (select 6 credits minimum)

Students should choose from the electives for their specialization.

Stage Management Electives:

BUS 3110 (DSS) Management Fundamentals	3
MGT 1160 Developing Self-Management Skills (F,Sp,Su)	1
MGT 2350 Small Business Management	3
MGT 3110 (DSS) Managing Organizations and People (F,Sp,Su)	3
MGT 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

Technician Electives:

ECE 1000 Introduction to Electrical and Computer Engineering (F)	2
ECE 2250 Electrical Circuits (F,Sp)	4
ETE 1040 Construction and Estimating (Sp)	3
ETE 1200 Computer-Aided Drafting and Design (F,Sp)	3
ETE 1640 Introduction to Welding (F)	3
ETE 2850 Statics and Strength of Materials (F)	3
THEA 5590 Design Studies for Theatre (F,Sp) (repeatable)	2

Sound Design

Required Theatre Design/Technical Courses (9 credits)

THEA 2560 Theatre and Studio Sound (F,Sp)	3
THEA 5510 Computer-Aided Design for Theatre (F)	3
THEA 5900 Special Projects I: Advanced Sound Design (1-4 cr, repeatable)	3

Required Music Courses (6 credits)

MUSC 1010 (BCA) Introduction to Music (F,Sp,Su)	3
MUSC 1100 (BCA) Fundamentals of Music (F,Sp)	3
(or participation in Music Ensemble)	

Required Production Courses (8 credits)

THEA 4750 Advanced Production Practicum: Project in Sound (F,Sp,Su) (repeatable)	1
THEA 4850 Advanced Production Projects: Project in Sound (F,Sp,Su) (repeatable)	1
THEA 5750 Repertory Theatre Production (Su) (2-8 cr, repeatable) or THEA 5930 Special Projects III: Project in Theatre (F,Sp,Su) (1-4 cr, repeatable)	3
(or Internship)	
THEA 5920 Special Projects II: Assistant Design (F,Sp,Su) (repeatable)	3

Elective Courses (select 4 credits minimum)

MUSC 3320 Psychology of Music I (Sp)	2
MUSC 3360 MIDI Studio Techniques (Sp)	2
MUSC 3370 Sound Recording and Reinforcement Techniques (Sp)	2
THEA 1113 Beginning Voice (F)	3
THEA 2480 Intermediate Voice for Theatre (Sp)	3
THEA 3450 (DHA) Dialects (F,Sp)	3

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. Coursework will be selected in consultation with student's minor advisor. 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) (1 cr, repeatable) and THEA 4850 Advanced Production Projects (F,Sp,Su) (1-3 cr, repeatable)	3

Department of Theatre Arts

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)

Theatre Courses (44 credits) + STEP (35 credits)

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 all courses required for major and emphasis area

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 Emma Eccles Jones 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/ENGL 4250 Playwriting (Sp)	3
THEA 5240 (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

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)	2
THEA 2420 Intermediate Acting: Scene Study (F,Sp)	3
THEA 2430 Movement for Actors II (F,Sp)	2
THEA 2440 Introduction to Dance for Theatre: Jazz, Ballet, and Tap (F,Sp)	2
THEA 2490 Intermediate Acting: Shakespeare (F,Sp)	3
THEA 3410 Dance for Theatre: Tap (F,Sp)	1
THEA 3420 Dance for Theatre: Jazz (F,Sp)	1
THEA 3440 Dance for Theatre: Ballet (F,Sp)	1
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) (1 cr, repeatable)	1-2
THEA 4750/4850 Advanced Production Practicum (F,Sp,Su) (1-3 cr, repeatable)	1-3

BFA Theatre Education Senior Project Requirements

During their senior year, students in the Theatre Education emphasis must complete a project 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 Program of the School of Teacher Education and Leadership (TEAL), Emma Eccles Jones 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 Program website:
<http://secondaryeducation.usu.edu>

Department of Theatre Arts

Minor Teaching Subject Area (Required)
(approximately 20-30 credits, depending on subject)
Students must complete a University-approved teaching minor.

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) (1 cr, repeatable)..... 1-2
THEA 4750 Advanced Production Practicum (F,Sp,Su)
(1-3 cr, repeatable)..... 1-3

Sample Four-year Plans

Sample semester-by-semester four-year plans for students working toward bachelor's degrees within the Department of Theatre Arts can be found at: <http://www.usu.edu/degreeplans/>

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests.

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, *except* those in the General Theatre Arts Studies BA program, are required to complete a project or recital appropriate to their area of emphasis in their senior year.

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.

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 within 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@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:

Department of Theatre Arts

THEA 1033 Beginning Acting (F,Sp)	3
THEA 1513 Stage and Costume Crafts (F,Sp)	3
THEA 2410 Directing (F,Sp)	3
THEA 3230 (CI) 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 (in this case 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 page 117).

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
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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 (<i>Topics include: Drafting for Theatre, Tailoring, Pattern Drafting, Structural Design for the Stage, Costume Crafts</i>) (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
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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 culminating phases.

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II. Project Phase (approximately three semesters) (35 credits)

A. Design Studies (complete 2 credits each semester) (6 credits)

THEA 6590 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 A3
 THEA 6920 Project in Theatre B3
 THEA 6920 Project in Theatre C3

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 proposal 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.)

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: luann.baker@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
Adrienne Moore, voice, acting, directing

Associate Professor Emeritus

Arthur Y. Smith, interpretation, theatre education

Assistant Professor

Shawn W. Fisher, design, technical generalist

Lecturer

Robbin C. Black, theatre appreciation, theatre education

Course Descriptions

Theatre Arts (THEA), pages 671-674

Interdepartmental Program in Toxicology

Director: Roger A. Coulombe, Jr.
Location: Animal Science 213
Phone: (435) 797-1600
FAX: (435) 797-1601
E-mail: roger.coulombe@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 Climate (PSC). 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. Pependorf, 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 (PSC)
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@aggiemail.usu.edu
WWW: http://www.cnr.usu.edu/wats

Undergraduate Advisor: Maureen A. Wagner, Natural Resources
120, (435) 797-2448, maureen.wagner@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 138-139).

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 Management (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	4
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su)	3

Department of Watershed Sciences

B. Fisheries Courses (16 credits)

WATS 3100 (CI) Fish Diversity and Conservation (F)	3
WATS 3110 Fish Diversity Laboratory (F)	1
WATS 4310 Wetland Ecology and Management (Sp)	3
WATS 4650 Principles in Fishery Management (Sp)	3
WATS 5200 Fish Habitat Relationships in Managed Forests (F)	3
WATS/BIOL 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 5930 Geographic Information Analysis (Sp)	3
Approved Natural Resources Capstone Experience	3

D. Directed Elective Courses (20 credits)

Students must choose a minimum of 20 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 (Sp)	3
POLS 4820 (DSS) Natural Resources and Environmental Policy: Political Economy of Environmental Quality (Sp)	3
WATS 3000 Oceanography (Sp)	3
WATS/CLIM 3820 (QI) Climate Change (Sp)	3
WATS/GEO 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 67-75) should be consulted to ensure meeting University Studies Requirements.

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.

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 4310 Wetland Ecology and Management (Sp)	3
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/BIOL 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)	4
WATS/CLIM 3820 (QI) Climate Change (Sp)	3
WATS/GEO 5150 Fluvial Geomorphology (F)	3
WATS/GEO 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 5760 Remote Sensing: Modeling and Analysis (Sp)	3
WATS 5930 Geographic Information Analysis (Sp)	3
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/SOIL 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 67-75) 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>

Geographic Information Science Minor Requirements (17-18 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 (9-10 credits)

Select three courses from the following:

CEE 6440 Geographic Information Systems in Water Resources (F).....	3
WATS 5250 Remote Sensing of Land Surfaces (Sp).....	4
WATS 5760 Remote Sensing: Modeling and Analysis (Sp)	3
WATS 5930 Geographic Information 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/CLIM 3820 (DSC/QI) Climate Change (Sp)	3
WATS 4500 Limnology: Ecology of Inland Waters (Sp)	3
WATS/GEO 5150 Fluvial Geomorphology (F).....	3
WATS 5640 Riparian Ecology and Management (Sp)	3

Recommended Four-year Plans

Recommended semester-by-semester four-year plans for students working toward bachelor's degrees within the Department of Watershed Sciences can be found at:
<http://www.usu.edu/degreplans/>

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests.

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 310.

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/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.

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

Department of Watershed Sciences

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 391.

Financial Assistance

General aspects of financial support for graduate students at Utah State University are listed on pages 111-112 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 112.

Watershed Sciences Faculty

Professors

Todd A. Crawl, 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
Helga Van Miegroet, wildland soils and biogeochemistry
Wayne A. Wurtsbaugh, limnology, fish ecology, and watershed biogeochemistry

Adjunct Professors

Christopher Neale, remote sensing
David G. Tarboton, geomorphology, hydrology
Peter R. Wilcock, sediment transport and geomorphology

Professor Emeritus

John M. Neuhold, fisheries biology

Associate Professors

Phaedra E. Budy, assistant leader, fisheries, Utah Cooperative Fisheries and Wildlife Research Unit, fisheries management and conservation
Nancy O. Mesner, water quality, water policy, and modeling
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

Assistant Professors

Nicholas Allmendinger, hydrology, stream restoration
Jiming Jin, remote sensing and analysis, global climate modeling
Karin Kettenring, wetland ecology

Research Assistant Professors

Nicolaas W. Bouwes, Jr., fisheries management, aquatic ecology
Brett Roper, USDA Forest Service Aquatic Monitoring Center Program Leader, aquatic ecologist

Adjunct Assistant Professors

Jayne Brim-Box, population genetics and conservation biology
Robert E. Gresswell, aquatic ecology and fish biology
Simon J. McKirdy, plant biosecurity
Scott Miller, freshwater and riparian ecology, stream restoration, and biomonitoring
David Naftz, geochemist
Michael J. Paul, bioassessment and stream ecosystem function
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 675-678

Department of Wildland Resources

Department Head: Johan du Toit
Location: Natural Resources 206
Phone: (435) 797-3219
FAX: (435) 797-3796
E-mail: lana.barr@usu.edu
WWW: <http://www.cnr.usu.edu/wild>

Undergraduate Advisor:

Maureen A. Wagner, Natural Resources 120, (435) 797-2448,
maureen.wagner@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 138-139.

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 67-75), 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).....	4
STAT 2000 (QI) Statistical Methods (F,Sp) (3 cr) or	
STAT 3000 (QI) Statistics for Scientists (F,Sp,Su) (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 (F,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 3800 Wildland Ecosystems (Sp).....	3
WILD 3810 Plant and Animal Populations (Sp).....	3
WILD 4750 (CI) Monitoring and Assessment in Natural Resource and Environmental Management (F).....	3
WILD 4850 Vegetation and Habitat Management (F).....	3
WILD 4900 Managing Dynamic Ecological Systems (Sp).....	3
WILD 4910 Assessment and Synthesis in Natural Resource Science (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:

Department of Wildland Resources

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>

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. Degree Program Courses (32 credits)

ENVS 3000 Natural Resources Policy and Economics (F)	4
ENVS 3300 Fundamentals of Recreation Resources Management (F)	3
ENVS 4000 (DSS) Human Dimensions of Natural Resource Management (F)	3
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>

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 19 credits of *Degree Program Courses* and 16 credits of *Degree Program Electives*, including the following:

A. Degree Program Courses (19 credits)

ADVS 2080 Beef Production Practices (Sp) (2 cr) or	
ADVS 2090 Sheep Production Practices (Sp) (2 cr)	2
ENVS 3000 Natural Resources Policy and Economics (F)	4
ENVS 4000 (DSS) Human Dimensions of Natural Resource Management (F)	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. Degree Program Electives (16 credits)

Students must meet with their advisor to plan a program of study for their 16 credits of degree program electives. Program option areas may include: agribusiness management, animal science, geographic information science, soil science, watershed science, and wildlife science. Students wanting to pursue employment with the Bureau of Land Management, U.S. Forest Service, Natural Resources Conservation Service, and other federal land management agencies should review the suggested electives listed below.

Suggested Electives for Federal Employment

Students wanting to qualify as a rangeland management specialist or soil conservationist with a federal land management agency should check the U.S. Office of Personnel Management website.

A listing of required coursework for the **Rangeland Management Series** (GS-454) is shown at:

<http://www.opm.gov/qualifications/SEC-IV/B/GS0400/0454.HTM>

In addition to several of the courses listed under the *General Science Foundation, Departmental Common Courses, and Degree Program Courses* sections, students must also take the following courses to meet the minimum requirements for the Rangeland Management Series:

Directly Related Plant Science Courses (select 2 courses)

BIOL 4400 (QI) Plant Physiology (F)	4
BIOL 4420 Plant Taxonomy (Sp odd, Su even)	3
PLSC 5550 Weed Biology and Control (F)	4
WILD 4950 ST: Dendrology (F)	3

Related Resource Management Courses (select 1 course)

ENVS 3300 Fundamentals of Recreation Resources Management (F)	3
PLSC 4320 Forage Production and Pasture Ecology (F)	3
WATS 5640 Riparian Ecology and Management (Sp)	3
WILD 4500 Principles of Wildlife Management (Sp)	3
WILD 5300 Wildlife Damage Management Principles (Sp)	3
WILD 5710 Wildland Disturbance: Ecology and Management (F)	3

A listing of required coursework for the **Soil Conservation Series** (GS-457) is shown at:

<http://www.opm.gov/qualifications/SEC-IV/B/GS0400/0457.HTM>

Department of Wildland Resources

In addition to several of the courses listed under the *General Science Foundation*, *Departmental Common Courses*, and *Degree Program Courses* sections, students must also take the following course to meet the minimum requirements for the Soil Conservation Series:

Plant Science Course
PLSC 5550 Weed Biology and Control (F)..... 4

C. General 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.

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 22 credits of Degree Program Courses, including the following:

A. Degree Program Courses (22 credits)

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 (CI) 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>

Recommended Four-year Plans

Recommended semester-by-semester four-year plans for students working toward bachelor's degrees within the Department of Wildland Resources can be found at: <http://www.usu.edu/degreetplans/>

Students should consult with their advisor to develop a plan of study tailored to their individual needs and interests.

Financial Assistance

The main opportunities for undergraduates to find financial support through grants, work-study, and loans are listed on pages 46-47 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 310.

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/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 391.

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 36-37. 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.

Department of Wildland Resources

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 116. 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 111-112 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/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
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 R. Kuhns, forestry extension specialist, urban forestry, tree physiology
James N. Long, forest ecology, silviculture
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
R. Douglas Ramsey, remote sensing, geographic information systems, landscape ecology, spatial analysis
Terry L. Sharik, academic administration and leadership, teaching and learning pedagogy, forest ecology
Helga Van Miegroet, forest soils and biogeochemistry
Michael L. Wolfe, wildlife ecology and management

Adjunct Professors

Mark W. Brunson, social and psychological aspects of forest and rangeland management
Douglas A. Johnson, plant ecophysiology

Professors Emeritus

Thadis W. Box, range management
Martyn M. Caldwell, plant physiological ecology
John A. Kadlec, wetlands ecology, wildlife management
Frederick F. Knowlton, National Wildlife Research Center, predator ecology, behavior and management
Ronald M. Lanner, forest genetics, dendrology
John C. Malechek, rangeland management
Frederic H. Wagner, wildlife ecology, natural resources policy

Department of Wildland Resources

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
Karen H. Beard, community ecology, ecosystem ecology, conservation biology
Christopher A. Call, vegetation manipulation/management
Richard C. Etchberger, wildlife-habitat interactions, natural resource education
Eric M. Gese, National Wildlife Research Center, predator behavior and ecology
Michael J. Jenkins, disturbance ecology and management, insects, fire, snow avalanches
Karen E. Mock, conservation genetics and applied molecular ecology
Ronald J. Ryel, plant physiological ecology
Eugene W. Schupp, plant population ecology and restoration ecology
John A. Shivik, National Wildlife Research Center, predator ecology

Adjunct Associate Professors

Dale L. Bartos, forest ecology, aspen conservation
Barbara J. Bentz, forest entomology
D. Layne Coppock, animal production systems/technology transfer and international pastoral development
Thomas A. Jones, native grass breeding
Kenneth C. Olson, grazing livestock nutrition
James A. Pfister, poisonous range plants
Michael H. Ralphs, poisonous plants/grazing management
Robert H. Schmidt, wildlife policy, wildlife damage management

Associate Professors 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
Brent D. Bibles, wildlife ecology
Frank P. Howe, avian ecology and management, riparian and shrubsteppe ecology, Utah Division of Wildlife Resources University Liaison
David N. Koons, animal population ecology

Research Assistant Professors

Mary M. Conner, wildlife population ecology
Patricia Cramer, transportation ecology, wildlife connectivity, carnivore and ungulate movement
Shandra Nicole Frey, Berryman Institute, resolution of human-wildlife conflict
Juan J. Villalba, foraging behavior

Adjunct Assistant Professors

Tamsin C. McCormick, desert ecology
Thomas A. Monaco, research ecologist
Ben C. West, wildlife damage management

Assistant Professor Emeritus

Barrie K. Gilbert, wildlife ethology, behavioral ecology

Course Descriptions

Wildland Resources (WILD), pages 679-682

Women and Gender Studies

Director: Brenda Cooper
Location: Animal Science 319C
Phone: (435) 797-3253
E-mail: brenda.cooper@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 a variety of faculty members from a variety of disciplines, including Anthropology, Biology, Journalism and Communication, English, Fine Arts, Health and Physical Education, History, Languages, Psychology, 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 (BSS) 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 (F,Sp).....	3
ARTH 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 3070/6700 Perspectives in Folklore: Gender Focus (F,Sp,Su)....	3
ENGL 3300 Period Studies in American Literature:	
Gender Focus (F,Sp)	3
ENGL 3510 Young Adult Literature: Gender Focus (F,Sp).....	3
ENGL 3520 Multicultural American Literature: Gender Focus (F,Sp)....	3
ENGL 3620 Native American Studies: Gender Focus (F,Sp).....	3
ENGL/HIST/RELS 3710 (CI) Folklore Colloquium:	
Gender Focus (Sp).....	3
ENGL 4320 British Writers: Gender Focus (F,Sp).....	3
ENGL 4350 Studies in Poetry: Gender Focus (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: Gender Focus (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: Gender Focus (F,Sp).....	3
ENVS 4950/6900 Special Topics: Gender and Environments (Sp).....	3
FCHD 3110 Human Sexuality (F,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
SOC 3010 Social Inequality (F,Sp).....	3
SOC 4370 Sociology of Gender (F).....	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 Topics of Spanish Literature: Gender Focus (F,Sp).....	3
SPAN 4910 Topics of Latin American Literature:	
Gender Focus (F,Sp).....	3
WGS 2010 Women and Leadership (Sp).....	3
WGS/JCOM 4410/6410 Gender and the Mass Media (F).....	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 679