

College of Agriculture

Dean: Noelle E. Cockett
Location: Agricultural Science 221
Phone: (435) 797-2201
FAX: (435) 797-3268
E-mail: noelle.cockett@usu.edu
WWW: http://www.ag.usu.edu

Associate Dean for Academic Programs:
Gary S. Straquadine, Agricultural Science 223A, (435) 797-3521,
garys@cc.usu.edu

**Associate Dean for Research and
Director, Agricultural Experiment Station:**
H. Paul Rasmussen, Agricultural Science 225, (435) 797-2207,
paul.rasmussen@usu.edu

The College of Agriculture includes the following departments:

Agricultural Systems Technology and Education (ASTE)
Animal, Dairy and Veterinary Sciences (ADVS)
Economics (Econ)
(jointly administered with the College of Business)
Nutrition and Food Sciences (NFS)
Plants, Soils, and Biometeorology (PSB)

Degrees and curriculum options are listed in the *Instructional Units and Programs* section of this catalog. In addition to programs in the departments, the interdepartmental MS and PhD degrees in Toxicology involve more than one department.

Agriculture today is a dynamic, rapidly changing industry. It includes more than farming or producing food and fiber. It embodies all the occupations connected with the research, production, processing, marketing, and distribution of food and fiber products.

Agriculture is the nation's largest industry. Of the 131 million people employed in the United States, about 21 million (16 percent) work in agriculture or an agriculture-related industry. This includes about half a million scientists who serve agriculture directly or indirectly. The agricultural industry is the biggest buyer, seller, and borrower in the United States, and it has the largest investment of any industry.

Today's agriculture offers graduates challenging opportunities in a highly technological and competitive society. Students must be prepared to interact in such a society when they complete their formal education.

The success of various curricula in agriculture is manifest by the achievements of the graduates. They are setting new standards for agricultural production and in positions as professional specialists, teachers, research investigators, and leaders in agriculture and related industries locally, nationally, and internationally.

Education in agriculture includes fundamental science, as well as applied business and technology. Many graduates continue their education for advanced degrees and other specialized education and training.

Admission Requirements

Undergraduate students accepted in good standing by the University are eligible for admission to the College of Agriculture.

Facilities and Equipment

The E. G. Peterson Agricultural Science Building houses the administrative offices of the College of Agriculture; the Agricultural Experiment Station; University Extension; the Animal, Dairy and Veterinary Sciences Department; and the Plants, Soils, and Biometeorology Department. The Animal, Dairy and Veterinary Sciences Department personnel are housed in the Agricultural Science Building, the Animal Sciences Building, the Biotechnology Center, the Skaggs Laboratory, the Veterinary Science Building, the South Farm, and the Caine Dairy. The Agricultural Systems Technology and Education Department is located in the Agricultural Systems Technology and Education Building. The Family and Consumer Sciences Education faculty and classes are located in the Family Life Building. The Economics Department is housed in the George S. Eccles Business Building. The Department of Nutrition and Food Sciences is housed in the C. A. Ernstrom Nutrition and Food Sciences Building. Some classes and laboratories are located on Agricultural Experiment Station facilities near the campus, where research and teaching interact. Research units located in more distant areas of the state provide research opportunities for graduate students and faculty members.

Curricula in Agriculture

Students may work toward the Bachelor of Science degree in any of the departments of the College of Agriculture.

Preveterinary training is offered in the Department of Animal, Dairy and Veterinary Sciences. Teacher certification can be completed through the ASTE Department in either Agricultural Education or Family and Consumer Sciences Education.

There are four basic curricula offered by most departments: (1) science, (2) production, (3) business, and (4) community development/technology transfer.

Departmental listings detail the requirements for earning a degree in these curricula.

Science

Students who choose the science curriculum learn the fundamentals of physical and biological sciences that are significant to agriculture, including biotechnology and genomics. In the basic science courses, students prepare themselves for graduate work and eventually research and teaching careers in the natural sciences. Graduates in science curricula are also prepared to do research or technical work in agriculturally oriented businesses such as farm chemicals, livestock health, feed processing and marketing, crop breeding, water use, and food processing. Science curricula are offered in the Departments of Animal, Dairy and Veterinary Sciences; Nutrition and Food Sciences; and Plants, Soils, and Biometeorology.

Production

This curriculum is designed to educate students to meet the special demands of today's agriculture. Successful modern agricultural production requires an understanding of the latest scientific knowledge and an ability to apply the information. The production curriculum will satisfy the needs of a student who plans to be involved in production agriculture, to be a farm manager, or to work directly with farm operators as a businessman or as a government or farm organization employee. This curriculum is offered in the Departments of Agricultural Systems Technology and Education; Plants, Soils, and Biometeorology; and in the animal and dairy emphases of the ADVS Department.

College of Agriculture

Business

The businesses and industries that buy from, sell to, and provide service for people involved in production agriculture are expanding the need for employees educated in agriculture. These enterprises include feed, fertilizer, machinery, and chemical firms that supply the producer's needs, as well as marketing firms that assemble, process, ship, and merchandise agricultural products. Managers of large-scale farm enterprises also profit from the kind of education provided by the business curriculum. Students who want to capitalize on their agricultural background while pursuing a business or industrial career should consider the business option. This curriculum is offered in the Departments of Economics; Agricultural Systems Technology and Education; Nutrition and Food Sciences; Plants, Soils, and Biometeorology; and in the animal and dairy emphases of the ADVS Department.

Community Development/Technology Transfer

The community development/technology transfer curriculum allows for skill development in serving communities through teaching, research, entrepreneurship, leadership, and resource management. Family and consumer development is at the core of the community. The Family and Consumer Sciences Education program prepares individuals to lead in this area. Agribusiness management will enhance communities, especially rural, agrarian locations. A degree in Agribusiness or Agricultural Systems Technology will position a graduate to lead.

Interdepartmental and intercollege cooperation has and will continue to facilitate the development of various other curricula. Students should not hesitate to inquire about the possibilities of following a curriculum that would allow for special interests. The College of Agriculture participates in the Interdisciplinary Studies Major (see pages 342-343), which offers flexibility for qualifying students who cannot find an existing degree that meets their needs. Advisors in each department are available and should be consulted for guidance in scheduling classes and in planning careers.

Financial Support

The College of Agriculture and the agricultural industry in the Intermountain West annually sponsor more than 150 scholarships, internships, and assistantships. The college and the local agribusinesses also support many students through work experience programs. For further information, contact the College of Agriculture Dean's Office (Agricultural Science 221) and/or individual department offices.

Safety and Liability in Classes and Laboratories

Certain classes and laboratories involve a risk of bodily injury or of damage to clothing. Students should take appropriate precautions and wear suitable protective clothing. Some of the risks include handling or being near animals, slick floors or corrals, use of toxic or corrosive substances, and the use of sharp or breakable instruments and power equipment. Students should take safety precautions during demonstrations or work with chemical substances, 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.

Course Description

Agriculture (AG), page 560

College of Business

Dean: Douglas D. Anderson
Location: Business 202
Phone: (435) 797-2376
FAX: (435) 797-3929
E-mail: douglas.anderson@business.usu.edu
WWW: http://www.usu.edu/cob

Senior Associate Dean:

Clifford R. Skousen, Business 202C, (435) 797-2331,
cliff.skousen@usu.edu

Associate Dean for Business Relations:

Ross E. Robson, Junction 20, (435) 797-2279,
ross.robson@usu.edu

Associate Dean for International Affairs:

Christopher Fawson, Business 712, (435) 797-2320,
chris.fawson@usu.edu

Director of Development:

Alta L. Markeson, Business 202F, (435) 797-3720,
alta.markeson@usu.edu

Director of Business Undergraduate Programs:

Ruth C. Harrison, Business 309, (435) 797-2272,
ruth.harrison@usu.edu

Director of Undergraduate Research:

Kenneth R. Bartkus, Business 816, (435) 797-3891,
ken.bartkus@business.usu.edu

Administrator of Business Graduate Programs:

Katherine E. McConkie, Business 809, (435) 797-2360,
katherine.mcconkie@usu.edu

Academic Departments

The College of Business includes the following academic departments. Information about degrees and curriculum options are listed in the departmental sections of this catalog.

**Accountancy, School of
Business Administration**

Economics (jointly administered with the College of Agriculture)

**Management and Human Resources
Management Information Systems**

Interdisciplinary/College Programs

The College of Business offers the following programs in addition to those offered by academic departments. Detailed descriptions of these programs are provided in this section of this catalog and in the separate *Office Systems Support AAS Degree* (see pages 452-453) and *Master of Business Administration (MBA)* (see pages 202-203) sections.

Major in Business (bachelor's degree)

Dual Major and Second Bachelor's in Business

Minor in Business

Master of Business Administration (MBA)

Office Systems Support (Associate of Applied Science Degree)

Nondegree and Other Programs

A wide variety of seminars and development programs are sponsored by college units and academic departments. For example, Business Relations operates the Partners in Business program and the Shingo Prize for Excellence in Manufacturing. *Partners in Business* provides a forum for the exchange of ideas, strategies, and innovative business practices through low-cost, high-quality management education seminars for working professionals. The program is managed by a staff of dedicated business students under the supervision of the program director. Annual seminars include: Financial Services and Banking, Operational Excellence, Accounting, Customer Service and Marketing, Women in Business, Information Technology, and Human

Resources. The *Shingo Prize for Excellence in Manufacturing* is an award given to North American organizations in recognition of world-class business performance achieved through focused improvements in core manufacturing and business processes. The Shingo Prize is also awarded for research and writing that expands the knowledge and understanding of lean manufacturing processes. The college sponsors the *Management Institute* as a link between the talents of the faculty and the training needs of leaders in business, industry, and government. The Management Institute focuses on delivering high-quality, custom-designed training and development programs in outdoor experiential learning, indoor experiential learning, and data-based consulting. The *Center for E-Commerce* is a part of the Management Information Systems Department in the College of Business. The purpose of the center is to provide educational services within the University and community. The center includes e-commerce education, certification training, project coordination, and interdepartmental research.

Accreditation

College of Business programs in business and accounting are accredited by AACSB International—The Association to Advance Collegiate Schools of Business. AACSB is the premier accrediting association for business and accounting programs.

Vision

The College of Business is a School of Opportunity. It strives to be a highly sought first-rate business school, providing a springboard from which students can excel confidently and ethically in a global market.

Mission

The college is engaged in three primary activities: learning, discovery, and outreach. The **learning** or **educational** mission is to prepare future managers and leaders to positively contribute in a world community with a quest for life-long learning and self-improvement. The **discovery** mission is to aggressively support basic and applied research, ensuring the continued enlargement of the base of understanding about business, government, and other complex institutions; about the processes of managing and leading; and about the economic foundations upon which they function. The **outreach** mission is to provide innovative opportunities for the extended community through its own initiatives and through partnering with others.

Learning Goals

Regardless of their major, undergraduate College of Business students are required to take a common coursework core that includes learning experiences in both general knowledge and skills, as well as management-specific knowledge and skills. Nine specific learning goals drive the curriculum. These goals are:

Goal 1

Each student can effectively communicate coherent and persuasive written reports and oral presentations.

Goal 2

Each student can recognize and analyze legal and ethical issues and choose appropriate actions for practical business situations.

Goal 3

Each student can correctly apply mathematical and statistical techniques appropriate for business analysis.

Goal 4

Each student can use contemporary information systems and technology in business decision-making.

Goal 5

Each student understands the domestic and international economic environment in which business organizations operate.

College of Business

Goal 6

Each student can evaluate the financial position of an organization and make appropriate financial decisions from an analysis of the organization's financial information.

Goal 7

Each student can make appropriate decisions in the creation of value through the production and marketing of goods and services.

Goal 8

Each student can demonstrate an understanding of individual and group dynamics in organizations, including the use of team building and collaborative behaviors in accomplishment of tasks.

Goal 9

Each student can conceptualize complex business issues, apply analysis to identify plausible solutions, and communicate findings.

Assessment

Each of the nine learning goals is monitored and assessed for achievement. Information obtained through the assessment process is used to adjust and modify instructional methods and curriculum design as part of the college's continuous improvement effort. Achievement of goals is assessed using both direct and indirect measures. Direct measures include selection of students, course-embedded measurements, and a national achievement test. Indirect measures include student, alumni, and employer surveys, as well as employment and career success of graduates. Specific assessments for the College of Business can be found at:

<http://www.usu.edu/cob/assessment/index.cfm>

Honors in Business

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. Qualified students in all majors within the College of Business may pursue an Honors degree. Upon graduation, the student's transcript will read: *Graduated with Honors in [name of the major]*. Honors students have the privilege of priority registration (registering a week before other students), as well as the privilege of enrolling in special course sections for honors students only. As part of a senior project, they have the opportunity to conduct business research of interest to them. Participating in the business honors program enriches the student's educational experience, gains membership in the USU Honors Program, and enhances opportunities for admission to graduate and professional schools.

Eligibility for Acceptance

New freshmen with an Admission Index score of 126 or higher will be invited to participate in USU's Honors Program and will be permitted to pursue Honors in Business. Admitted students must maintain a 3.50 minimum GPA in order to remain in the Honors Program. Sophomore, junior, and transfer students may apply or receive more information at the Honors Program Office, Main 15. Additional information can also be found online at: <http://www.usu.edu/honors/>

Program of Study

Honors in Business requires 15 credits, which may be completed in the following way. If specific honors courses are not taken, then other courses may be substituted upon approval of the College of Business honors advisor.

ECON 1500H (BAI) Introduction to Economic Institutions, History, and Principles3
(taken during the first fall semester)

ACCT 2010H Survey of Accounting I3
(taken during the fall of the second year)

MHR 3110H (DSS) Managing People and Organizations3
(taken during the spring of the second year)

At least one upper-division course in the major 3 minimum
(taken under contract)

Supervised Senior Thesis/Project taken under one of the following (depending on major): ACCT 4950H, BA 4950H, BIS 4950H, ECON 4950H, or MHR 4950H (3 credits).

A student may elect to complete an Honors Advanced Internship (BUS 4250) by contract, in lieu of the Senior Honors Thesis/Project. For information about this option, contact Shauna Karren, College of Business Internship Director, Business 309, (435) 797-0333, shauna.karren@usu.edu.

College Honors Advisor

Clifford R. Skousen, Senior Associate Dean, College of Business, Business 202, (435) 797-2331, cliff.skousen@usu.edu.

Undergraduate Programs

Admission and Graduation Requirements

Freshman Admission

Students may be admitted directly into the College of Business as incoming freshmen if they have less than 24 earned post-high school college credits and if all of the following conditions are met: (1) admitted to Utah State University; (2) designated a College of Business major on USU application or submitted a College of Business application to the College of Business Career and Education Opportunities Center; (3) ACT Composite of 24 or higher; and (4) high school GPA of 3.5 or higher.

Non-Freshman and Transfer Admission

USU students and transfer students from other accredited colleges and universities may be admitted directly to any College of Business major if they have met the following conditions: (1) admitted to Utah State University; (2) earned 24 or more post-high school college credits with 3.5 GPA or higher; and (3) designated a College of Business major on USU application (transfer students) or submitted a College of Business application to the College of Business Career and Education Opportunities Center (USU continuing students).

Students not meeting the above conditions are encouraged to apply. Admission is competitive based on available space in the College of Business. Application forms and information are available at the College of Business Career and Education Opportunities (CEO) Center and at <http://www.usu.edu/cob/ceo/admission/index.cfm>. Applications are accepted after (1) passing the University's Computer Information Literacy (CIL) Exam or equivalent; (2) passing the College of Business English Usage Exam, or an ACT English section score of at least 29, or a C or better in BIS 2200 or equivalent (information and sample test at <http://www.usu.edu/cob/bis2200requir.cfm>); and (3) completion of at least 24 post-high school college credits of coursework, including the pre-business course requirements or equivalent with a grade of C or better. An essay will also be required.

Pre-Business Course Requirements (13 credits)

Applicants will be ranked according to an Application GPA that is calculated as follows: one-third weight on 13 credits earned in four required courses (ECON 1500, MATH 1100, STAT 2300, and PSY or SOC 1010); one-third weight on last 24 credits earned; and one-third weight on overall GPA. Essays will be evaluated by the admissions screening committee.

Students may not repeat a course *more than twice*, and *may have no more than 10 repeats in total* to earn a degree. (College of Business courses are limited to one repeat.)

Matriculation Requirement and Transfer Limitation

No more than 15 USU College of Business credits (ACCT, BA, BIS, BUS, MHR), numbered 2000 and above, earned as a nonbusiness major (before acceptance into the College of Business) can be applied to a College of Business degree. More than 15 business credits can be transferred from other accredited institutions. However, additional USU College of Business credits added to previously earned transfer business credits may not exceed a combined total of 15. Furthermore, to earn a bachelor's degree in a College of Business major, at least 50 percent of the required College of Business credits must be earned from coursework taken from the Utah State University College of Business.

Enrollment Restrictions

Admission to the College of Business does not ensure access to the courses required for graduation. The following course admission requirements must be met by all USU students:

1. There are no restrictions on 1000-level courses.
2. ACCT 2010, 2020, MHR 2050, and BIS 2100, 2200, require as prerequisites at least 15 credits of completed college-level work, an overall GPA (transfer credits included) of at least 2.50, and STAT 1040, or MATH 1030 or 1050. (MATH 1050 or equivalent is required for College of Business Majors.) In addition, BIS 2100 requires the CIL exam or equivalent, and BIS 2200 requires a passing score on the College of Business English Usage Exam or an ACT English Section score of at least 29.
3. Most 3000-, 4000-, and 5000-level departmental courses in the College of Business are restricted to students admitted to the College of Business or another USU major with an overall GPA of at least 2.67 and completion of at least 40 credits.
4. MHR 4880 and 4890 require completion of at least 90 credits for admission, as well as completion of BA 3400, 3500, 3700, and MHR 3110.
5. College of Business courses may be repeated only once.
6. Many College of Business courses have prerequisites and other restrictions requiring adherence. Before registering for courses within the College of Business, students should refer to course listings in this catalog or consult with their advisor to ensure they have completed the necessary prerequisites.

University Studies Requirements

All freshmen-level students who enter USU Fall of 1998 and thereafter will be required to meet the University Studies requirements. Students who have received an Associate of Arts/Science degree from a college or university in the Utah System of Higher Education or from a school with which USU or the College of Business has an articulation agreement will be considered to have fulfilled the

General Education portion of the University Studies requirements, *but must still complete the Depth Education portion*. It is recommended that all business students visit with an advisor in the Career and Education Opportunities Center, Business 309, to clarify their specific requirements in this area. Additional information about these requirements is available on pages 49-59 of this catalog.

USU Credits and Business Credits

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

Optional PID+, D, F Grade Restriction

This option (see the USU "Grading Policy," pages 39-40) is not available for any required courses for majors and minors in the College of Business.

College of Business Stop-out Policy

Students having a break in attendance of College of Business programs in excess of one year will be subject to the college and departmental requirements in effect at the time of their return.

Graduation

Students must satisfy all University, college, and departmental major requirements to be eligible for graduation. Refer to appropriate sections of this catalog for details.

Major in Business

The College of Business administers Bachelor of Science (BS) and Bachelor of Arts (BA) degree programs in business. Because these degree programs require a broad course distribution among the departments of the college, they are administered by the college, rather than by a specific department. These programs are primarily designed to be offered through the University's Regional Campuses and Distance Education locations. However, students may also satisfy degree requirements by taking equivalent coursework on the Logan campus. Further information is available in the College of Business Career and Education Opportunities Center, Business 309, (435) 797-2272.

Students who have been admitted to Utah State University and who have earned *at least 24* post-high school credits qualify for admission to this major. However, a minimum 2.5 GPA is typically required for business courses taught at the Regional Campuses and Distance Education locations. An overall 2.50 GPA is required for graduation. On-campus departmental courses at the 3000-, 4000-, and 5000-level are restricted to students who have been admitted to the College of Business or another USU major, and who have earned *at least 40* credits; a minimum 2.67 GPA is typically required for these courses. In order to progress in the program, students must maintain the required GPA level. They must also satisfy all specific prerequisites required for each course.

All students enrolled at USU are required to satisfy the General Education requirements and the University Studies Depth Education requirements of the University, as described on pages 49-59 of this catalog.

College of Business

Business Major Requirements (71 credits)

Coursework in the following three categories must be completed in order to earn a BS or BA degree in Business: **Pre-business, Business Core, and Option Areas.**

Pre-Business (17 credits)

ECON 1500 (BAI) Introduction to Economic Institutions, History, and Principles	3
MATH 1050 (QL) College Algebra	4
MATH 1100 (QL) Calculus Techniques	3
STAT 2300 (QL) Business Statistics	4
PSY 1010 (BSS) General Psychology (3 cr) or	
SOC 1010 (BSS) Introductory Sociology (3 cr)	3

Business Core (36 credits)

ACCT 2010 Survey of Accounting I	3
ACCT 2020 Survey of Accounting II	3
BIS 2100 Principles of Management Information Systems	3
BIS 2200 (CI) Business Communication	3
MHR 2050 Legal and Ethical Environment of Business	3
ECON 2010 (BSS) Introduction to Microeconomics	3
ECON 3400 (DSS) International Economics for Business	3
BUS 3110 (DSS) Management Fundamentals	3
BUS 3400 (QI) Finance Fundamentals	3
BUS 3500 Marketing Principles	3
BUS 3700 Operations Management Fundamentals	3
BUS 4880 (CI) Business Strategy	3

Option Areas (18 credits)

One of the following three option areas must be selected.

Accounting Option

BUS 3010 Intermediate Accounting I	3
BUS 3020 Intermediate Accounting II	3
BUS 3310 Managerial Cost Accounting	3
BUS 3410 Federal Income Tax I	3
BUS 4250 Advanced Internship (6 cr) or	
Approved upper-division coursework (6 cr)	6

Business Information Systems Option

BUS 3330 Essentials of Database Systems	3
BUS 3510 Business Programming	3
BUS 4050 Selected Topics in Information Systems	3
BUS 5100 Systems Analysis and Design and Project Management	3
BUS 4250 Advanced Internship (6 cr) or	
Approved upper-division coursework (6 cr)	6

Management Option

The management option can be satisfied in one of three ways:

- 18 credits**—12 credits of approved business-subject coursework, plus 6 credits of BUS 4250 (Advanced Internship) or other approved upper-division coursework.
- Dual Major**—Must complete *all* requirements for another major outside of the College of Business.
- Second Bachelor's Degree**—Must have a previously earned bachelor's degree in a nonbusiness subject.

Dual Major and Second Bachelor's Degree

The College of Business offers both a dual major and a second bachelor's degree in business. The course requirements consist of the Pre-Business and Business Core courses listed above in the *Major in Business* section. The first major for a dual major or previous

bachelor's degree for a second bachelor's must be in a subject outside the College of Business. For information concerning other dual majors or second bachelor's degrees in specializations (other majors) in the college, see departmental sections of this catalog.

Minor in Business

The college offers a minor for non-College of Business majors requiring six of the courses listed below. This minor is designed to develop a general background and perspective in business. Completion of this minor will acquaint students with each business discipline. Advisement for the minor in business is through the College of Business Career and Education Opportunities Center in Business 309. An overall minimum GPA of 2.50 is required for the six courses. Students are responsible to complete prerequisite courses where applicable. Required courses for the minor in business include ACCT 2010; BA 3400 or BUS 3400 or BA 3460; BA 3500 or BUS 3500; MHR 3110 or BUS 3110; and two of the following courses: ACCT 2020, BA 3700 or BUS 3700, BIS 2100 or BUS 3100, ECON 3400, and MHR 2050.

Minors in Other Business Subjects

Minors are available in other business subjects, as indicated in departmental sections of this catalog.

College of Business Sponsored Student Organizations

Business Ambassadors

Student representatives of the College of Business. Each year, 12 to 13 ambassadors are selected. These ambassadors assist the dean of the college with hosting convocations, breakfasts, tailgate parties, and other events attended by alumni and other prominent business people.

The ambassadors also assist with College of Business transfer student recruitment, by traveling with the USU Ambassadors to community colleges and other two-year institutions. In addition, they work with campus advisors to recruit undeclared students.

The main duty of the ambassadors is to ensure that all people who visit the College of Business feel welcome. Ambassadors give campus tours and engage visitors in fun and interesting conversation. For additional information, contact Alta Markeson at alta.markeson@usu.edu or at (435) 797-3720.

Business Council

Consists of 12 College of Business students from various business majors. The main objectives of the council are to listen to students and to take action to implement their ideas within the College of Business.

During weekly meetings, the council discusses feedback received from students via the student idea box in the George S. Eccles Business Building. In addition, a representative from the council meets with college administrators once per month to ensure faculty members are aware of student opinions and concerns. For more information, contact Jan Lyons at jan.lyons@business.usu.edu or at (435) 797-3722.

Phi Beta Lambda (PBL)

A national student organization, specifically designed for students seeking a competitive edge in the business world. Benefits of membership in PBL include leadership development, networking contacts, social activities, travel opportunities, and professional conferences. For more information, visit <http://www.usu.edu/pbl/> or contact Shauna Karren at shauna.karren@business.usu.edu or at (435) 797-2272.

Other Professional Student Organizations

The following student organizations are sponsored by College of Business departments and are available for membership, depending upon student objectives and qualifications.

American Marketing Association (AMA)

The USU Chapter of the American Marketing Association (AMA) provides interested students with exposure to marketing issues, speakers, networking opportunities, and career advice. The club meets every other week and welcomes all who are excited about the field of marketing. For more information, contact Jan Lyons at jan.lyons@usu.edu or at (435) 797-3722. An additional contact is Stacey Hills at stacey.hills@business.usu.edu or at (435) 797-8201.

Association for Computing Machinery and Special Interest Group on E-commerce, Student Chapter (BIS ACM and SIGE-com)

The USU College of Business student chapter of the Association for Computing Machinery has joined forces with the Special Interest Group in E-commerce. This alliance enables Management Information Systems majors to begin professional networking and career-enhancing activities. SIGE-com encourages research and acquiring of first-hand experience with advanced applications relating to electronic commerce and the sharing of new ideas and experiences. The group is also dedicated to the advancement of electronic commerce principles and practice. As the leading computing-centric professional organization in the field, SIGE-com seeks to promote the informed development of commerce automation technology, employing the best available engineering methods and economic understanding. For more information, visit <http://www.ususigecom.com/> or contact Jeffrey Johnson at jeffrey.johnson@usu.edu or at (435) 797-2350. An additional contact is Bernie Lantz at bernie.lantz@usu.edu or at (435) 797-2899.

Beta Alpha Psi

National scholastic and professional organization for financial information students and professionals. Beta Alpha Psi members are recognized as having achieved a high standard of professionalism through academia and service. By joining this organization, students commit to a level of excellence recognized by both public and private institutions. For more information, contact the School of Accountancy at maryann.clark@usu.edu or at (435) 797-2330.

Beta Gamma Sigma

Founded in 1913 to recognize superior scholarship in business. Provides the highest international recognition a business student anywhere in the world can receive. The USU chapter was established in 1975. Membership is by invitation only and is limited to the top 20 percent of business graduate students, the top 10 percent of seniors with business majors, and the top 7 percent of juniors with business majors. Candidate must have completed one year of study at USU. For more information, contact the College of Business Career and Education Opportunities Center (Business 309) at: ceo@business.usu.edu or at (435) 797-2274.

CEO Club

The student chapter of the CEO organization develops interaction and networking opportunities for students. The chapter sponsors the campus-wide Entrepreneurship Day, with the renowned Elevator Speech competition each spring. For more information, contact David Herrmann at david.herrmann@usu.edu or at (435) 797-2287.

Economics Club

Provides a forum whereby meaningful interaction between professionals, faculty, and students can be fostered. The meetings provide social contact as well. For more information, contact Tyler Bowles at tbowles@econ.usu.edu or at (435) 797-2378.

Finance Club

Provides opportunities for USU students to learn how to apply their skills and knowledge, while enhancing their resume through participation and leadership activities. Members network with successful business professionals who speak at club meetings. Finance Club members find this knowledge is a necessary and valuable part of their education at Utah State University. For more information, visit <http://www.usu.edu/finance> or contact Jan Lyons at jan.lyons@usu.edu or at (435) 797-3722.

Financial Planning Student Association (FPSA)

Designed for students having an interest in the growing field of financial planning. Financial planners exercise entrepreneurial skills to assist families planning for the future. Professionals from various areas in financial planning discuss what they have learned and offer information and advice which can be useful in a student's career, as well as in everyday life. For more information, visit <http://www.usu.edu/fpsa> or contact E. Vance Grange at vance.grange@usu.edu or at (435) 797-2702.

Institute of Management Accountants (IMA)

Allows student to network with leading national and local accounting firms, build leadership skills, and learn from speakers with backgrounds in accounting, management, and finance. Membership is available to many majors and requires a reasonable time commitment. For more information, contact Frank Shuman at frank.shuman@usu.edu or at (435) 797-2339.

MBA Association (MBAA)

The MBA Association (MBAA) provides USU students with an opportunity to enhance their professional and academic skills while building their resumes. Club members focus on career attainment and benefit from a forum for networking with faculty, alumni, and employers. The MBAA also works to increase awareness of the USU MBA program and assists the USU College of Business in developing an effective curriculum for the MBA program.

Society for Human Resource Management (SHRM)

Worldwide association of human resource professionals having more than 42,000 members nationally. SHRM covers a wide variety of topics, including compensation, interviews and candidate selection, and occupational safety and training. For more information, visit <http://www.usu.edu/shrm> or contact Al Warnick at alan.warnick@usu.edu or at (435) 797-2301.

Scholarships, Fellowships, and Assistantships

A number of scholarships and assistantships are available to College of Business students at both the undergraduate and graduate levels. There are also opportunities for employment in research projects and other activities. Assistantships for graduate students are available for both teaching and research. Applications for undergraduate scholarships may be made directly to the Career and Education Opportunities Center, Business 309.

Course Descriptions

Business (BUS), pages 584-585

College of Education and Human Services

Dean: Carol J. Strong

Location: Emma Eccles Jones Education 109

Phone: (435) 797-1437

E-mail: shannon.johnson@usu.edu

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

Associate Dean for Teacher Education, Graduation, and Educator Licensing:

Francine Fukui Johnson, Education 101, (435) 797-1443,
francine.johnson@usu.edu

Associate Dean for Education Outreach:

Michael K. Freeman, Education 114A, (435) 797-1474,
michael.freeman@usu.edu

Associate Dean for Research:

James T. Dorward, Education 453A, (435) 797-1471,
jim.dorward@usu.edu

Academic Departments and Degrees

The College of Education and Human Services has the following departments, which offer the degrees shown:

Communicative Disorders and Deaf Education—BS, BA, MS, MA, MEd, EdS, AuD

Elementary Education—BS, BA, MS, MA, MEd, EdS

Family, Consumer, and Human Development—BS, BA, MS, MFHD, PhD

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

Instructional Technology—MS, MEd, EdS, PhD

Psychology—BS, BA, MS, PhD

Secondary Education—BS, BA, MS, MA, MEd, EdS

Special Education and Rehabilitation—BS, BA, MEd, MS, MRC, EdS, PhD

In addition, the college offers the following degrees:

Interdisciplinary Studies Major—BS, BA

Interdepartmental Doctoral Degree (participation by departments of Elementary Education, Secondary Education, and Special Education and Rehabilitation)—EdD, PhD

The College of Education and Human Services provides preparation programs for prospective teachers, for counselors and other professional personnel in education, and for professionals in the human services area and in corporate settings. Students are urged to refer to the more detailed descriptions of programs, majors, and areas of specialization contained in this catalog.

The College of Education and Human Services participates in the Interdisciplinary Studies Major (see pages 342-343), which offers flexibility for qualifying students who cannot find an existing degree that meets their needs.

Accreditation

Utah State University is a member of the American Association of Colleges for Teacher Education and is accredited by the National Council for the Accreditation of Teacher Education and the Utah State Board of Education. Students who are licensed to teach in the State of Utah may qualify for licensure in other states and the District of Columbia. Additional program accreditations include: American Psychological Association, American Speech-Language-Hearing Association, Council on the Education of the Deaf, National Association of School Psychologists, and Council on Accreditation of the National Recreation Park Association.

University Studies Requirements

All students graduating from the College of Education and Human Services must complete the USU University Studies requirements (see pages 49-59).

Admission Requirements to Teacher Education

Students wishing to enter the Teacher Education Program at Utah State University must formally apply for admission and be approved by the Office of the Associate Dean for Teacher Education, Graduation, and Educator Licensing, as well as by the department where the teaching major is being offered. All applicants are required to submit a record of their ACT scores, pass the Teacher Education Writing Exam, and take a speech and hearing test. Individual departments may also have additional admission requirements. Students are not permitted to enroll in the teacher education professional core classes prior to being admitted to the Teacher Education Program.

Detailed information about admission to the Teacher Education Program should be obtained from a departmental advisor or from the Office of the Associate Dean for Teacher Education, Graduation, and Educator Licensing.

Teacher Licensing

The Dean of the College of Education and Human Services is assigned responsibility for the development, approval, and administration of Teacher Licensing requirements for students.

The College of Education and Human Services currently offers preservice teacher preparation leading to licensure in 34 different areas. In addition, advanced programs leading to professional licensure are available for administrators, supervisors, school counselors, school psychologists, school library media specialists, speech-language pathologists, audiologists, educators of the deaf, and specialists in special education. Training is also available in English as a Second Language (ESL), reading, distance education, gifted and talented education, and middle-level education.

Specific requirements for each license may be obtained from the Office of the Associate Dean for Teacher Education, Graduation, and Educator Licensing or from the department in which the major work is offered. All students who desire licensure must complete a criminal background check and must take the Utah State Office of Education approved content test (Praxis II) in their content area.

For the early childhood, elementary, secondary, or special education license, a closely supervised program of student teaching is conducted in selected schools throughout the state. Student teachers are required to pass the Utah State Office of Education approved content test (Praxis II) in their major content area prior to student teaching. Students should be financially prepared to live off campus during the semester selected as their professional semester of student teaching.

Dual Licensing

Dual licensing programs are offered in the following areas: early childhood education and deaf education; early childhood education and elementary education; early childhood education and special education; elementary education and deaf education; elementary education and secondary education; elementary education and special education; and secondary education and special education. A student desiring dual licensure should consult with an advisor in one of the departments within the College of Education and Human Services early in his or her program. Ordinarily dual licensure will require at least one additional semester of work.

College of Education and Human Services

Teacher Placement Service

The Teacher Placement Service functions as an integral part of the University Placement Center. Students may register with the service, which will help in compiling the proper credentials to be used in placement interviews. Application for placement services should be made prior to student teaching whenever possible. No fee is charged for using the center.

Facilities

The College of Education and Human Services Edith Bowen Laboratory School is a functioning elementary school on the University campus, serving as a research, demonstration, and teacher training center.

The Center for Early Childhood Education provides educational experiences and resources for teachers and parents that reflect the most current understanding of the social, emotional, physical, and cognitive needs of children in pre-kindergarten, kindergarten, and the primary grades.

The Center for the School of the Future is dedicated to improving the quality and effectiveness of education through identifying, researching, and developing proven educational practices, as well as supporting their dissemination and adoption in local circumstances.

The Center for Persons with Disabilities is Utah's university center for excellence in developmental disabilities. Its programs offer students opportunities to participate in multidisciplinary education, research, and service. Students complete clinical and field experiences, and may receive financial support through assistantships, internships, stipends, or employment.

Course Descriptions

Education (EDUC), pages 610-612

College of Engineering

Dean: H. Scott Hinton
Location: Engineering 413
Phone: (435) 797-2775
FAX: (435) 797-2769
E-mail: office@engineering.usu.edu
WWW: http://www.engineering.usu.edu

Associate Dean:
Wynn R. Walker, Engineering 413B, (435) 797-2788,
wynnwalk@cc.usu.edu

Associate Dean:
Christine E. Hailey, Engineering 413C, (435) 797-3332,
chailey@engineering.usu.edu

Associate Dean:
Maurice G. Thomas, Engineering 413F, (435) 797-1797,
mthomas@cc.usu.edu

Academic Advisors:
Kathleen E. Bayn, Engineering 308, (435) 797-2705,
kathy.bayn@usu.edu

Isobel M. Roskelley, Engineering 312, (435) 797-2705,
isobel.roskelley@usu.edu

Joan P. Smith, Engineering 310, (435) 797-2705,
joan.smith@usu.edu

Executive Director of Development: Val K. Potter, Engineering 413L,
(435) 797-8012, val.potter@usu.edu

Director of Development: Joseph Jenkins, Engineering 413M,
(435) 797-7611, joseph.jenkins@usu.edu

The College of Engineering includes the following academic departments:

Biological and Irrigation Engineering
Civil and Environmental Engineering
Electrical and Computer Engineering
Engineering and Technology Education
Mechanical and Aerospace Engineering

The College of Engineering includes the following research centers, institutes, and laboratories:

Research Centers, Institutes, and Laboratories

Anderson Center for Wireless Teaching and Research:

Jacob H. Gunther, Director

Buried Structures Laboratory: Alma P. Moser, Director

Center for Advanced Thermal Management Technologies:

J. Clair Batty, Director

Center for Control of Flows in Manufacturing:

Barton L. Smith, Director

Center for Profitable Uses of Agricultural Byproducts:

Conly L. Hansen, Director

Center for Self-Organizing and Intelligent Systems (CSOIS):

Yangquan Chen, Director

Center for Space Engineering: Charles M. Swenson, Director

Huntsman Environmental Research Center (HERC):

Maurice G. Thomas, Director

Inland Northwest Research Alliance at USU:

Ronald C. Sims, Coordinator

Institute for Natural Systems Engineering:

Thomas B. Hardy, Director

International Irrigation Center (IIC):

L. Humberto Yap-Salinas, Director

Manufacturing Extension Partnership: Stephen S. Reed, Director

Rocky Mountain NASA Space Grant Consortium:

Doran J. Baker, Director

Toxic and Hazardous Waste Management: Ronald C. Sims, Director

Utah Local Technical Assistance Program: Doyt T. Bolling, Director

Utah On-Site Wastewater Training Center: Judith L. Sims, Director

Utah Transportation Center: Kevin C. Womack, Director

State Centers of Excellence

Center for Advanced Imagery LADAR: Robert T. Pack, Director

Center for Solar Biofuels Technology: Byard D. Wood, Director

Center for High-Speed Information Processing (CHIP):

Tamal Bose, Director

National and State Centers

National Center for Engineering and Technology Education

(NCETE): Christine E. Hailey, Director

Utah Water Research Laboratory (UWRL): Mac McKee, Director

Utah State University Research Foundation

Space Dynamics Laboratory (SDL): Michael D. Pavich, Director

Mission

The primary objective of the College of Engineering is to foster a creative learning environment that will:

1. prepare engineering students to support the needs of industry and
2. develop new technologies and services that will improve tomorrow's economy and environment.

Goal

The goal of the academic programs of the College of Engineering is to provide engineering and technical education enabling engineering students to:

1. develop as ethical professionals who understand engineering and technology in its societal context;
2. learn modern engineering/science and technology principles and their application in conducting experiments and analyzing data;
3. gain experience in working on engineering problems and designing solutions to meet desired needs;
4. acquire skills in communicating effectively and working on teams; and
5. understand the importance of life-long professional development and learning.

The college strives to create a brighter future by working with students, employers, industry, and government research partners to achieve this objective.

Programs

The undergraduate engineering BS degree programs offered by USU, which are accredited by the Engineering Accreditation Commission of ABET (EAC/ABET), include: Biological Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Environmental Engineering, and Mechanical Engineering.

At the graduate level, Master of Engineering (ME), Master of Science (MS), and Doctor of Philosophy (PhD) degrees are offered in these specific majors, along with the Civil Engineer (CE) degree.

The Engineering and Technology Education Department offers BS degrees in Engineering and Technology Education, Aviation Technology—Maintenance Management, and Aviation Technology—Professional Pilot, as well as an MS degree in Engineering and Technology Education. Admission and academic requirements for the ETE Department are considerably different than those for the other engineering departments. For details, see the Engineering and Technology Education section of this catalog (pages 273-277).

For details about the various majors and specialties offered by departments and programs within the College of Engineering, see the respective departmental sections in this catalog.

Assessment

The College of Engineering is committed to assessing the quality of its academic departments and programs, in order to assure that the desired educational outcomes will be achieved. Faculty members within the college strive to assure that their students obtain the knowledge and skills needed for success in their chosen fields.

The college uses a variety of tools and methods to gather information and data to evaluate progress in meeting the college's program goals and objectives, and to take actions to continually improve the quality of students' educational experience.

Undergraduate Programs

Objectives

The objectives of the engineering curriculum are: (1) to provide students with professional competence enabling them to enter and progress rapidly in their professional careers, (2) to provide an understanding of the physical and social world in which they live and work, and (3) to provide a basis for continued intellectual growth, professionally and socially.

In the engineering programs, the curricula begin with studies in mathematics, basic science, introductory engineering, and introductory engineering design. These basic science and engineering skills are coupled with communication skills, as well as courses in humanities and social sciences. The professional engineering programs continue with engineering science, engineering design, and modern engineering tools. Engineering design activities start during the freshman and sophomore years, progressing in-depth during the junior and senior years as the student's proficiency increases. The design experience culminates with a capstone design sequence, which builds upon the fundamentals of engineering, communication skills, science, mathematics, humanities and social sciences, economics, ethics, safety, reliability, aesthetics, and social impact.

The expected outcomes of the professional engineering programs are: (1) to unite engineering sciences and modern engineering tools with engineering design to enhance the practical problem-solving abilities, decision-making proficiency, and creativity of the engineering student; (2) to provide for an understanding and appreciation of professional responsibility and ethics; (3) to expand a sensitivity to the economic, legal, and social dimensions of engineering decisions; and (4) to provide the foundation and help instill a desire for life-long learning.

Studies in the humanities and social sciences serve not only to meet the objectives of a broad education, but also to meet the objectives of the engineering profession. In the interest of making engineers aware of the impact of engineering solutions in a global, economic, environmental, and societal context, the College of Engineering requires coursework in the humanities and social sciences as an integral part of the engineering program. To satisfy this requirement, courses selected must provide both breadth and depth and be planned to fulfill an objective appropriate to the engineering profession.

Admission Requirements

Engineering Requirements

In addition to the policies of the University concerning admission of students, the following regulations apply to the engineering programs:

1. In order to complete an engineering curriculum in four years, high school students must complete at least two years of algebra, one year of geometry, one-half year of trigonometry, four years of English, and courses in computers, chemistry, and physics. If these courses are not taken in high school, they must be taken in college prior to starting the regular engineering programs. Students with deficiencies in several areas will probably require five years to fulfill graduation requirements.

Students can earn university credits in English, humanities, and social sciences by receiving appropriate scores on the College Level Examination Program (CLEP) tests. Advanced placement (AP) credit may be obtained in calculus, chemistry, English, history, and physics.

2. Transfer students from other colleges or universities will be referred to the Engineering Admission Committee for evaluation. Criteria considered in admission decisions for transfer students include resources available in the requested department and the transfer GPA, along with an evaluation of the program of the former college or university. Decisions concerning academic standing once the student is admitted to USU will be based solely on USU grades.
3. Students registered on campus (including General Studies) must be approved by the Engineering Admission Committee before transferring to the College of Engineering. Students in this category must have demonstrated, by courses taken at USU, a potential to succeed in the major of their choice.

Professional Engineering Program

Introduction

The purpose of the Professional Engineering Program (PEP) is to provide a quality education for engineering students by (1) requiring that students be fully prepared for upper-division engineering coursework by having satisfactorily completed all required preprofessional courses and (2) limiting enrollment in upper-division courses consistent with resources available within the departments and the college.

College of Engineering

Policy

Enrollment in upper-division engineering courses (3000-level and above) is available *only* to students who have been accepted into the PEP or an appropriate graduate program or have a nonengineering major which requires a specific engineering class for which the student has passed the prerequisite courses.

Application Requirements

Current PEP applications listing the required PEP courses and admission standards are available from the various departments and the office of the Dean of Engineering. The minimum requirements a student must satisfy in order to be eligible to apply for admission to a professional program are:

1. The student must be in good academic standing in the University and the college.
2. The student must achieve a grade of C- or better in every required preprofessional course. Required preprofessional courses are defined by each major. They include math, science, and engineering courses, as well as ENGL 2010. The 2.3 (2.8 for Electrical Engineering and Computer Engineering) minimum GPA requirement (see item 3 below) does not include ENGL 2010. The *P/D+*, *D*, *F* grading option may not be used except in freshman English Composition.
3. The student must achieve an overall grade point average of 2.3 (2.8 for Electrical Engineering and Computer Engineering) or better for all required preprofessional coursework completed at USU.

Repeated Coursework

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

Transfer Credit

Transfer credit accepted by the department and the college may be applied toward meeting the requirements for admission into the PEP; however, the grades received will not be used in the USU GPA calculation. For students with transfer credits, a final decision on admission into the PEP will not be made until after the applicant has completed at least 12 semester credits of acceptable engineering, math, and science coursework at USU. Some of this coursework may include upper-division classes taken by permission.

Applications

Students should apply to the Professional Program midway through the semester in which they will complete all preprofessional courses. Students may request permission to take a limited number (not to exceed 15 credits) of upper-division courses if they are within 10 credit hours of completing the necessary requirements, have submitted a PEP application, and are registered for all remaining preprofessional courses. The final decision on granting permission to take upper-division classes before admission to the PEP rests with the college academic advisor and the Associate Dean of Engineering for Academics.

Admission Procedures

Satisfying minimum eligibility requirements does not ensure that a student will be admitted to a PEP program in a specific department.

The number of students accepted in the Professional Engineering Program of a department will be based upon the number of students that can be accommodated in upper-division classes. Applicants will be ranked and selected in order of their academic standing in the required preprofessional courses. Admission into a PEP program is for a period of three years. Students unable to complete graduation requirements during this time will be interviewed by the department head to determine whether special circumstances justify their continuance in the program.

Academic Requirements

The Dean's Office of the College of Engineering maintains a handout sheet giving current details of all academic regulations of the college. **It is the responsibility of the student to know the current regulations and to follow these regulations.**

Preprofessional Program

Students must maintain a USU GPA of 2.0 to remain in good standing both in the college and the University. Students in a preprofessional program who are not making satisfactory progress toward acceptance into a professional program or who become ineligible to enter a professional program will be suspended from the college. Students in good standing in a preprofessional program must still meet the entrance requirements for admission into a professional program.

Professional Program

For all engineering majors in the professional program the following academic regulations apply, in addition to University regulations:

1. A GPA of 2.0 or higher must be maintained in all upper-division engineering/math/science courses required for, or used as technical electives in, the chosen major. Courses which were part of the preprofessional program requirements and University Studies courses are not included in this GPA calculation.
2. No more than 10 hours of *D* or *D+* credit may be applied toward meeting graduation requirements in engineering/math/science classes.
3. College of Engineering courses may be repeated only once. Audits count as a time taking a class unless prior written approval is obtained from the department head. A maximum of three required or elective courses completed as part of a professional program can be repeated in order to meet graduation requirements. (Courses completed as part of a preprofessional program are not included in this total of three repeats.)
4. The *P/D+*, *D*, *F* grading option may not be used in required or elective courses completed as part of a professional program. (The *P/D+*, *D*, *F* grading option is approved for University Studies Courses.)
5. The academic regulations listed above (1-4) apply to required coursework and any elective engineering/math/science course which could be used to satisfy graduation requirements for the chosen degree. That is, once a student completes a particular technical elective, it becomes a required course for that student.
6. Students in violation of departmental or college academic regulations, no longer eligible for graduation, or not making satisfactory progress toward a degree, will be placed on probation.

- a. Students will be placed on probation if they (i) earn an *F* in an engineering/math/science course which could be used to satisfy graduation requirements for the chosen degree (see No. 5 above); (ii) have more than 10 hours of *D* credit (see No. 2 above); or (iii) have a GPA of less than 2.0 (see No. 1 above).
- b. Students remain on probation until they improve their standing by repeating and passing all failed classes, repeating classes to reduce the number of *D* credits to 10 or less, and/or by raising their GPA above 2.0.
- c. While on probation, a student must earn a semester GPA of 2.0 or higher in engineering/math/science classes and must not earn any grades of *D* or *F*.

While on probation, a student may not preregister. The student's major code will be changed to a preprofessional code. The student must meet at least once each semester with the college academic advisor to work out a schedule having the primary goal of correcting the existing academic problems.

General Engineering

Engineering students are encouraged to select a major as soon as possible. Many of the courses taken during the freshman year are common to all engineering majors; however, there are significant differences in the courses taken during the sophomore year. Students who have not selected a specific major should meet with the college academic advisor for assistance in planning a personalized program. Students who choose to remain in general engineering must be prepared to meet the specific requirements of a professional program in the department of their choice.

Additional Engineering Information

Professional Societies

Faculty members of the departments hold memberships in various professional societies and organizations.

Student chapters or societies include the American Society of Agricultural and Biological Engineers; the Institute of Biological Engineering; the Biological and Irrigation Engineering Club; American Institute of Aeronautics and Astronautics; American Society of Civil Engineers; Chi Epsilon; Institute of Electrical and Electronic Engineers; American Society of Mechanical Engineers; American Water Resources Association; Tau Beta Pi; International Technology Education Association; National Intercollegiate Flying Association; Professional Flight Society; Society of Environmental Engineering Students; and Society of Women Engineers. Students are encouraged to affiliate with appropriate student societies.

The Engineering Council is comprised of a student from each department, a representative from each student society, and a staff member from the Dean's Office. The college senator is chairperson, or a chairperson is appointed by the Dean's Office. The council meets regularly to provide effective student-staff-administration liaison.

ROTC

Many engineering students find satisfaction in serving their country in the Reserve Officer Training Program (ROTC) and as reserve officers after graduation. Junior and senior ROTC students receive compensation equivalent to a substantial scholarship. See the Department of Aerospace Studies section (pages 138-139) or the Department of Military Science section (pages 413-414) of this catalog.

Scholarships, Fellowships, and Assistantships

A number of scholarships and assistantships are available to College of Engineering students. Interested high school seniors are encouraged to submit the *Application for Undergraduate Admission and Scholarships* to the Admissions Office before February 1 of the year they wish to receive assistance. Continuing students, transfer students, and returning students should contact the Dean's Office, College of Engineering for a scholarship application. Completed applications are always due February 1. There are also opportunities for employment on research projects and other activities.

Concurrent BS/Master's Program

Qualifications

The concurrent BS/Master's program allows engineering students to begin taking graduate-level classes during their senior year. This permits them to complete requirements for *both* the BS degree *and* the master's degree concurrently during two years. Students in this program have a greater selection of graduate courses, since many graduate courses are taught during alternate years. In addition, the student's senior design project could be a start for a graduate design project or thesis. After completing their BS degree, students in the program can earn a master's degree in only one additional year. Both the BS and the master's degree can generally be earned with 150 total credits, although students should note that a Plan C MS requires 3 extra credits.

Procedures

Students in Biological Engineering, Civil Engineering, and Environmental Engineering must complete their junior year in engineering with a 3.0 GPA, both overall and during the last 60 semester credits. Students in Electrical Engineering and Computer Engineering must have a 3.3 GPA, both overall and during the last 60 semester credits. Students in Mechanical Engineering must earn a 3.4 GPA during the last 60 semester credits. No later than the beginning of the first semester of the senior year, they must apply to the department offering their major and be accepted into the concurrent program. For application forms, students should contact their department office or the College of Engineering Advising Center (Engineering 314A).

To prepare a two-year completion plan of study, students must meet with their approved faculty advisor. (Department head gives approval for advisor.) Students must take the GRE exam and submit scores to the School of Graduate Studies. (See major department for minimum GRE qualifying scores.)

Students must first contact the department to determine eligibility for the concurrent program. If eligible, they should apply to the School of Graduate Studies. A Split Registration Form must be filled out and submitted for each semester the student is enrolled in the concurrent program. All paperwork involved should have a notation of "Concurrent Enrollment" at the top of each page (e.g., undergraduate application for graduation, Program of Study, split forms, etc.).

Formal acceptance into the School of Graduate Studies is required. The student must select a graduate committee, which must be approved by the School of Graduate Studies. The proposed master's program must be approved by the committee, as well as by the School of Graduate Studies.

College of Engineering

During the second year of the concurrent program, the student must pay graduate tuition. When the student is within 21 credits of completing both degrees, he or she will be coded as a graduate student. Thereafter, the student will pay graduate fees and will be eligible for loans, but *not* grants.

An application for graduation with a BS degree must be completed. The student must maintain a 3.0 or higher GPA in courses approved for his or her concurrent program.

Graduate Programs

For information about graduate programs, admissions, assistantships, and fellowships, see departmental sections of this catalog.

Research

The College of Engineering pursues an extensive program of research through the various research centers, institutes, laboratories, and departments. There are opportunities for graduate students to participate, and many undergraduates can find employment in research programs. An extensive list of research centers and points of contact can be found on page 120.

Graduate Study

The college offers graduate study programs leading to the ME, MS, CE, and PhD degrees. For further information and details, see individual departmental sections of this catalog.

Course Descriptions

General Engineering (ENGR), page 621

College of Humanities, Arts, and Social Sciences

Dean: Gary Kiger
Location: Main 338
Phone: (435) 797-1195
FAX: (435) 797-1092
WWW: <http://www.hass.usu.edu>

**Associate Dean; Director, Center for International Studies;
Director, Asian Studies Major and Minor:**
R. Edward Glatfelter, Main 333, (435) 797-1196,
ed.glatfelter@usu.edu

Associate Dean:
Christine Hult, Main 338E, (435) 797-8619, christine.hult@usu.edu

Director, College of HASS Advising Center:
Mary E. Leavitt, Taggart Student Center 302, (435) 797-3883,
mary.leavitt@usu.edu

Liberal Arts Program:
Contact College of HASS Advising Center,
Taggart Student Center 302, (435) 797-3883

The College of Humanities, Arts, and Social Sciences has the following departments and programs:

Aerospace Studies
American Studies
Art
Asian Studies
British and Commonwealth Studies
Classics Minor
English
History
Intensive English Language Institute
Interdisciplinary Studies (participates in, along with colleges of
Agriculture, Education and Human Services, Natural Resources,
and Science)
Interior Design
International Studies
Journalism and Communication
Landscape Architecture and Environmental Planning
Languages, Philosophy, and Speech Communication
Liberal Arts
Military Science
Music
Political Science
Religious Studies
Sociology, Social Work and Anthropology
Theatre Arts
Women and Gender Studies

Other HASS Units:

Center for International Studies
College of HASS Advising Center
Mountain West Center for Regional Studies
Nora Eccles Harrison Museum of Art

A listing of majors and degrees can be found under each department or program.

Within the College of Humanities, Arts, and Social Sciences are found those departments which provide career preparation in some of the most interesting and vital academic fields. The study of society, the governing of society and its history, communication in a number of languages, the various aspects of culture—all these appeal to an

increasing number of undergraduate and graduate students. Many train for careers in these fields; more—scientists, engineers, etc.—take courses to broaden their horizons and add interest to their lives.

It is probably fair to say that the social trend is toward an awareness that while material things are important they are not enough for a full life. For this, the individual may turn to literature, art, music, and theatre. Concern with environmental problems may lead the student to an investigation of landscape architecture. The complexities of modern life necessitate an understanding of the social sciences and history. It is within the College of Humanities, Arts, and Social Sciences that these needs may be met.

Admission and Graduation Requirements

Students accepted in good standing by the University are eligible for admission to the College of Humanities, Arts, and Social Sciences (HASS). Because of limitations of faculty and/or space, a few departments within the college, such as Art, LAEP, and Sociology, Social Work and Anthropology, limit enrollment in their professional programs. See the departmental sections in this catalog and the department head for information regarding these limitations and/or requirements in addition to the University graduation requirements.

The College of HASS participates in the Interdisciplinary Studies Major (see pages 342-343), which offers flexibility for qualifying students who cannot find an existing degree that meets their needs.

Caine School of the Arts

Believing in the unique power of the arts to celebrate, illuminate, transform, and inspire the human spirit, the Caine School of the Arts seeks to make the arts more visible, more innovative, and more fully integrated into the intellectual life of Utah State University and the communities it serves. A collaborative community, representing the collective strengths and voices of the arts, the Caine School offers a means for connecting people and programs. This collaboration will facilitate opportunities for interdisciplinary creation and research, and foster a culture that values the arts and promotes access to the arts in the University, the community, and the region. Utah State's Caine School of the Arts represents the broadest interpretation of "the arts": art as personal expression, art for art's sake, art as communication, art as an important social and cultural force, art for personal enjoyment, and art as a contribution to what it means to be both an individual and a part of the larger cultures that connect us.

In achieving this mission, the Caine School of the Arts fulfills multiple roles.

On an advocacy level, the Caine School of the Arts offers a unified public presence for the arts that enhances the reputation of the University: informing the community about events, showcasing excellence in artistic programming and discovery, recruiting students, and promoting the campus as a culture that values the knowledge and enjoyment the arts engender.

On a curricular level, arts education grounded in a strong liberal arts tradition is offered. A studio approach and expert faculty provide a supportive environment for training professional artists in creative writing, interior design, landscape architecture and environmental planning, music, theatre, and the visual arts. These programs are instrumental in preparing teachers, historians, critics, and scholars. The Caine School also serves students throughout the University with breadth and depth courses in the arts.

College of Humanities, Arts, and Social Sciences

On an outreach level, a rich program of lectures, exhibitions, and performances is offered for the USU campus and extended communities. Educational programs for pre-K through grade 12, as well as partnerships with arts-related groups, extend throughout the State of Utah. Many of the Caine School of the Arts programs provide design solutions for clients, locally and around the world.

On an organizational level, an environment in which dialogue and relationships can flourish across traditional boundaries is promoted, opening the way for new creative endeavors and understandings. An organizational structure encouraging and facilitating meaningful and effective collaborations is provided.

On a cultural level, the Caine School of the Arts seeks to infuse the University and its extended community with an increasing passion for the creation, investigation, and appreciation of the arts. The Caine School aims to position Utah State University as a national model for the “new land-grant university”—a place where personal, professional, academic, and community enrichment through the arts is a major institutional goal.

Nora Eccles Harrison Museum of Art

Director: Victoria Rowe, (435) 797-1414, victoria.rowe@usu.edu

Collections Manager and Registrar: Susanne Lambert, (435) 797-0166, susanne.lambert@usu.edu

Assistant Education Curator: Nadra Haffar, (435) 797-0165, nadra.haffar@usu.edu

Assistant Education Curator: Deborah Banerjee, (435) 797-8027, deborah.banerjee@usu.edu

Administrative Program Coordinator: Rachel Hamm, (435) 797-1414, rachel.hamm@usu.edu

The Nora Eccles Harrison Museum of Art is the major center for the exhibition of the visual arts in northern Utah. Emphasizing the breadth of artistic expression and the history of art in the western United States, the Museum's permanent collections include Twentieth Century American sculpture, ceramics, paintings, graphic arts, photographs, and American Indian arts. Selections from the collection are always on view and are rotated periodically to reflect the continuing growth and refinement of the collection. In addition to installations of its permanent holdings, the Museum organizes temporary and traveling exhibitions and serves as a venue for exhibitions of national and international stature. Artist talks, films, docent tours, and educational activities are additional dimensions of the Museum's programs which are designed to interpret, present, and foster the development of the visual arts.

As a component of Utah State University, the Museum provides educational opportunities for undergraduate and graduate students pursuing professional careers in the museum field. Through on-the-job training, independent study, and internships, students participate in collections care and management, exhibition development, installation design, and educational programming. Research and publication are also integral parts of the Museum's educational offerings, and students, along with faculty and other scholars, pursue projects which are relevant to the permanent collections and exhibitions.

Named for its benefactor, the Nora Eccles Harrison Museum of Art was made possible through an insightful and generous gift from the Nora Eccles Treadwell Foundation. Designed by internationally acclaimed architect, Edward Larabee Barnes, the 20,000-square-foot structure includes offices, a workshop, library, storage facilities, and five exhibition galleries.

For more information, write or call: Nora Eccles Harrison Museum of Art, Utah State University, 4020 Old Main Hill, Logan UT 84322-4020, (435) 797-0163, FAX (435) 797-3423.

Mountain West Center for Regional Studies

Program Director: Elaine Thatcher, Main 303, (435) 797-3630

Utah History Fair Director: Michael W. Johnson, (435) 797-3633

The Mountain West Center for Regional Studies is a multidisciplinary outreach center in the College of Humanities, Arts, and Social Sciences. Its purpose is to enhance the work of the University through public programs, research and program funding, visiting scholars, student scholarships, and other projects, with a particular emphasis on activities that increase understanding of the Interior West, its land, and cultural groups.

Programs of the center include the David and Beatrice Evans Biography Awards, the Bennion Teachers' Workshop, the L. T. and J. T. Dee Visiting Scholars Program, the Utah History Fair, the USU Faculty Fellowship, the Mountain West Songfest, and several scholarships. The center also sponsors various special projects relating to timely arts, humanities, and social sciences issues.

Center for International Studies

Director:
R. Edward Glatfelter (HASS Dean's Office), Main 333,
(435) 797-1196, ed.glatfelter@usu.edu

The Center for International Studies promotes and coordinates international academic exchanges between the University and institutions of higher education abroad. Major objectives of the center are: (1) to develop bilateral university linkage programs, (2) to facilitate faculty and student exchange programs, and (3) to promote collaborative research programs, joint seminars, workshops, and conferences.

College of Humanities, Arts, and Social Sciences

College of HASS Advising Center

Director: Mary E. Leavitt

Associate Director: Irene B. McInerney

Advisor: Lisa R. Hamblin

Advisor: Susan B. Parkinson

Advisor: Sally B. Peterson

Advisor: Marcia R. Roberts

Program Coordinator: Scott C. Robinette

Office in Taggart Student Center 302, (435) 797-3883
(Please call ahead for an appointment.)

The College of HASS Advising Center (CHAC) provides academic advising for students in the College of Humanities, Arts, and Social Sciences. Academic advisors counsel these students in the University Studies requirements and in certain HASS majors.

Academic advising is provided through the center to all Liberal Arts majors.

Advising

College of HASS students receive advising concerning University and College of HASS policies and procedures, as well as in University Studies, the Liberal Arts Program, graduation requirements and processes, the Interdisciplinary Studies Major, and the USU Area Studies Certificate programs. In addition, students are advised concerning academic choices, low grade point averages, and other problems.

Academic Services

CHAC represents the Dean of HASS in providing academic services to undergraduate students in the College of HASS. This includes requests for academic record changes and other documentation requiring the Dean's signature. Coordination of academic problems, support, or referrals to other University services are also provided. Transcript evaluations, including international and transfer records, are made and approved in CHAC.

Graduation

All HASS graduation matters are processed through CHAC. Students should begin the graduation process at least one month prior to the graduation application deadline, and the application should be turned into CHAC at least two weeks prior to the deadline in order to avoid a late fee. A final review of University Studies (or other General Education programs) and other University graduation requirements will be made and the final approval signature added before the application is returned to the student for payment of the graduation fee. If the student wishes to amend the application to substitute or drop courses that are listed on it, a Supplement Form must be submitted through CHAC.

The Area Studies Certificates are awarded at the time of graduation. Application for the certificate should be made through CHAC.

Course Descriptions

Humanities, Arts, and Social Sciences (HASS), page 639

Interdisciplinary Studies (ITDS), page 652

Latin American Studies (LATS), page 659

Women and Gender Studies (WGS), page 733

College of Natural Resources

Dean: Nat B. Frazer
Associate Dean and Extension Program Leader: Nancy O. Mesner
Director of Distance Education: Richard C. Etchberger
Director of Development: Jon Paulding
Location: Natural Resources 108
Phone: (435) 797-2452
FAX: (435) 797-2443
E-mail: nradvise@cc.usu.edu
WWW: http://www.cnr.usu.edu

Undergraduate Advisor:
Maureen A. Wagner, Natural Resources 120, (435) 797-2448,
maureen@cc.usu.edu

The College of Natural Resources has the following academic degree programs:

College of Natural Resources

Master of Natural Resources (MNR)
Participates in Interdisciplinary Studies (BS, BA)

Environment and Society Department

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

Watershed Sciences Department

Ecology (MS and PhD)
Fisheries and Aquatic Sciences (BS)
Fisheries Biology (MS and PhD)
Watershed and Earth Systems (BS)
Watershed Science (MS and PhD)

Wildland Resources Department

Conservation and Restoration Ecology (BS)
Ecology (MS and PhD)
Forestry (BS, MS, and PhD)
Rangeland Resources (BS)
Range Science (MS and PhD)
Wildlife Biology (MS and PhD)
Wildlife Science (BS)

A list of degree requirements, emphases, and specializations can be found in the catalog section for each department. For a description of the Master of Natural Resources (MNR) professional degree, see page 438.

Interdisciplinary Programs

Many of the degree programs listed above are interdisciplinary to some extent. However, the Conservation and Restoration Ecology, Environmental Studies, Geography, and Watershed and Earth Systems programs offer students the opportunity to develop broad interdisciplinary programs to meet their interests. Conservation and Restoration Ecology and Watershed and Earth Systems build on a strong science base; Environmental Studies has a greater emphasis on management and policy; and Geography brings together ideas about culture, human behavior, and the physical environment.

The College of Natural Resources also participates in the Interdisciplinary Studies Major, which offers flexibility for qualifying students who cannot find an existing degree that meets their needs. In addition to the requirements found on pages 342-343, the college also requires completion of 23 credits in College of Natural Resources courses, and a 2.5 GPA in all College of Natural Resources courses.

Minors in Natural Resources

The college offers minors in the following areas:

Environmental Studies
Fisheries Science
Geographic Information Science
Geography/Geography Teaching
Recreation Resources
Watershed Science

Requirements for the minors are found in the appropriate departmental sections of this catalog. Students should also consult a faculty advisor for the minor.

Objectives

The College of Natural Resources provides programs of study and professional training in the use and management of natural resources and the environment. These programs deal with renewable land and water resources and the management of these resources and their ecosystems. Forests, rangelands, wildlife, fisheries, watersheds, and recreation resources comprise the natural resources and environmental areas in which the college has developed professional competence. The college's expertise in geography provides a link between the management of these resources and their value to our society and other cultures.

The College of Natural Resources programs and facilities provide exceptional opportunities for field experience. Forests and rangelands comprise more than 90 percent of the total Utah land area. The Wasatch-Cache National Forest and other areas of natural lands close to the USU campus provide unlimited study projects and opportunities for demonstration. Yellowstone and other national parks are within one day's driving distance.

Career Opportunities

The curricula of the college prepare men and women for positions with federal or state agencies, private-sector work in natural resources management and administration, and positions in education.

Summer Employment/Work Experience

Students are strongly encouraged to seek summer employment with faculty research projects or natural resource agencies to gain practical work experience and help refine career goals. Students should check with the College of Natural Resources Academic Service Center in early January regarding summer employment opportunities.

Undergraduate Programs

Academic Policies

Admission

Freshmen accepted in good standing by the University are eligible for admission to the College of Natural Resources. Transfer students need a cumulative 2.5 GPA for admission to College of Natural Resources majors. Departments may impose additional requirements; refer to departmental sections for information.

Students will make more satisfactory progress in natural resources majors if they have had two years of high school algebra; have taken coursework in chemistry, physics, and biology; and have obtained basic computer skills. Four years of English are also desirable. Prospective students should realize that natural resources fields are

College of Natural Resources

highly technical professions, requiring not just field ability, but also high aptitude for scholarship. Success is also correlated with an ability to work well with people.

Natural Resources—Undecided

Students who have not yet decided on a specific natural resources major may be admitted to the college as “undecided.” Many of the courses taken during the freshman year are common to all natural resources majors; however, students are encouraged to select a major as soon as possible. Students in the undecided category should meet with the college academic advisor for assistance in planning their educational program and selecting a major.

Changes in Graduation Requirements

Students who complete a baccalaureate degree within seven years of enrollment at USU can qualify for graduation by meeting (1) the General Education/University Studies requirements in effect when they initially enrolled at USU (or any revision of the University Studies requirements that has been in effect within seven years of their graduation) **and** (2) the major requirements in effect when they officially declared their major (or any revision of the major requirements that has been in effect within seven years of their graduation).

Students who have not completed the baccalaureate requirements within seven years of their initial enrollment at USU must have their General Education/University Studies and major requirements evaluated and approved by their department head and dean.

Academic Responsibility

The departments publish current major requirements in the catalog each year. It is the student's responsibility to know the current requirements and to consult with a faculty advisor in planning and completing his or her degree program.

Graduation Requirements

Students must satisfy all University, College of Natural Resources, and departmental major requirements for graduation. Students must complete a series of basic lower-division courses, providing the disciplinary foundation for the natural resource and environmental professions, before advancing to professional coursework; foundation course requirements vary among the departments of the college. Equivalents of the foundation courses can be taken at many two- and four-year colleges. Students intending to transfer to a College of Natural Resources major should consult with a faculty advisor before registering for foundation courses at another school. Some foundation and core courses can be used to satisfy University Studies requirements. College requirements also include a grade point average of 2.5 or higher for all courses taught by the College of Natural Resources. Refer to the appropriate sections of this catalog for further details on graduation requirements.

Student Leadership

In addition to coursework and research involvement, undergraduate education in the College of Natural Resources also includes leadership education through professional internships and extracurricular involvement.

The Natural Resources Student Council and various student clubs offer opportunities for enrichment, professional development, and fun. Most of the student leaders have participated in leadership training activities offered by the College of Natural Resources. Students are strongly encouraged to participate in organizations affiliated with their majors or future career paths. Among these are student chapters affiliated with the following professional societies:

American Fisheries Society
International Association for Society and Natural Resources
Society of American Foresters
Society for Range Management
The Wildlife Society

Financial Aid

The College of Natural Resources awards more than 65 individual scholarships annually to undergraduates having majors within the college. During recent years, more than \$160,000 in financial aid has been awarded annually, with emphasis on assistance to upper-division undergraduate students. The S.J. and Jessie E. Quinney Scholars program awards up to 10 scholarships annually of \$3,000 per year to entering freshmen and transfer students in the College of Natural Resources. Interested high school students and prospective transfer students are encouraged to write to the College of Natural Resources Dean's Office regarding these scholarships.

Undergraduates in Research

The College of Natural Resources maintains an extensive program of research in all aspects of natural resources and the environment. Undergraduate students are an integral part of this program. Their participation in research is encouraged, especially for those students planning to go on to graduate study.

Students are often able to find part-time employment in professors' laboratories, working side-by-side with graduate students and faculty members on studies involving a wide range of topics from endangered fish biology to wildland soil science, backcountry hiking behavior to sagebrush ecology, and water conservation policy to the genetics of rare plants and animals. Highly motivated students can also design their own research projects with the assistance of College of Natural Resources faculty members. University and college programs can offer undergraduate researchers financial assistance to help cover the costs of research and of presenting research results to audiences of natural resource scientists and managers, as well as to other students.

Graduate Programs

The College of Natural Resources offers graduate programs leading to the Master of Natural Resources (MNR), Master of Science (MS), and Doctor of Philosophy (PhD) degrees. These degree programs are described in the catalog sections for the respective departments. There are also separate descriptions for the programs leading to the MNR degree (page 438), the Natural Resource and Environmental Policy Certificate Program (page 437), and the National Environmental Policy Act (pages 432-433).

College of Natural Resources

Financial Assistance

Assistantships

Financial assistance for graduate programs includes both research and teaching assistantships that are awarded through the departments offering each degree. For further information, students should contact their department and major professor.

Fellowships

Fellowships and tuition waivers are offered to incoming graduate students on a competitive basis. Application is made through the student's major professor.

Course Descriptions

Natural Resources (NR), pages 681-682

National Environmental Policy Act (NEPA), page 677

College of Science

Dean: Donald W. Fiesinger (effective through June 2007)

Dean: Mary S. Hubbard (effective July 2007)

Location: Eccles Science Learning Center 245

Phone: (435) 797-2478

FAX: (435) 797-3378

E-mail: scido@cc.usu.edu

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

Associate Dean: Richard J. Mueller, ESLC 245G, (435) 797-2479,
rmueller@biology.usu.edu

Associate Dean: Lisa M. Berreau, ESLC 245J, (435) 797-3509,
berreau@cc.usu.edu

The College of Science has the following departments and programs:

Biology

Chemistry and Biochemistry

Computer Science

Geology

Mathematics and Statistics

Physics

Cooperative Nursing Program

Degrees, emphases, specializations, and program descriptions are listed with the departments and the Nursing Program. In addition, there is a Center for Atmospheric and Space Sciences (CASS) and two interdisciplinary programs which involve the college. The Department of Biology participates in the Interdepartmental Graduate Program in Toxicology. This program offers research opportunities leading to MS and PhD degrees within several specialties of toxicology. The college also participates in an interdisciplinary, interdepartmental program in ecology which operates under the Ecology Center. The Ecology Center brings distinguished scientists to campus, fosters faculty research, and enhances graduate education in all areas of ecology.

Objectives

USU has always emphasized the sciences. Modern civilization is based on science, most facets of which are fundamental in a land-grant university.

Opportunities for rewarding careers are excellent in the fields of science. These opportunities exist in education, research, conservation, service, and industry.

The curricula of the science departments are designed to achieve five purposes:

First, they serve all students. No college graduate can be considered educated without an appreciation of scientific principles.

Second, the college trains teachers of science at all levels of education. Highly competent teachers are absolutely essential to the continued well-being and development of society.

Third, students are prepared to take positions in industry and business in a highly technological world.

Fourth, education is provided in the health fields both at the preprofessional and entry level. The college has excellent programs in pre dental and premedical education with an exceptional record of placing students in dental and medical schools. Undergraduate degrees in the various departments of the college can be tailored to include pre dental and premedical training. Other programs prepare

graduates to enter the health profession directly upon graduation.

Fifth, the College of Science educates research scholars in many fields of science. This is accomplished by completing a sound undergraduate degree in the field, followed by graduate specialization.

Students planning to enter the sciences are urged to discuss their plans and goals early with advisors, who are available in each academic department. Basic coursework in mathematics, chemistry, physics, and computer science is essential to most areas of science.

Admission Requirements

Students accepted in good standing by the University are eligible for admission to all departments in the College of Science. Students majoring in Computer Science must qualify for advanced standing status on the basis of their academic performance. Specific details are given in the Computer Science section of this catalog (see pages 229-230).

College of Science Core Requirements

Mathematics Requirement

All bachelor degree candidates in the College of Science must complete one year of calculus, consisting of MATH 1210 and 1220. In some degrees or options within degrees, the second semester of calculus may be replaced by STAT 3000. The substitution will be for specific degree programs, and not by student choice.

Science Requirement

Every bachelor degree candidate in the College of Science must complete a year-long sequence outside of his or her major department. The approved sequences are: (1) BIOL 1610, 1620; (2) CHEM 1210, 1220; (3) GEO 1150, 3200; (4) PHYS 2110, 2120; and (5) PHYS 2210, 2220.

Science Major (Undecided)

A beginning freshman student who wishes to major in science, but who has not selected a specific major, may register in the college as an Undecided Science Major. A course of study will be developed that will attempt to maximize transfer into the various departmental majors in the college. Students in the Undecided Science Major will be required to transfer to a departmental major after one year of study.

Scholarships

Scholarships are available through the college and some of the departments. Students should contact the college or their major department for further information about these scholarships. Information is also available at: <http://www.usu.edu/science/>

Graduate Assistantships and Fellowships

Excellent graduate assistantships and fellowships are available in all departments. Assistantships are available both for teaching and research. Applications should be made directly to the department concerned. For more information, see the Graduate Financial Assistance section of this catalog (pages 100-101).

College of Science

Graduate Programs

Graduate programs leading to the MS or PhD degree are available in each department in the college. In addition, the Department of Mathematics and Statistics offers an MMath (Master of Mathematics) degree, and the Computer Science Department offers an MCS (Master of Computer Science) degree. See the departmental sections in this catalog for more information on these programs.

Interdisciplinary Studies Major

The College of Science participates in the Interdisciplinary Studies Major (see pages 342-343), which offers flexibility for qualifying students who cannot find an existing degree that meets their needs.

Honors Program

Several departments in the college participate in the University Honors Program by offering special honors courses and by sponsoring an option for graduation with departmental honors.

Undergraduate Research

The sciences provide an ideal setting for research. All departments within the College of Science provide opportunities for undergraduate students to participate in research activities. Interested students should discuss this option with their academic advisor or with an associate dean in the college office.

Course Description

Science (SCI), page 712