UCCS

2004-2005 BULLETIN

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University of Colorado at Colorado Springs

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P.O. Box 7150
Colorado Springs, CO 80933-7150

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UCCS 2004-2005 COURSE BULLETIN

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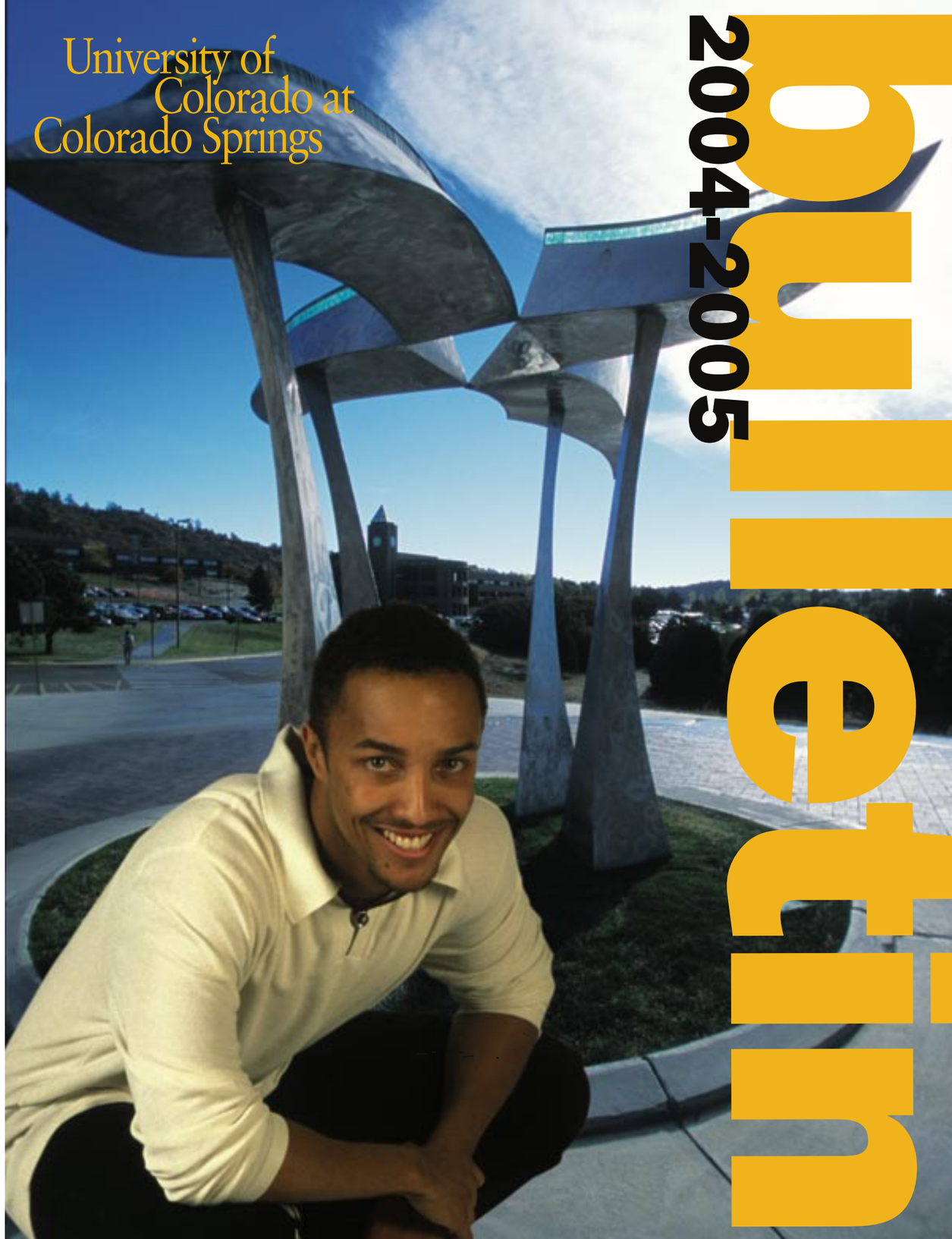


2004-2005

BULLETIN

Undergraduate Programs of Study

In addition to the degree programs listed below, course work in a number of other undergraduate areas of study is offered. College freshmen and undergraduate transfers may enter

Business and Administration
B.S. – four years

Emphasis which may be completed at UCCS
- Accounting
- Business Administration
- Finance
- General Business
- Human Resources Management
- Information Systems
- International Business
- Marketing
- Marketing/Professional
- Golf Management
- Organizational Management
- Service Management

Education
Professional Licensure:
- Elementary Education
- Alternative Licensing Program

Secondary Education:
- English, Mathematics, Science, Social Studies, Spanish

Special Education Licensing Program

Professional Licensure through the Teacher Education Program requires two semesters of study plus one summer session and may be included as a part of a four-year degree program in the College of Letters, Arts and Sciences, or may be pursued after a bachelor of arts has been earned in a liberal arts program. Professional Licensure through the Alternative Licensure Program requires three semesters of study plus one summer session and may be pursued after a bachelor of arts degree has been earned.

Engineering and Applied Science
B.S. – four years

Majors which may be completed at UCCS
- Computer Engineering
- Computer Science
- Electrical Engineering
- Mathematics BA or BS
- Mechanical Engineering

Generally, two years of work toward the following degrees from the College of Engineering and Applied Science may be taken on this campus:
- Architectural Engineering
- Chemical Engineering
- Civil Engineering
- Engineering Physics

Letters, Arts and Sciences
B.A. – four years

B.S. – four years

B.A. with teaching certificate – four years [1]

Majors
- Anthropology
- Biology
- Chemistry (B.A. or B.S.)
- Communication
- Distributed Studies [2]
- Economics
- English
- Fine Arts
- Geography and Environmental Studies
- History
- Philosophy
- Physics (B.S.)
- Political Science
- Psychology
- Sociology
- Spanish

Preprofessional Programs of two to four years which may be completed at UCCS [3]
- Pre-Dental Hygiene
- Pre-Dentistry
- Pre-Education
- Pre-Law
- Pre-Medicine
- Pre-Nursing
- Pre-Pharmacy
- Pre-Physical Therapy
- Pre-Physician Assistant
- Pre-Veterinary

1 See College of Education section of this catalog for details.

2 Distributed Studies majors include: Business Economics and Public Administration.

3 Not a major. A group of courses which meet specified professional school requirements but by themselves do not meet degree requirements.

Beth-El College of Nursing and Health Sciences
Majors
- Health Care Science
- Nursing

Graduate School

Graduate programs which require a bachelor's degree

Business and Administration
Business Administration–M.B.A.

Areas of Emphasis
- Health Care Administration
- International Business Management
- Services Management
- Technology Management

Functional Areas of Emphasis
- Accounting
- Finance
- General
- Information Systems
  - Basic Technology Track
  - Infrastructure Integration Track
- Leadership and Human Resource Management
- Marketing
- Operations and Technology Management
- Project Management

Education
Counseling and Human Services — M.A.

Options
- Community Counseling
- Leadership
- School Counseling
- Student Affairs in Higher Education

Curriculum and Instruction — M.A.

Options
- Educational Leadership
- Principal and Administrator Licensure
- Reading
- Science Education

Special Education — M.A.

Engineering and Applied Science
Applied Mathematics – M.S.

Computer Science – M.S.

Electrical Engineering – M.S.

Areas of Emphasis
- Communications and Signal Processing
- Computer Aided Design
- Computer Engineering
- Control Systems
- Electromagnetics
- Microelectronics
- Signal Processing

Engineering – Master of Engineering (M.E.)

Areas of Emphasis
- Engineering
- Management
- Information Assurance
- Manufacturing
- Software Engineering

Engineering – Ph.D.

Mechanical Engineering–M.S.

Areas of Emphasis
- Aerospace Engineering
- Dynamic Systems and Control
- Fluid Mechanics
- Manufacturing
- Thermodynamics/Heat Transfer

Graduate School of Public Affairs
Public Administration–M.P.A.

Criminal Justice – M.C.J.*

Areas of Emphasis
- Certificate in Nonprofit Management
- Certificate in Criminal Justice
- Certificate in Public Management

** M.C.J.classes are offered at UCCS and the degree is awarded through CU-Denver.*

Letters, Arts and Sciences
Applied Geography – M.A.

Basic Science – M.B.S.

Options
- Anthropology
- Biology
- Biotechnology/Biochemistry
- Chemistry
- Exercise Science
- Geography and Environmental Studies
- Mathematics
- Mathematics, Teaching
- Physics
- Science, Teaching

Communication – M.A.

Geropsychology – Ph.D.

History – M.A.

Psychology – M.A.

Sociology – M.A.

Beth-El Graduate School of Nursing
Nursing – M.S.

University of Colorado at Colorado Springs

1420 Austin Bluffs Parkway
P. O. Box 7150
Colorado Springs, CO
80933-7150
(719) 262-3000 or
1(800)990-UCCS (8227)
www.uccs.edu

Mission

The Colorado Springs campus of the University of Colorado shall be a comprehensive baccalaureate university with selective admission standards. The Colorado Springs campus shall offer liberal arts and sciences, business, engineering, health sciences, and teacher preparation undergraduate degree programs, and a selected number of masters and doctoral degree programs.

About the campus

The University of Colorado at Colorado Springs is one of four campuses in the University of Colorado system. UCCS emphasizes a broad range of degree programs in the liberal arts and sciences and professional programs in business, engineering, nursing, education and public affairs.

In 1964, local businessman George T. Dwire offered the university the Cragmor Sanatorium and its surrounding 80 acres for the sum of $1. UCCS was created by an act of the Colorado Legislature in 1965, providing UCCS with a permanent home for its growing following of scholars.

UCCS aims to become the #1 comprehensive regional research university in the nation with 10,000-12,000 students. This goal is fueled by UCCS status as one of the fastest-growing universities in Colorado and in the nation. The university is known for its high-quality academics and engagement with its community. In recent years, *U.S. News and World Report* named UCCS a top Western public university and the American Association of State Colleges and Universities named the university one of two national leaders in community engagement efforts.

The campus – UCCS is located on approximately 514 acres in northeast Colorado Springs, at the foot of Austin Bluffs, a rugged natural cliff formation. The campus provides a spectacular view of the Front Range of the Rockies including Pikes Peak, a 14,100-foot mountain. Inspired by the view from its pinnacle, Katharine Lee Bates wrote "America the Beautiful" in 1893. The campus boasts easy access to Interstate 25, downtown and recreational areas.

UCCS offers 25 bachelor's degrees, 17 master's degrees, and two doctoral degrees. There are six colleges on campus: business; education; engineering and applied science; public affairs; letters, arts and sciences; and nursing. More than 514 faculty and 392 staff members support the campus.

During fall 2003 semester, more than 7,600 students enrolled in state supported instruction and more than 400 students participated in extended studies. Nearly two-thirds of the students are female. UCCS boasts a diverse student body made up of 17 percent ethnic minority students. Students include 92 percent Colorado residents, 7 percent are from out of state and 1 percent are international students. Students from all 50 states and 67 countries are represented. More than 300 active military personnel and more than 30 U.S. Olympic athletes pursue higher learning at UCCS.

About 76 percent of students are enrolled in undergraduate programs and 24 percent are pursuing graduate study.

The campus' current funds annual budget is approximately $76 million. Campus expenditures yield approximately $203 million to the local economy each year through construction, employee and student spending, travel and operating expenses.

For more information about the campus, the city, and the climate, visit www.uccs.edu/campusinfo/campusinfo.htm.

Accreditation

Accredited by The Higher Learning Commission; Member of the North Central Association.

Admissions and Records

Main Hall, room 108
www.uccs.edu/admissions.html_
E-mail: admrec@uccs.edu

Admissions (719) 262-3383
or 1-800-990-UCCS

Certifications (719) 262-3387
Fax (719) 262-3116

Records and Registration Information
(719) 262-3361

Transcripts (719) 262-3376

Tuition Classification (719) 262-3381 or 262-3385

The Admissions Office provides services in admissions advising, foreign student admission, application processing, transfer credit evaluation, and residency tuition classification.

For admission requirements to the Graduate School, see the Graduate School section and individual college and school sections of this Bulletin or visit web.uccs.edu/gradschl.

The Records Office handles matters pertaining to the demographic and academic student record. It provides information on these processes: address changes, grades, grade changes, drops, adds, withdrawals, changes to pass/fail grading, credit changes, stops, releases, registrations, Privacy Act requests, requests for transcripts, course description requests, and concurrent registrations with other university campuses.

Admission

Admission of Undergraduate Students

The University of Colorado seeks to identify applicants having a high probability of successful completion of their academic program. Admission is based on evaluation of many criteria; among the most important are the following:

1. General level of academic performance before admission to the university, as indicated by the evaluation of work taken at other educational institutions
2. Evidence of scholarly ability and accomplishment as indicated by

scores on accepted tests of scholastic aptitude and achievement

3. Motivation and potential for academic growth and ability to work in an academic community, as indicated by trends in the student's record, by letters of recommendation from teachers and others qualified to comment on the student, by accomplishments outside academic work, and by other relevant evidence.

All credentials presented for admission to the University of Colorado become the property of the university.

A student who is granted admission or readmission must reflect, in a moral and ethical sense, a personal background acceptable to the university. The University of Colorado reserves the right to deny admission to applicants whose total credentials reflect an inability to assume the obligations of performance and behavior deemed essential and relevant to any of its lawful missions, processes, and functions as an educational institution.

Admission to UCCS does not guarantee eligibility for future intrauniversity transfer.

Application

How to Apply

1. Obtain an application form from the Office of Admissions and Records in person, by phone, by mail, or by internet. The mailing address is at the front of this bulletin. The telephone number is (719) 262-3383 or 1-800-990-UCCS (8227). Apply on the web at "www.uccs.edu".
2. Follow the instructions for completing the form and ensure that all required documents are delivered by the deadline dates published in the Schedule of Courses, or on the web.

Credentials

To be considered for admission, applicants must submit complete and official credentials as required by the desired program of study. An "official credential" is one received directly from the issuing institution via a third party common carrier. Students may not disregard any part of their previous educational background. Failure to submit transcripts from all institutions previously attended will be cause for canceling the admission process or dismissal. All credentials presented for admission to UCCS become the property of the university and may not be returned to the applicant.

Notification

As soon as possible after the Office of Admissions and Records receives all required credentials, students will be notified of their admission status. If qualified, the student will receive notification of eligibility for admission. Admission eligibility to the University of Colorado does not constitute a guarantee of enrollment in any specific course.

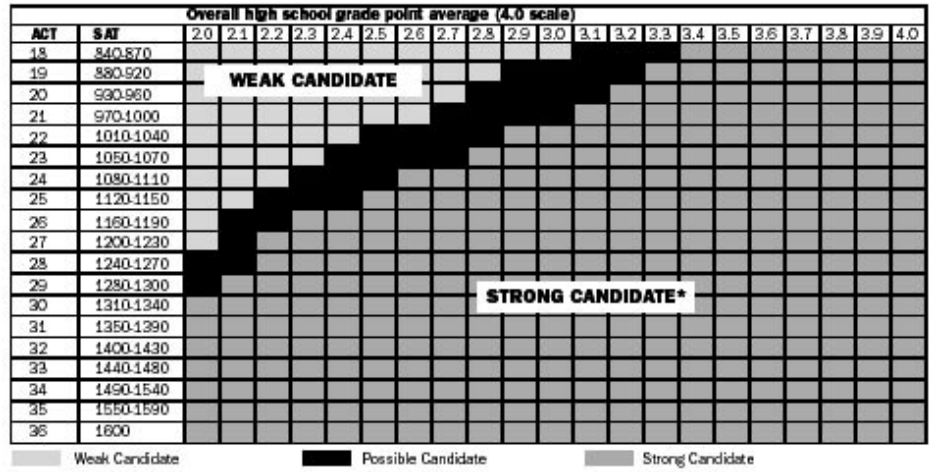
Admission of Freshmen

1-800-990-UCCS(8227)
(719) 262-3383

Freshmen may enroll in the Beth-El College of Nursing and Health Sciences, the College of Letters, Arts and Sciences, the College of Business and Administration, and the College of Engineering and Applied Science in the fall, spring, or summer terms. The schools of the university – Dentistry, Education, Graduate, Graduate School of Public Affairs, Journalism, Law, Medicine, Nursing, and Pharmacy – require one or more years of college-level work before a student may be considered for admission. The programs at UCCS provide all the course work required for entrance into the Schools of Dentistry, Education, Graduate, Graduate School of Public Affairs, Journalism, Law, Medicine, and Pharmacy. Students may complete teacher certification requirements on this campus.

1. Priority for admission to the College of Letters, Arts and Sciences is given to applicants who (a) rank in the upper 40% of their high school graduating class at the end of the 6th, 7th, or final semester; (b) achieve a combined Scholastic Aptitude Test (SAT) score of 1,080 or above, or a composite American College Test (ACT) score of 24 or above; (c) have a G.P.A. of 2.8 or above; and (d) complete all high school course units as required by the college to which they have applied. Increased requirements for admission to the colleges of Business and Administration, Engineering and Applied Science, and Nursing and Health Sciences are described in their respective sections of this bulletin. Applicants who do not meet all of these requirements should refer to category number 2 below.
2. Applicants for freshman admission whose records vary in any way from the above priority admissions category will be considered on an individual basis by evaluation of their overall academic records including (a) the quality of their high school program of study; (b) the level of their college entrance test scores (SAT or ACT); and (c) any information unique to an individual situation. In addition, all applicants whose records reflect innovative grading systems, unusual curricula, no rank in class, or a high school equivalency through the General Education Development (GED) test, will be considered in this category. Students in this category admitted to the university may not exceed 20% of the total admitted pool.

Freshman Admissions Criteria



Codes for the University of Colorado at Colorado Springs ACT CODE: 0535 SAT CODE: 4874

** Students in the strong candidate category are only assured admission provided they meet the Regents' Minimum Academic Preparation Standards (MAPS). These standards include 4 years of English (2 of which must be in composition), 3 years of college preparatory mathematics, 3 years of natural science (2 of which must be laboratory sciences), 2 years social sciences, 2 years of the same foreign language, and at least one year of additional academic elective credit. Applicants who meet these high school requirements and the admission criteria in the chart will be admitted provided all other factors are consistent and enrollment limitations have not been reached. For the fall 2002 semester, the mid 50% of all new freshmen presented a high school class rank between the 50th and 85th percentile, a high school GPA from 2.9-3.7, ACT composite scores from 20-26, SAT combined scores from 950-1180.*

Minimum Academic Preparation Standards (MAPS)

Freshmen and transfers entering the University of Colorado who have graduated from high school in 1988 or later will be required to meet Minimum Academic Preparation Standards (MAPS). The individual college's requirements are listed in the chart. Students should be careful to note the different requirements in particular colleges and plan their academic preparation accordingly.

Options For Those Not Meeting MAPS Requirements as Entering Freshmen

What if my high school doesn't offer all the courses I need to meet the MAPS?

An admission decision involves many factors. There will also be consideration of the extent to which this curriculum has been available. Students with deficiencies may be admitted to the university provided they meet the other admission standards (e.g. test scores, rank in high school class, and grade point average) and provided they make up the deficiencies in the MAPS prior to graduation from the university.

How will my deficiencies be dealt with while enrolled in the university?

Freshmen or transfer students who are admitted but who are deficient in MAPS will be required to make up the deficiency in accordance with the following policy.

1. Students who are deficient one unit in one or more areas may:

   a. Make up that deficiency by taking a course that would normally be counted as degree credit and have that course count as part of their undergraduate total hours, assuming that all prerequisites are fulfilled. (For example, students could enroll in I.D. 105, successfully complete the course, eliminate their one-unit deficiency in mathematics, and earn three credits toward the 120.)

   b. Take a proficiency test (if one is available): A score of 280-286 on the foreign language proficiency test eliminates one unit of deficiency and permits students to enroll in the second semester of that language. A score of 336-341 (or above) on the test eliminates all units of MAPS deficiencies for foreign language. (Note: According to MAPS, students must be proficient in foreign language up through the second semester of college level). A score of 19 on the ACT-English or 450 SAT-English eliminates a one-unit deficiency in English and entitles students to enroll in English 131. A score of 60 on the Reasoning Skills Exam also eliminates one unit of deficiency in mathematics.

   c. Utilize appropriate Advanced Placement and CLEP scores to eliminate the deficiency.

   d. Eliminate a single-unit deficiency in English by successfully completing English 099 (formerly English 121); and in mathematics by successfully completing MATH 090, Fundamentals of Algebra. These courses are offered through Extended Studies; and while they do eliminate one unit of deficiency, they DO NOT count toward the total number of hours needed to graduate.

   e. Take appropriate courses at community colleges or other colleges to eliminate a unit of deficiency. Students should be aware of courses which will and will not transfer to the University of Colorado.

2. Students who are deficient two or more units, may:

   a. Remove any single unit of deficiency by any of the methods in 1, above.

   b. Remove two units by various combinations of the methods in 1, above.

Advanced Placement Program

The university participates in the high school advanced placement program of the College Board. Students receiving scores of 3, 4, or 5 on advanced placement examinations are generally granted college credit. Official scores must be sent to the university directly from the College Board. Please see chart on page 8.

Applicants Who Did Not Graduate From an Approved High School

An applicant who has not graduated from high school must submit satisfactory scores on the General Educational Development Test (GED), a Certificate of Equivalency from any state department of education, a complete transcript of any high school work completed, and SAT or ACT entrance examination scores. Each applicant will be considered on an individual basis.

Undergraduate and Unclassified Student Admission Information

Applications and required credentials should be filed no later than July 1 for fall, December 1 for spring, and May 1 for summer.

Call 1-800-990-UCCS (8227) or (719) 262-3383

TYPE OF APPLICANT	CRITERIA FOR ADMISSION [1]	REQUIRED CREDENTIALS [2,3,4]	NOTES
Freshman (Students seeking a Bachelor's Degree who have never attended a collegiate institution)	See Freshman Admission Critera Chart page 4 and Assured Admission Criteria page 5.	• Complete application • $45 application fee (non-refundable) • Official high school transcript showing rank in class and date of graduation. If still enrolled in high school, 7th semester grades and 8th semester courses in progress. • Official ACT or SAT score report.	• For specific unit requirements refer to the college sections of this catalog. • Non-high school graduates must submit copies of GED scores and a state equivalency certificate in addition to a high school transcript showing work completed through highest grade.
Transfer (Students seeking a Bachelor's Degree who have attended a collegiate institution other than UCCS)	See Transfer Admission Requirments, page .	• Complete application • $45 application fee (non-refundable) • One official transcript from each college attended. • Freshman credentials may be required. • Non-high school graduates must submit copies of GED scores and state equivalency certificates.	• While credits from an institution may appear on the transcript of a second institution, transcripts must be submitted from all institutions where credit has been earned.
Unclassified (Non-degree) (Students who are not seeking a degree at this institution or who have not yet been admitted to degree status.)	• Must be 20 years of age by Sept. 15 for fall semester or summer term, or Feb. 15 for spring semester. • Must be a high school graduate or possess equivalency certificate. • Must have at least a 2.0 G.P.A. and be in good standing and eligible to return to all institutions previously attended.	• Complete application • $20 application fee (non-refundable) • Non-high school graduates must submit copies of GED scores and state equivalency certificates.	• Unclassified students without a degree must maintain a 2.0 G.P.A. to remain eligible to continue. • After completing 12 semester hours, degree seeking students must change to degree status. • Not eligible for most forms of financial aid.
Former CU Set-up (Returning unclassified student; returning degree student with fewer than 12 semester hours at another institution since CU)	• Must be in good standing **(*see Note A)**	• Former student application. Degree students must have official transcripts sent for any work attempted since last CU semester.	**Note A** - students under academic suspension in certain schools and colleges at CU may enroll during the summer term as a means of improving their G.P.A.
Former CU Re-entering (Degree student who has attempted 12 or more hours at another institution since attending CU)	• Same as for transfer student.	• Same as for transfer student. Application fee required.	Will be considered for previous major unless a different major is requested on the application. Must meet same criteria as transfer student
Change of Status: **Unclassified to Degree** (Current or former CU unclassified students who wish to enter a degree program)	• Same as for transfer student.	• Same as for transfer student. Application fee required.	
Change of Status: **Degree to Unclassified** (***See Note B** – Current or former CU degree students who have graduated and wish to take additional work)	• Must have completed degree. • Must be in good standing and eligible to return to all institutions attended.	• Unclassified student application. • NO application fee required.	**Note B** - only students who have completed and received a degree are eligible for change from degree status to unclassified.
INTER-CAMPUS TRANSFER (Students who have been enrolled on one CU campus and wish to take courses on another.)	• Must be in good standing	• Former student application. • Credentials as required by Campus Admissions Office.	• Transfers from UCCS to another CU campus should refer to appropriate catalog for any additional requirements.

1 Applicants not meeting these criteria are considered on an individual basis. Requirements for individual schools and colleges may vary or exceed the stated minimum.

2 Transcripts must be sent directly to the University of Colorado from each issuing institution. All documents submitted become the property of the University.

3 Any applicant who did not graduate from a high school must submit GED scores and a State Equivalency Certificate in addition to other required credentials.

4 Additional credentials may be required in individual cases.

Students Not Granted Admission

An applicant who is not granted admission as an entering freshman may wish to consider a transfer to the university after one or two years of study elsewhere (see transfer requirements section). In the best interest of students pursuing educational goals for which they lack some academic preparation, the university Committee on Admissions often recommends that such applicants complete at least one full year of college level course work at a regionally accredited college where much personal attention and the appropriate courses will prepare the student for an eventual successful experience at the University of Colorado.

High School Concurrent Enrollment

High school juniors and seniors with proven academic abilities may be admitted for one term at a time with special approval from the admissions committee. Credit for courses taken may subsequently be applied toward a university degree program. For more information and application instructions, contact the Office of Admissions and Records.

International Baccalaureate Program Credit

Students admitted after June 30, 2003, and who graduated from high school having successfully completed an International Baccalaureate (IB) diploma program, shall be granted at least 24 semester hours of college credit at no cost. Credit is only awarded for a score of 4 or better on an examination administered as part of the IB diploma program. Students who complete four Higher Level (HL) exams will receive 6 – 8 hours of credit for each exam. Students who complete three HL exams and three Standard Level (SL) exams will receive 6 – 8 hours of credit for each individual HL exam and a total of 6 hours of elective credit for all three of the SL exams in aggregate. All colleges accept these credits, but apply them differently depending on the student's degree program.

Students who do not complete the entire IB diploma program will receive credit for up to four Higher Level (HL) exams completed with scores of 4 or better. No credit will be awarded for Standard Level (SL) exams.

Credit is not granted for an IB score if the student completes an equivalent college course or Advanced Placement (AP) course. Credit is awarded only for higher level exams on which a student scores sufficiently high on a scale of 1-7. All colleges accept these credits, but apply them differently depending on the student's degree program. Please contact an advisor in the Student Success Center for test score interpretation.

A complete listing of IB courses and qualifying exam score can be found at web.uccs.edu/transfer.

Transfer Admission Requirements

Admission of Transfer Students

1-800-990-UCCS(8227)
(719) 262-3383

To be considered for admission, transfer students must be eligible to return to all collegiate institutions attended; they may not disregard any part of a previous collegiate record. Failure to advise the university of all institutions previously attended may be sufficient cause for rejection or dismissal.

Transcripts must be sent directly to the University of Colorado from each issuing institution. All documents submitted become the property of the University of Colorado.

General Academic Requirements

Transfer students who graduated from high school in 1988 or later are subject to the same minimum academic preparation standards as those required by freshmen. Please see "Minimum Academic Preparation Standards" section of this bulletin.

Transfer students must meet a minimum G.P.A. requirement which varies according to the hours of collegiate work completed and the type of institution in which the course work was taken. If the transfer student has 30 semester hours or more, the required G.P.A. is 2.0 for several fields of study. If the student has earned from 12 to 29 semester hours, and the institution has comparable admission standards then a 2.0 G.P.A. is the minimum requirement. In the 12-29 hour range, if the work was earned at an institution with lower admission standards, then a 2.5 G.P.A. minimum is required. If the student who has earned 12-29 semester hours had high school criteria which meet our freshmen minimum requirements, then he or she is admissible with a 2.0 G.P.A. Work in progress at the time of application cannot be considered in computing the cumulative average. As there are some schools and colleges at the university which require a higher grade-point average for transfer, students are urged to investigate specific requirements.

Community College Transfer Students

Students who successfully complete a state guaranteed general education course will receive transfer credits applied to graduation requirements in all majors unless a specific statewide Articulation Agreement exists. Currently Colorado has several approved statewide articulation agreements in business, nursing, engineering, elementary teacher education and nursing. Information about the state guaranteed transfer program and articulation agreements is available on the Colorado Commission on Higher Education website at www.state.co.us/cche.

UCCS will honor the transfer of an associate of arts (A.A.) degree and the associate of science (A.S.) degree earned at a Colorado public institution that offers A.A. or A.S. degrees. A student who earns an A.A. or A.S. with a grade of "C" or better in all courses will transfer with junior standing into any Letters, Arts and Sciences (LAS) degree program offered by UCCS. The credits earned in the associate degree program will apply at minimum to 35 credits. Because all LAS degrees are designed to be completed in 120 credit hours, a transfer student can complete a four-year degree in the same time as a native student, 120 hours. UCCS will evaluate credit for Advanced Placement, International Baccalaureate, and alternate sources of credit following its standard policy.

Advanced Placement Program Credit

Credit Toward Graduation Requirements By College. (X) Credit will apply to degree programs in the specific college

Advanced Placement Examination Title	Examination Score	UCCS Course Equivalent	Semester Hours	Business and Administration	Engineering and Applied Science	Letters, Arts and Sciences
BIOLOGY						
Biology	5, 4	BIOL 110, 115	6	X	a	c
CHEMISTRY						
Chemistry	5, 4	CHEM 103, 106	10	X	b	X
	3	CHEM 103	5	X	b	X
CLASSICS						
Virgil	5, 4	Humanities	6	X	c	X
	3	Humanities	3	X	c	X
Catullus-Horace	5, 4	Humanities	6	X	c	X
	3	Humanities	3	X	c	X
Vergil and Catullus-Horace	5, 4	Humanities	9	X	c	X
COMPUTER SCIENCE						
Computer Science	5	CS 115	3	X	c	X
ECONOMICS						
Microeconomics	5, 4	ECON 101	3	X	c	X
Macroeconomics	5, 4	ECON 102	3	X	c	X
ENGLISH						
English Composition	5	ENGL 131, 141, 150	6	X	X	X
and Literature	4	ENGL 131, 150	6	X	X	X
English Language	5	ENGL 131, 141	6	X	X	X
and Composition	4	ENGL 131	3	X	c	X
FINE ARTS						
Studio Art	5, 4, 3	VA 104, 206	6	X	c	X
Art History	5, 4, 3	A H 280, 282	6	X	X	X
FOREIGN LANGUAGE						
French Language	5, 4	FR 211, 301	6	X	c	X
	3	FR 211	3	X	c	X
French Literature	5, 4	FR 211, 311	6	X	X	X
	3	FR 211	3	X	X	X
German Language	5, 4	GER 211, 301	6	X	c	X
	3	GER 211	3	X	c	X
German Literature	5, 4	GER 211, 311	6	X	X	X
	3	GER 211	3	X	X	X
Spanish Language	5, 4	SPAN 211, 301	6	X	c	X
	3	SPAN 211	3	X	c	X
Spanish Literature	5, 4	SPAN 211, 311	6	X	X	X
	3	SPAN 211	3	X	X	X
GOVERNMENT & POLITICS						
U.S. Government & Politics	5, 4	Elective	3	c	c	X
Comparative Gov't & Politics	5, 4	Elective	3	c	c	X
HISTORY						
American History	5, 4	HIST 151, 154	6	X	X	X
European History	5, 4	HIST 101, 103	6	X	X	X
MATHEMATICS						
Math – Calculus AB	5	MATH 135, 136	8	X	X	X
	4	MATH 135	4	X	X	X
Math – Calculus BC	5, 4	MATH 135, 136	8	X	X	X
	3	MATH 135	4	X	X	X
MUSIC						
Music Theory	5, 4	Elective	6	X	c	X
	3	Elective	3	X	c	X
Music Lis/Lit	5	Humanities	6	X	c	X
	4,3	Humanities	3	X	c	
PHYSICS						
Physics B	5, 4, 3	PES 101, 102	8	X	c	X
Physics C - Mechanics	5, 4	PES 101, 102	5	X	X	X
Physics C - Electricity & Magnetism	5, 4	PES 112, 215	5	X	X	X
PSYCHOLOGY						
Psychology	5, 4	PSY 100	4	c	c	X
Statistics	5,4	QUAN 201	3	X	X	X

a Does not apply. Computer Science majors and premedical options check with faculty advisor.
b Chemistry 103 fulfills departmental requirements in all areas. Chemistry 106 fulfills Computer Science requirements and may be an elective credit in Applied Mathematics.
c Check with faculty advisor in major department.

Transfer Guides

Guides to assist students in their transfer from Colorado community colleges are available for student use at web.uccs.edu/transfer.

Transfer of College Level Credit

No evaluation of transfer credit is made until after a student is admitted as a degree student. An admitted student will be notified when the evaluation has been completed. New transfer students will be advised about requirements remaining and completed when they attend one of the mandatory New Student Orientations.

College credit is transferable to UCCS according to the following stipulations:

1. Credit must have been earned at a college or university of recognized standing.
2. Only courses in which a grade of C or better has been attained will be accepted for transfer at this institution. Grades of pass, satisfactory, honors, etc., are also accepted for transfer. However, a limitation is placed on the number of pass hours accepted toward a degree by each school and college.
3. Credit is not transferable from vocational or technical curricula.
4. Credit will be granted only for course work appropriate to the curricula at UCCS.
5. Remedial or subcollege level courses are not transferable.
6. A maximum of 72 hours may be transferred from a two-year or junior college.
7. A maximum of 102 semester hours of transfer credit may be counted toward graduation. Individual schools and colleges determine which courses and hours will apply toward the degree.
8. Individual schools and colleges reserve the right to accept or deny credit earned while under scholastic suspension.
9. A maximum of 60 semester hours of extension credit (including no more than 30 semester hours of correspondence) may be counted toward an undergraduate degree at the University of Colorado.
10. Advanced placement credit is evaluated upon receipt of an official score report from the College Entrance Examination Board. Usually only scores of 3, 4, and 5 are considered for credit. Credit is not granted for an advanced placement score if the student has completed a college course which is equivalent to the course for which he/she would receive advanced placement credit.
11. College Level Examination Program (CLEP) credit for approved subject examinations may only be granted if a score of 67 percentile or above is received and if the courses are acceptable to the student's school or college. A maximum of 30 semester hours may be counted toward a degree. Credit is not granted for a CLEP score if the student has completed equivalent work.

    Colorado residents may secure CLEP materials from the state regional office by contacting:

    College Level Examination Program
    c/o College Entrance Examination Board
    4155 East Jewell Street, Suite 705
    Denver, Colorado 80222

    Students outside of Colorado may obtain CLEP information and application forms by writing:

    College Level Examination Program
    Box 1822
    Princeton, New Jersey 08540
12. Credit for military schooling is evaluated upon receipt of forms DD 295 and DD 214. Evaluation of credit is in accordance with the American Council on Education's credit recommendation and is generally considered as elective credit.
13. Admission to the University of Colorado does not guarantee eligibility for future transfer into other programs, colleges, or schools within the university.

All course work is evaluated on the semester hour basis, i.e., 1 quarter hour equals 2/3 semester hour.

Transfer Credit Appeal Procedure

The procedure for appealing a decision involving the acceptance of course work from a Colorado community college for credit toward a degree is as follows:

1. State guaranteed courses under the State Guarantee General Education (GT pathways) policy will transfer to any four-year institution in Colorado to satisfy general education requirements. Other, non-guarantee courses are evaluated individually and within 30 days of date of admission. Students must file an appeal within 15 days of receiving their transcript evaluation by writing the office assigned responsibility for transfer evaluations at UCCS. The decisions made in the transcript evaluation will be binding if the student fails to file an appeal within this time frame. UCCS will have 30 days to respond in writing to the student appeal. A transfer student should abide by the following procedure when appealing a credit transfer decision:

   a. Complete and return a petition form to the Student Success Center, Main Hall, 2nd floor. The form will be forwarded to the appropriate authority within the college.

   b. The appropriate authority will respond in writing to the petitioner.

2. If the dispute cannot be resolved between the student and UCCS personnel within 30 days, the student may appeal in writing to the Colorado Commission on Higher Education. The student has 15 days from receipt of the written notification to file an appeal. Information concerning the appeal process is available at the Student Success Center, Main Hall, 2nd floor.

Student Bill of Rights

The Colorado General Assembly implemented the Student Bill of Rights (C.R.S. 23-1-125) to assure that students enrolled in public institutions of higher education have the following rights:

a. A quality general education experience that develops competencies in reading, writing, mathematics, technology and critical thinking through an integrated arts and science experience.

b. Students should be able to complete their associate of arts and associate of science degree programs in no more than 60 credit hours or their baccalaureate programs in no more than 120 credit hours unless there are additional degree requirements recognized by the Commission;

c. A student can sign a two-year or four-year graduation agreement that formalizes a plan for that student to obtain a degree in two or four years,

unless there are additional degree requirements recognized by the Commission;

d. Students have a right to clear and concise information concerning which courses must be completed successfully to complete their degrees;

e. Students have a right to know which courses are transferable among the state public two-year and four-year institutions of higher education;

f. Students, upon completion of core general education courses, regardless of the delivery method, should have those courses satisfy the core course requirements of all Colorado public institutions of higher education;

g. Students have a right to know if courses from one or more public higher education institutions satisfy the students' degree requirements;

h. A student's credit for the completion of the core requirements and core courses shall not expire for ten years from the date of initial enrollment and shall be transferable.

International Student Admission

The university is authorized under federal law to enroll non-immigrant foreign students. International applicants are required to contact the director of admissions for international students in the office of admissions and records before submitting an application. All foreign applicants from non-English speaking countries are required to demonstrate proficiency in English by submitting scores on the test of English as a foreign language (TOEFL). International students must follow special procedures and observe special deadlines. The application fee is $100 and is nonrefundable. English as a second language (ESL) is not available at UCCS.

Admission of Unclassified Students

1-800-990-UCCS(8227)
(719) 262-3383

The unclassified student designation has been established to meet the needs of those students who wish to take university courses but who do not presently intend to work toward a degree at the University of Colorado. Permission to register for specific courses is contingent upon the availability of space. Unclassified students may have difficulty obtaining course space due to class enrollment limits and because degree students may have a higher priority in certain departments.

Unclassified students enrolled during the academic year (fall, spring and summer terms) must be 20 years of age or older by September 15 for the fall and summer terms and February 15 for the spring term, and must have a 2.0 G.P.A. in all college work attempted, and must be in good standing at all collegiate institutions attended.

An unclassified student who is not a high school graduate must submit GED scores and a high school equivalency certificate issued by a state department of education at the time of application.

Unclassified students may take courses on a pass/fail basis; however, such credit will be counted as part of the total pass/fail credit allowed by the various schools and colleges should the student change to degree status.

Continuation as an unclassified student (Major Code NOLD, NOUD, NOHS or NODW) is contingent upon maintaining an overall grade point average of 2.0 upon completion of 12 or more semester hours.

Certified teachers with baccalaureates who seek only a renewal of the certificate currently held and who do not require institutional endorsement or recommendation may qualify for the university-wide unclassified student classification as outlined above.

Persons with baccalaureates who seek initial teacher certification must apply for and be admitted to the Teacher Education Program separately and meet the requirements of the College of Education. For information on the deadlines for admission to the program, unclassified students should consult the College of Education.

Unclassified students may not register concurrently on more than one campus of the university.

The Graduate School of Business and Administration does not allow students to register for graduate level business classes until they are officially admitted to the M.B.A. program.

Applying Unclassified Student Credits Toward Degree

Unclassified students may apply for admission to an undergraduate degree program by submitting an undergraduate admissions application, complete academic credentials, and the application fee. Accepted degree applicants may transfer a maximum of 12 semester hours taken as an unclassified student at this university to an undergraduate degree program with the approval of the appropriate dean's office.

Unclassified students desiring to pursue a graduate degree at the university are encouraged to submit the complete graduate application and supporting credentials as soon as possible. Students may be allowed to transfer up to 9 semester hours of credit taken as an unclassified student at this university to apply toward a master's degree provided the transfer is recommended by the department concerned and approved by the dean of the Graduate School. Students are advised to contact the Office of the Dean of the specific graduate school in which they wish to enroll for further details on the transfer of unclassified student credentials. See also Transfer of Unclassified Student Credit Hours in this bulletin. For continuation as an unclassified student see "eligibility to return" section of this bulletin.

Admission of Graduate Students

Graduate School
Main Hall, room 304
(719) 262-3417
Fax: (719) 262-3045
web.uccs.edu/gradschl

Complete information is contained in the Graduate School section of this bulletin.

Classification of In-state and Out-of-state Students

(719) 262-3381 or (719) 262-3385
1-800-990-UCCS (8227)

A student is initially classified as an in-state or out-of-state registrant for tuition purposes at the time an application and all supporting credentials have been received in the Office of Admissions and Records. The classification is based upon information furnished by the student and from other relevant sources. After the student's status is determined, it remains unchanged in the absence of satisfactory evidence to the contrary. The student who, due to subsequent events, becomes eligible for a change in classification, whether from out-of-

state to in-state or the reverse, has the responsibility of informing the tuition classification officer, Office of Admissions and Records, in writing within 15 days after such a change occurs.

If adult students, or emancipated minors, establish domicile outside Colorado, they are to send written notification within 15 days to the tuition classification officer.

Petitioning for Classification Change

Instructions as to the procedure to follow, the necessary petition forms, and detailed information regarding the statute are available from the tuition classification officer in the Office of Admissions and Records.

Classification Notes

1. Petitions will not be acted upon until an application for admission to the university and complete supporting credentials have been received.
2. Changes in classification are made effective at the time of the student's next registration.
3. A student who willfully gives wrong information to evade payment of the out-of-state tuition is subject to legal and disciplinary action.
4. Petitions and all required documents must be submitted no later than the census date (see below, Registration, Fee Regulations) for the term a change in status is sought. Late or incomplete petitions will not be considered until the next semester.

U.S. and Canadian Military Waivers/ Olympic Waivers

Special rules apply to active duty members of the U.S. and Canadian Armed Forces permanently stationed in Colorado and their dependents and Olympic athletes in training. Strict deadlines of certification each term one enrolls are enforced for these individuals. Please contact the tuition classification officer in Admissions and Records for details.

Registration

(719) 262-3361

See the Academic Calendar for dates of registration. Times and details of registration, course offerings, and instructions on how to register over the internet via the Student Online Center are published in the **Schedule of Courses** each academic term. Changes to the published schedule are posted on the web.

Expenses

Tuition and Fee Regulations

(719) 262-3391

The Board of Regents reserves the right to change tuition and fees at any time.

Students are required to pay a down payment prior to registration. Down payment requirements and due dates for payment of balances are contained in the Schedule of Courses.

All students enrolled for courses are assessed mandatory student fees. These consist of a base student fee and per credit hour fees as noted below. The income is used to fund student activities and to finance the University Center and Family Development Center.

1. All persons attending regularly scheduled classes must be registered and must have paid the proper tuition and fees. The tuition for those auditing a course on this campus is the same as for those registered for credit. Auditors register for courses for No Credit (NC).
2. Students enrolled as "Candidate for Degree" only to take a comprehensive examination for a master's degree will pay graduate, resident tuition for 1 credit hour, plus appropriate fees.

Payment of Tuition and Fees

Students must pay a substantial tuition down payment. The down payment requirements and payment due date is contained in the Schedule of Courses. Students receiving financial aid or a guaranteed student loan should contact the Financial Aid Office to determine if they are eligible for a down payment waiver. Students covered by a third-party contract should contact the Third Party Billing Office. Students receiving veterans assistance will be expected to pay the specified down payment.

Due date for payment of balances is contained in the Schedule of Courses. Bills will be mailed approximately two weeks after the end of the drop/add period for the balance of tuition and fees less the down payment. Payments must be received at the Bursar's Office by the due date. Mail postmarked on the due date will not be honored.

Bills not paid by the due date will be assessed a prorated late fine up to $50 and will accrue a 1 percent per month service charge on the unpaid balance (12% A.P.R.).

Students receiving financial aid will have tuition and fees deducted from their awards. Any balance remaining may be picked up at the Loan Disbursement Office.

Personal Checks

A student's personal check is accepted for any university obligation, unless the student is deemed to be a poor credit risk. A $25 service charge plus bank collection charges will be assessed for all returned checks. If the returned check was for a down payment, a reinstatement fee of $25 plus $10 per month will be assessed until cleared. If the check was for a tuition bill, a prorated late payment fine up to $50 plus interest will be assessed if applicable.

Drops or Withdrawals

A course drop or withdrawal is effective on the date that the completed form is returned to and stamped received by the Records Office. Any adjustment in tuition is made as of the receipted date by the Records Office.

Refunds/Rebates

Refunds/rebates will not be processed until approximately two weeks after the end of the drop/add period. The amount of refund/rebate is determined by the time of withdrawal in accordance with the policy contained in the Schedule of Courses.

Payment Policy

It is the student's responsibility to ensure payment is completed by the established due date. Students who enroll after the last day of late registration must pay a $50 late penalty fee plus a regular downpayment and meet the established final payment due date.

Census date

The census date is the final controlling date for assessment of tuition, receiving a refund for a change in registration (dropped course), requesting the pass/ fail option or changing back to a letter grade, and a number of other academic, financial, and registration functions. Census date is the 12th class day of a fall or spring semester or the 6th class day of the summer term. The exact day and date is printed in the Schedule of Courses each semester.

General Fees

Learning Technology Fee

All students pay a $5 per credit hour

fee. The learning technology fee provides for the purchase of new computer equipment and software accessible to all students, the maintenance and upgrade of telecommunication equipment used in all current and future learning centers, and the development of a broad set of informational communication offerings accessible to all students.

Matriculation Fee

This nonrefundable charge is assessed to all students new to the University of Colorado system. It is a one-time charge of $25 and covers the normal cost of transcripts and establishing your university record. The fee is assessed during registration at the time of initial enrollment and is nonrefundable, even though the student may withdraw.

Room and Board Down Payment

Housing Village students must make a $1,200 room and board down payment. Pay at the Bursar/Cashier's window, on the web or by mail.

Safety and Transportation Fee

It is the policy of the Colorado Commission on Higher Education that parking for vehicles owned by students, faculty and staff must be funded on a self supporting basis from special charges made of those owning automobiles and parking them on campus. In accordance with this policy, the UCCS Parking and Transportation Services Operation is established as a self-supporting auxiliary enterprise, RECEIVING NO STATE APPROPRIATIONS from tax revenues. This means that the construction, improvement and maintenance of all parking facilities at UCCS are financed solely through permit sales, parking fines and visitor parking revenue. Annual revenue must be sufficient to satisfy operating expenses and to repay revenue bonds sold to construct parking facilities.

The Safety and Transportation fee is charged per student, per semester regardless of a student's credit hour course load. Some of the things the Student Safety and Transportation fee pays for:

1. The campus shuttle and the Four Diamonds bus service
2. Increased hours and service from the campus police
3. Emergency phones on campus
4. Lighting along roadways and in parking lots

Residential students parking a car on campus must purchase a Housing Permit. The Housing Permit allows students to park in parking lots 8, 9 and N.

Commuter students have the option of purchasing a parking permit to park in HUB parking lots or Lot N. A HUB permit allows parking in Lots 1-7, A-D, Lot N, and the parking garage. Permits are also available for Lot N access and evening parking only. Commuter Students not wishing to purchase a parking permit may park at the Four Diamonds parking lot located at 5025 North Nevada. Bus service to the main campus is provided free of charge to students who possess a valid I.D. card.

Permits are limited and prices are subject to change. For current information please call 262-3528 or reference the website at www.uccs.edu/~pusafety.

Cars violating parking regulations are subject to ticketing and/or towing. Parking is on a first come, first served basis. Faculty, staff and students should direct all parking or traffic inquiries to Transportation and Traffic Services, in the Department of Public Safety, Campus Services Building, room 237, or call 262-3528.

Student Health Center Fee

The Health Center is available to all full-time and part-time students who have paid the following fees, per semester: Fall semester, $25; Spring semester, $25; Summer session: $12.50.

Student Identification Fee

The fee for a student photo I.D. is $15.

Student Information System (SIS) Fees

This is a nonrefundable fee approved by the Board of Regents to be effective fall 1984. The fee is payable each semester of registration.

The Student Information System (SIS) enables the university to provide better service to its students through student records, course scheduling, data management, transcripts, financial aid, student accounts and registration using the student on line center. All students pay $5.50 each semester or term.

Student Events/Performance Fee

The Student Events/Performance fee of $4 per semester for students enrolled in more than six credit hours and $2.50 per semester for students enrolled in six or fewer credit hours provides free access for all UCCS students to all Theatreworks performances and events in the Bon Vivant Theater in University Hall.

Student Life Fees

$58 Plus $13.85 Per Credit Hour

Every student enrolled for courses will be assessed mandatory student life fees for the spring term. These fees finance the student facilities, programs and services that are not supported by the university's general fund budget. The six Student Life Fees are:

- **Athletics Fee** ($3.35 per credit hour) Support for six women's and six men's intercollegiate sports programs.
- **Family Development Center Bond Fee** ($10 base)
- **Family Development Center Operating Fee** ($3 base) Support for programs and services.
- **Student Activities Fee** ($12 base) Support for student organizations, student newspaper, student government operations and other student activities.
- **Student Recreation Fee** ($1 per credit hour) Support for recreation programs and activities and campus fitness center.
- **University Center Bond Fee** ($33 base plus $9.50 per credit hour) – Repayment of bonded indebtedness on building as well as support for entertainment, cultural and educational programs, and the Center's operation.

Repayment of bonded indebtedness on building as well as support for childcare operations.

Instructional Fees

Refunds for course or instructional fees and deposits for students who withdraw from school are made according to the refund schedules found in the Schedule of Courses for each semester or term of the academic year. A full refund of course or instructional fees and deposits for courses dropped on or before the census date is made to students who remain

TUITION SCHEDULE — FALL 2003 TUITION IS BASED ON YOUR STUDENT STATUS, NOT THE LEVEL OF THE COURSE

Undergraduate Freshmen and Sophomore Students and non-degree/unclassified students without an undergraduate degree with less than 60 semester hours completed

CREDIT HOURS	RESIDENT	NON-RESIDENT
0-1	$149	$ 770
2	299	1540
3	447	2310
4	597	3081
5	747	3850
6	893	4598
7	1044	6226
8	1194	6365
9	1244	6508
10	1305	6648
11	1399	6787
12-15	1512	7067
each hour over 15	$ 149	$ 767

Undergraduate Junior and Senior Students in the College of Letters, Arts and Sciences and non-degree/unclassified students without an undergraduate degree with greater than 60 hours completed

CREDIT HOURS	RESIDENT	NON-RESIDENT
0-1	$138	$ 704
2	274	1408
3	411	2110
4	549	2814
5	688	3517
6	825	4222
7	961	5684
8	1098	5815
9	1146	5948
10	1223	6082
11	1338	6213
12-15	1444	6465
each hour over 15	$138	$ 704

Undergraduate Junior and Senior Students in the Beth-El College of Nursing and Health Sciences

CREDIT HOURS	RESIDENT	NON-RESIDENT
0-1	$ 171	$ 467
2	343	933
3	515	1400
4	687	1867
5	858	2333
6	1029	2799
7	1202	3267
8	1373	3732
9	1544	4199
10	1716	4666
11	1887	5132
12-15	2051	5801
each hour over 15	$ 171	$ 467

Undergraduate Junior and Senior Students in the Colleges of Business and Engineering

CREDIT HOURS	RESIDENT	NON-RESIDENT
0-1	$ 151	$ 718
2	303	1438
3	453	2156
4	604	2877
5	755	3595
6	908	4314
7	1059	5811
8	1211	5945
9	1278	6078
10	1308	6212
11	1407	6346
12-15	1500	6609
each hour over 15	$ 151	$ 718

Undergraduate Certificate Students in the College of Education

CREDIT HOURS	RESIDENT	NON-RESIDENT
0-1	$ 125	$584
2	253	1167
3	378	1752
4	504	2334
5	631	2917
6	756	3499
7	884	4461
8	1008	4761
9	1091	5059
10	1188	5355
11	1304	5654
12-15	1405	6115
each hour over 15	$ 125	$ 584

Graduate Students in Master of Basic Science

CREDIT HOURS	RESIDENT	NON-RESIDENT
0-1	$ 183	$ 657
2	361	1315
3	543	1973
4	724	2630
5	905	3286
6	1086	3945
7	1328	5116
8	1528	5522
9	1650	5890
10	1747	6230
11	1829	6544
12-15	1859	6894
each hour over 15	$183	$ 657

Graduate Students in the College of Engineering and Applied Science

CREDIT HOURS	RESIDENT	NON-RESIDENT
0-1	$217	$ 813
2	433	1622
3	651	2435
4	866	3247
5	1083	4059
6	1300	4870
7	1580	6852
8	1800	6961
9	1892	7072
10	1921	7184
11	1952	7296
12-15	1973	7432
each hour over 15	$ 217	$ 813

Graduate Students in the Graduate School of Public Affairs

CREDIT HOURS	RESIDENT	NON-RESIDENT
0-1	$ 198	$ 715
2	394	1429
3	590	2144
4	790	2858
5	986	3573
6	1183	4288
7	1441	5516
8	1658	5979
9	1797	6404
10	1909	6802
11	2006	7172
12-15	2074	7499
each hour over 15	$ 198	$ 715

Graduate Students in the College of Business and Administration

CREDIT HOURS	RESIDENT	NON-RESIDENT
0-1	$ 227	$ 824
2	456	1646
3	684	2469
4	911	3291
5	1138	4115
6	1368	4937
7	1661	6963
8	1891	7076
9	1991	7187
10	2022	7299
11	2052	7410
12-15	2073	7545
each hour over 15	$ 227	$ 824

Graduate Students in Non-Professional Programs (Communication, History, Psychology, and Sociology.) and non-degree/unclassified students with a bachelors degree

CREDIT HOURS	RESIDENT	NON-RESIDENT
0-1	$ 188	$768
2	377	538
3	564	2309
4	752	3077
5	939	3847
6	1128	4616
7	1373	6475
8	1561	6585
9	1637	6694
10	1665	6805
11	1694	6916
12-15	1712	7052
each hour over 15	$188	$ 768

Graduate Students in the College of Education

CREDIT HOURS	RESIDENT	NON-RESIDENT
0-1	$ 206	$ 813
2	411	1622
3	616	2435
4	821	3247
5	1027	4059
6	1232	4870
7	1501	6852
8	1711	6961
9	1892	7072
10	1921	7184
11	1952	7296
12-15	1973	7432
each hour over 15	$ 206	$ 813

Graduate Students in the Beth-El College of Nursing and Health Sciences

CREDIT HOURS	RESIDENT	NON-RESIDENT
0-1	$ 225	$511
2	449	1024
3	674	1536
4	901	2047
5	1126	2559
6	1350	3071
7	1575	3583
8	1800	4095
9	2025	4606
10	2249	5119
11	2476	5630
12-15	2703	6249
each hour over 15	$ 225	$ 511

2003-2004 RATES FOR PLANNING PURPOSES ONLY

• The Board of Regents reserves the right to change tuition and fees at any time. • Tuition and fees for fractional hours are prorated at the 1 hour rate.

enrolled for at least one course. Colleges and Schools may change the fee schedule at anytime without prior notice. The following course and instructional fees and deposits is representative of, but not inclusive of, all fees.

Biology

All students enrolling in biology courses with laboratory components (or equivalents) will be assessed a materials fee for specimens, slides, glassware, etc.: Biology 100 level laboratory courses-$30; Biology 200-$40; Biology 300 and above laboratory courses - $50.

Business

All students taking Information Systems or Quantitative Methods courses will be charged a $15 per credit hour fee. Students taking any other course in the College of Business will be charged a $5 per credit hour fee. The maximum fee charged to a single student in a single semester for these fees is $120. In addition, students enrolled in on-line courses are assessed a $52 fee per class.

Chemistry

There is a total charge of $40 for each laboratory course. Independent study courses are considered to be lab courses.

Communication

A $30 laboratory fee will be assessed for each course in TV production and/ or filmmaking. Communication 350 (American Cinema) carries a fee of $20.

Education

Students enrolled in certain College of Education courses will be assessed fees ranging from $10 to $100 per course.

Engineering and Applied Sciences

All students taking courses in the College of Engineering and Applied Sciences will be charged a $10 per credit hour fee. The maximum fee charged to a single student in a single semester for these fees is $120. This fee applies to all courses in the college except graduate thesis courses. These fees are nonrefundable and will be used by the departments for inventory renewal. Students are responsible and liable for damage to equipment caused by neglect, improper use, or failure to follow operating instructions.

English

All students enrolled in English composition and certain other courses will be assessed a $10 fee per course.

Geology and Geography

Students enrolled in certain Geology or Geography courses will be assessed materials fees.

Graduate School of Public Affairs

Students enrolled in on-line courses are assessed a $100 fee per class.

Languages and Culture

Students enrolled in lab courses, and certain other language instruction courses, will be assessed a $10 fee per course. In addition, $25 will be charged for courses with travel.

Letters, Arts and Sciences

Students enrolled in on-line courses are assessed a $52 fee per class. Students taking courses with field trips may be assessed a $20 trip fee.

Nursing

Beth-El College of Nursing students taking nursing courses will be assessed fees ranging from $25 to $100 per course.

Physics and Energy Sciences

Students enrolled in lab courses will be assessed various fees.

Psychology

Graduate students in Psychology will be charged clinical experience fees.

Visual Arts Fees

All students enrolling in any art history or visual arts course will be charged a program fee of $40 per semester enrolled, regardless of how many courses a student is registered for. In addition, studio art courses will be assessed a fee of $30 per class to help defray the cost of supplies. Students enrolled in Film 100 or 200 will be assessed $10 per course. Fees for Theatre 100, 250, 310, 336, and 337 will be $10 per course. There will be a fee of $20 for AH 100, and a fee of $10 for MUS 100. There is a full refund of the deposit for courses dropped the first two weeks of the term.

Credit by Examination Fee

Special examinations, given for the purpose of obtaining credit for a course solely through the passing of an examination without otherwise registering for and taking the course, are available to degree students in the university. The fee for each examination is the lower division, resident rate for 3 semester hours regardless of the number of hours of credit that are awarded. Credit is Pass/Fail ONLY.

Arrangements for special examinations are made through the Office of Admissions and Records. The fees for the examinations are payable in advance and are nonrefundable.

In cases where the examination is administered for other institutions and the results reported to that institution, the same nonrefundable fee will be assessed in advance; the individual student is responsible for payment.

Financial Aid/ Student Employment

Cragmor Hall, room 201 (top floor)
(719) 262-3460
1-800-990-8227
fax (719) 262-3650
www.uccs.edu/~finaidse/

FAFSA code: 004509

Office hours: 9 a.m. to 7 p.m. on Monday and 9 a.m. to 5 p.m. Tuesday through Friday.

The financial aid program is designed to assist students who would be unable to attend the university without aid. The university receives funding from the state of Colorado, the federal government, and private donors to meet the needs of students who can document their financial eligibility. The campus also uses its own resources to meet students' needs.

Financial Aid

There are two basic types of financial aid available to help students meet their educational costs: need-based aid and non need-based aid.

Need-based Aid

Need-based aid requires sufficient documentation of need. See the directions in the section below entitled "How do I Apply for Financial Aid?" . Need-based aid consists of:

- **Grants**
  Grants are funds that do not have to be repaid. Examples include the

federal government's Federal Pell Grant and the Federal Supplemental Educational Opportunity Grant. Grants funded by the General Assembly of the State of Colorado include the Colorado Student Grant, the Colorado Leveraging Educational Assistance Program (federal funds are matched by the state), the Supplemental Leveraging Educational Assistance Program (federal funds are matched by the state), the Governor's Opportunity Scholarship Program and the Colorado Graduate Grant.

- **Loans**
  Loans are funds that have to be repaid at a future date. Examples include the Federal Perkins Loan and the Federal Stafford Loan (subsidized).

- **Work-study**
  This offers part-time, subsidized employment (approximately 10 -20 hours per week) with both on and selected off-campus employers. Both Federal Work-Study and Colorado Work-Study are available. Students must apply for financial aid and receive a work-study award to be eligible. Students must also be enrolled at least half-time and comply with the financial aid policy on Reasonable Academic Progress to maintain eligibility for work-study.

NOTE: State of Colorado funds are available only to students who qualify for resident tuition (not based upon military status or olympic status). Both resident and non-resident students may be eligible for federal funds. See the Student Employment homepage at www.uccs.edu/~stuemp/ for more information about work-study and all student employment options.

Non Need-based Aid

Information and applications are available on the web at www.uccs.edu/~finaidese/

- **Loans**

  These funds have to be repaid at a future date.

  An example is the Federal Stafford Loan (unsubsidized). Interest accrues immediately and can be paid quarterly or can be added on to the principal, and repayment begins six months after the student is no longer enrolled half time.

  For application information see the section below entitled "How Do I Apply for Financial Aid?". While eligibility for these loans is not based on need, an applicant must first establish that he or she is not eligible for need-based aid. Therefore, the financial aid application procedure described in the section entitled "How Do I Apply for Financial Aid?" must be followed.

- **Colorado No-Need Work-Study**
  These funds are not based on financial need and offer part-time, subsidized employment (approximately 10-20 hours per week), on campus or at selected off campus employers. Applications are available on line and are due by the end of the first week of fall classes. This program is available during the fall and spring semesters only and awards are made only once early in the fall semester. Undergraduate degree students who are eligible for resident tuition (not military or olympic status), take at least six credit hours and who comply with the financial aid policy on Reasonable Academic Progress may apply for Colorado No-Need Work-Study. Students are selected for this award by a computerized random selection program.

- **Parent Loans**
  These are low interest loans that parents of dependent students may obtain to help pay the costs of attendance. The parent must qualify for credit (not have adverse credit). The parent may apply for the full cost of attendance (as set by the Office of Financial Aid/Student Employment) for the year, minus financial aid awarded. Eligibility must be established each year. At this time, filing the Free Application for Federal Student Aid (FAFSA) is not a requirement. To establish eligibility and apply for the Parent Loan to Undergraduate Students, go to www.studentloan online.com.

How Do I Apply for Financial Aid?

Follow these instructions to apply for financial aid, including Federal Stafford Loans (subsidized and unsubsidized):

1. Complete the Free Application for Federal Student Aid (FAFSA) on the web at www.fafsa.ed.gov or you may obtain the paper FAFSA from a high school or any college financial aid office. The process can be completed after January 1 each year. **We recommend that you file the FAFSA no later than March 1 each year and that you do it on the web.** The correct information must be on the Student Information System (SIS) by April 1 to meet our financial aid awarding priority date. Students must also be admitted to a degree program by that date. Meeting this priority date does not guarantee you will receive financial aid, but you will be considered for all types of assistance, including need-based grants.
2. The FAFSA analyzes your family's income, assets, family size, and other factors, and allows the Financial Aid Office to estimate your contribution and/or the amount your family could reasonably be expected to contribute to your education. The philosophy of the student assistance programs is that the student and family have the first responsibility to pay for the educational costs. The financial aid programs are available to promote access for students/families with the least ability to pay.
3. After the processor receives the information, the results will be sent electronically to UCCS (assuming you listed the correct code of 004509 on the web application or the paper form). You will receive a Student Aid Report (SAR). If corrections are needed, call or come in to the Financial Aid Office and we will make them electronically. If no corrections are needed, keep the SAR. You are not required to submit the electronic or paper SAR to the Financial Aid Office.
4. If you wish to apply for a Federal Stafford Loan (subsidized or unsubsidized), you will need to follow all of the steps listed above and, in addition:

   a. Federal Stafford Loan applicants should obtain a loan questionnaire from the Financial Aid Office or on the web at www.uccs.edu/~finaidse/formfinaid/htm complete it and send it or fax it.

   b. If this is your first federal student loan at UCCS, complete pre-loan counseling on the web at www.uccs.edu/~finaidese/ then click on the "Pre-Loan & Exit Counseling Online" icon. Confirmation will be sent to the Financial Aid Office electronically.

Select a lender from our recommended lender list, and if it is the first time you have borrowed a Federal Stafford

Loan at UCCS, certification will be done electronically and the Colorado Student Loan Program (CSLP) will send you a Master Promissory Note (MPN). This note is valid for 10 years if you remain with the same lender. The timely return of the MPN to the CSLP is imperative. Funds will then be applied to your student bill electronically.

If you select a lender that is not on our list of recommended lenders, and you are a first time borrower, you must obtain the Master Promissory Note (MPN) and School Certification Form (that you get from the lender) and submit it with the lender and guarantor's name and address to the Financial Aid Office to complete. This must be done each time you apply for a loan. Loan eligibility is certified, and funds are sent, by mail. This is a much longer process.

All correspondence will be sent to your permanent address (not your mailing address). Be sure to keep it updated in the Records Office or the Financial Aid Office. You may also make changes on line once you have your student PIN.

Student Employment

Cragmor Hall, room 202 (top floor)
(719) 262-3460
fax (719) 262-3650
www.uccs.edu/~stuemp/

The Financial Aid/Student Employment Office offers a self-referral employment service to currently enrolled students, and to students who have been accepted for the following term. Students need not document financial need to apply for these jobs. There is no charge for any of these services.

On-campus (hourly/non work-study) employment is available to full-time or part-time degree status students or unclassified students who are at least half-time. Additionally, during the summer, degree-seeking students may work on campus without being enrolled if they were enrolled as at least a half-time student during the previous spring semester and will return in the fall semester. Jobs are generally part-time and are listed throughout the year depending upon employer needs. The majority of openings, however, are at the beginning of each semester.

Off-campus employment, both part-time and full-time, is available throughout the year depending upon employer needs. Openings range from highly skilled technicians and computer assistants to clerical work, food service and general labor. Temporary and on-call positions in such areas as day care, tutoring, house cleaning and furniture moving are also listed. Many residential nationwide camps list openings for the summer.

Current job openings, both on and off campus, work-study and non work-study, are listed on SEAN's PLACE, a computerized student employment assistance network for students. This service is strictly self-referral, and to apply for any job the student must contact the employer directly. Students may access SEAN's PLACE on the web at www.uccs.edu/~stuemp

Scholarships

All of the scholarships available to students are listed on the web at www.uccs.edu/~finaidse/scholarship. The deadline for most of the institutional scholarships is March 1. If March 1 falls on a weekend, the deadline will be the next business day. Postmarks will not be honored. Many of the scholarships require that students have completed the FAFSA (see above). The Universal Scholarship Application is available on the website above. Outside scholarship search databases (all free) are also listed on the scholarship web page.

Temporary Assistance

The university has available a short-term loan program for students in need of temporary financial assistance (e.g., books). These loans are temporary in nature and have a maximum repayment period of one semester. The fee to borrow is $5 per $100 borrowed. Students may borrow only one loan per semester with a maximum of $500. Applications are available in the Office of Financial Aid/Student Employment.

Tuition Down Payment Loans are also available for up to the amount of the resident down payment. The fee to borrow is $5 per $100 borrowed. The fees are added to the student's bill.

Student Loan Deferment

(Includes Summer Term)

All special or unclassified students seeking an enrollment deferment for student loans will be considered undergraduates for verification purposes. In order to receive a deferment as a half-time student, the student must be enrolled for six credit hours. In order to receive a deferment as a full-time student, the student must be enrolled for 12 or more credit hours. Deferment forms are available in the Office of Financial Aid/Student Employment or your student loan lender. The Office of Admissions and Records certifies the student's enrollment status.

The Office of Financial Aid recommends that students wanting a deferment as a graduate student obtain degree status in their school or college.

Public Safety

Public Safety and Student Health Building
(719) 262-3528 (parking)
(719) 262-3111 (police)
www.uccs.edu/~pusafety/

The Department of Public Safety is a service agency. The officers of the department are certified, commissioned police officers for the state of Colorado.

911 Emergencies

on campus: 9-911

An "emergency" refers to any situation where there is an immediate danger to life or health of an individual, or individuals, on campus. Emergencies may be related to fires, chemical releases, medical problems or a wide variety of other events. For life threatening emergencies on campus, call 9-911. All other calls for police services, including crime reporting, should be made by calling 262-3111.

Campus Closure

(719) 262-3346

In the event that the campus is closed due to weather or other reasons, the information will be available by calling the above number. Information is also available on Colorado Springs television and radio stations and the Internet by accessing www.uccs.edu or www.rockyinfo.net

Photo Identification

(719) 262-3528

All fee-paying students, faculty and staff are required to have a UCCS photo I.D. card. This card is required to check out material from the Kraemer Family Library, cash checks on campus, take advantage of special student prices for software or events, or gain admittance into sensitive areas of the campus.

The charge for an I.D. card is nonrefundable. All new students and most transfer students will be automatically billed for an I.D. card whether or not a card is made. Transfer students from other CU campuses are not automatically billed for an I.D. and must pay for the I.D. at the time it is made. Photo I.D. cards must be made and claimed in the semester during which the automatic charge is made. I.D. cards made after the first semester of attendance for any reason, including lost or stolen cards, will result in a recharge. I.D. photos are taken Monday through Friday 8 a.m.- 5 p.m. during the semester.

Police Operations and Environmental Safety

(719) 262-3111

The Department of Public Safety maintains a full-service police operation to respond to reports of criminal acts and emergencies on campus. These officers are state certified and hold police commissions with the State of Colorado. The Department of Public Safety Office is also responsible for responding to all incidents that occur on campus involving police, parking, traffic, fire prevention and protection, environmental health and safety, emergency disaster coordination and chemical materials management.

In compliance with the Clery Act, the University Police publishes the UCCS Safety and Security Report in September of every year. Crime statistics listed in this pamphlet reflect reported crime only and are for calendar years January through December. The document is available on line at www.uccs.edu/~pusafety/campus_safety.htm.

In addition, Public Safety provides several community services upon request:

1. Motorist assists: dead battery jump-starts, retrieval of keys from locked vehicles, etc.
2. Escorts to and/or from vehicles or buildings.
3. Lost and Found Service

Student Services

Alumni and Community Relations

Main Hall, room 416A
(719) 262-3046
www.uccs.edu/~alumni

The Office of Alumni and Community Relations works to provide programs and services which build a mutually beneficial and enduring relationship among alumni, students, the university and the community.

Army ROTC

Eagle Rock Building 201
(719) 262-3520

Department of Military Science
The Army Reserve Officers Training Corps program is available to UCCS students. Enrollment in the basic courses (100/200 level) is available to all full-time students. Enrollment in advanced courses (300/400 level) is open to juniors and seniors who have successfully completed all basic courses or Basic ROTC Summer Camp or to veterans at any level. All students should be academically aligned between their ROTC level and academic level (i.e., a freshman should enroll in freshman ROTC classes). Scholarships are available to qualified students. Completion of the ROTC program leads to a commission as an officer in the United States Army, Army National Guard or Army Reserve upon graduation. A minor in Military Science is available to students who complete all commissioning requirements. Interested students are encouraged to consult with the Department of Military Science.

Bookstore

University Center, lower level
(719) 262-3247
www.uccs.edu/~storeboo/

The Bookstore caters to the special needs of the academic community. The educational pursuits and the professionalism of the student, faculty, and staff dictates a full service store offering required course materials, optional course materials, self-help guides, software, computer accessories, as well as best sellers, general reading books, cards, posters, clothing and gift items, including Mountain Lions insignia items, school supplies and much more. For convenience, personal checks with proper identification, MasterCard and Visa cards are accepted.

The Bookstore is open year-round, six days a week with special hours at the beginning of fall, spring, and summer terms. In special situations, the hours may vary.

Textbooks

Required and optional course materials are available in the Bookstore. Each course taught is identified by its shelf tag listing course information and arranged according to department, course number, and section. Some used books are available for most classes. Used books sell for 25 percent less than a new book's list price.

Convenience Store

University Center, next to the Bookstore

The Convenience Store provides additional products to meet the needs of students, providing items such as snacks, grocery items, personal products and more. The Convenience Store is open seven days a week during the Fall and Spring semesters and six days a week during the Summer semester.

Chancellor's Leadership Class

Main Hall, room 318
(719) 262-3065

The Chancellor's Leadership Class provides a leadership development program for undergraduate students which includes a leadership studies curriculum, community service projects, personal enrichment, and mentoring.

Counseling Center

Main Hall, room 324
(719) 262-3265

The University Counseling Center (UCC) helps students maximize their learning experiences. When students have difficulties with personal issues, career indecision, or relationship problems, academic achievement may suffer. The UCC exists to help students with these issues using short-term therapy approaches. There is no charge for initial or emergency sessions. There is a nominal fee for on-going group or individual sessions.

The UCC provides 1) individual, couples, family and group counseling to help students address personal problems experienced while enrolled at the

university; 2) workshops that address mental health needs and academic skill needs of students; 3) consultation services for faculty, staff and students; and 4) mental health information and referral services.

If a student presents a complex problem that should be treated by a specialist from the community, UCC staff will provide referrals to qualified specialists. Specialist referrals must be paid by the student. The university recommends that students carry sufficient health insurance to cover both routine and unforeseen medical and mental health situations. The university sponsored student health insurance policy covers approved inpatient mental health treatment, but it does not cover outpatient mental health treatment.

Dean of Students

Main Hall, room 202
(719) 262-3258
E-mail: dos@uccs.edu

The Office of the Dean of Students serves as a link between individual students, student government, and the various academic and administrative offices of the university. The Dean of Students and the Dean's staff serve as advocates for students' interests and needs to the rest of the university. Students who have a suggestion or concern should contact the office.

Disability Services

Disability Services
Main Hall, room 105
(719) 262-3354

In accordance with UCCS intent to make every effort to ensure the accessibility of its campus, academic and support programs, the Disability Services staff assists the student with disabilities in utilizing the variety of university and community resources available to help the student become integrated into the campus environment. If you are a student with a disability, you are encouraged to call for an appointment to discuss your needs and available services. Since some services may require advance budgeting and special arrangements with other agencies, let us know your special needs as soon as you are considering coming to UCCS.

EXCEL Centers

web.uccs.edu/projexcel/

Project EXCEL is a program designed to help students achieve academic success during their collegiate careers. The activities and support services of Project EXCEL are provided to students via five learning centers located across the campus. The Centers provide programs that are linked to and support the academic curriculum across the campus. Refer to the Internet for hours of operation or contact each Center directly.

- **Language Technology Center**
  (719) 262-3690
  Fax (719) 262-3146
  Dwire Hall, room 311
- **Mathematics Learning Center**
  (719) 262-3687
  Fax (719) 262-3605
  Engineering Building, room 129
- **Oral Communication Center**
  (719) 262-4770
  Columbine Hall, room 312
- **Science/Health Science Learning Center**
  (719) 262-3689
  Science Building, room 145
  University Hall, room 202
- **Writing Center**
  (719) 262-4336
  Columbine Hall, room 316

Family Development Center

(719) 262-3483

The Family Development Center provides quality, affordable preschool, kindergarten and child care for university families and the community at large. We offer educational programs for children ranging in age from 1 year (and walking) to 12 years.

The Center maintains a staff of highly qualified and caring teachers. The activities in the classrooms are planned by professional lead teachers trained in early childhood/child development. Lead teachers are assisted by additional teachers and aides. The Center strives to meet the standards for low child/staff ratios adopted by the National Association for the Education of Young Children (NAEYC).

The Center is open from 7am to 6 pm, Monday through Friday. Rates are competitive with discounts for students.

Enrollment is limited and is on a first come, first served basis, with priority given to UCCS students. Phone or visit the Center for further enrollment information.

Housing Village

Monarch House
(719) 262-4042

The Housing Village provides a variety of on campus living options for students including four person suites, three person suites, and single rooms with private baths. Each suite is same gender, and students may choose to live on a floor with people of the same gender. The Housing Village offers the appropriate mix of privacy and the opportunity to relax and meet friends. Students have the option of selecting their own roommates.

Many extras and amenities are offered to the residents of the Housing Village including a variety of meal plans, laundry facilities, computer lab, cable television, and lounges on each floor. The Housing Village also offers a variety of educational, social, and cultural programs in addition to many recreational opportunities.

Contracts are available for the full academic year (August–May) and also for summer school. For contracts, annual costs, meal plan options or additional information, please contact the Housing Village office, or visit online at web.uccs.edu/housing.

Intercollegiate Athletics

University Center, second floor
(719) 262-3601
www.uccs.edu/%7Eathletic/

The Intercollegiate Athletic program at UCCS seeks to carry out its primary mission of developing exemplary student athletes who participate in the total spectrum of university life. Exemplary student athletes play intercollegiate sports and also focus on education, good character, no substance abuse, leadership, and goals.

To that end, UCCS sponsors 14 varsity sports that compete at the NCAA Division II level in the Rocky Mountain Athletic Conference (RMAC). Varsity sports include: men's and women's basketball, men's and women's cross-country, men's and women's outdoor/indoor track, men's and women's tennis, women's volleyball, women's fastpitch softball, men's soccer, and men's golf.

The RMAC is divided into two divisions (East and West) in the sports of women's volleyball and men's and women's basketball. UCCS competes in the West

Division of the RMAC along with New Mexico Highlands University, Mesa State College, Western State College, Fort Lewis College, Adams State College, and Colorado State University – Pueblo. The East Division of the RMAC includes the University of Nebraska-Kearney, Chadron State College, Ft. Hays State University, Metropolitan State College of Denver, Regis University, Colorado School of Mines and Colorado Christian University.

The UCCS Mountain Lion volleyball and basketball teams compete in the "Lion's Den", a 300-seat gymnasium located on the second floor of the University Center in the heart of the campus. The softball and soccer teams play at the 4-Diamond Complex on Nevada Avenue, just north of Austin Bluffs Parkway.

The UCCS tennis teams play at The Broadmoor and at the Memorial Park Tennis Center while the men's golf team plays at local area golf clubs.

UCCS offers limited athletic scholarships that are awarded on an individual basis by the head coaches of each of the varsity sports.

International Student Services

Main Hall, room 104
(719) 262-3238 or -3819

International Student Services serves as an advocate for foreign students attending or planning to attend UCCS by identifying services and programs that can assist in meeting their needs. This unit promotes, supports, and develops any activity that brings about a cross-cultural understanding and sensitivity on campus. The unit is responsible for providing current and future international students with information and services available to them on campus and the surrounding community.

Kraemer Family Library

El Pomar Center
(719) 262-3296
web.uccs.edu/library

The Kraemer Family Library supports teaching and research activities of the students and faculty by providing a diverse collection of more than one million items and offering a wide array of interpretive services. These services include a comprehensive library instruction program, electronic data bases, interlibrary loan and reference services. Access to a wide variety of electronic resources and the library's online catalog is available through the library web page.

The library is housed in El Pomar Center. Library services are available more than 90 hours per week during the regular semesters. Individual study carrels, computer labs, multimedia development labs, group study rooms, and copy machines are available. Special equipment and software are available to assist the hearing and visually impaired gain access to library materials.

Library users have access to the library's collection of 420,000 book volumes, 670,000 microform volumes, 11,800 maps, and 6,000 media items. These items include 2,171 paper and 18,000 electronic journal titles as well as U.S. and Colorado government documents. In addition, students and faculty have access to the collections of many of the state's other academic libraries through personal visits, shared electronic catalogs or interlibrary loan. The library's interlibrary loan agreements also provide students and faculty with access to the collections of most of the libraries in the U.S. and other countries.

Off Campus Housing

ROAR office
University Center, first level
(719) 262-3470
web.uccs.edu/commuter/
E-mail: ROAR@uccs.edu

The off campus housing referral service, including listings of rooms, apartments, and houses, as well as students seeking roommates to share their accommodations, is maintained by the Refuge for Organizations, Activities and Recreation (ROAR) office located across from the Information Desk in the University Center.

Pre-Collegiate Development Program

Main Hall, room 303
(719) 262-3239

UCCS has entered into a partnership with public schools in the Pikes Peak region including six Pueblo schools to help prepare under-represented and first generation college students to be competitive for college entrance upon graduation from high school.

The program consists of an academic year component which includes workshops on self-concept, career planning, time management, and cultural activities. The program also includes an on-campus summer component which is designed to build the students' academic skills. Students remain in the program until they graduate from high school. The program is for students in grades 9 through 12, with a limited middle school program that serves students in grades 6 through 9.

Print Shop

Campus Services Building, room 230
(719) 262-3213 or
University Center, room 109
(719) 262-3353
www.uccs.edu/~printshp/

The Print Shop offers full service printing and copying, including color copies, binding, laminating and faxing services to students, faculty and staff. There are two convenient locations on campus. University Center print shop hours are 8 a.m. to 8 p.m. M-Thurs, 8 a.m. to 5 p.m. Fri. and 10 a.m. t o 4 p.m. Sat. The Campus Services Building print shop hours are 8 a.m. to 5 p.m. M-F.

Refuge for Organizations, Activities and Recreation (ROAR)

University Center, first level
719) 262-3450
E-mail: ROAR@uccs.edu

The Refuge for Organizations, Activities and Recreation (ROAR), located across from the University Center Information Desk, is your doorway to campus life! Through involvement in one or more of the areas within the ROAR, you are guaranteed to grow personally, make lifelong friendships, develop valuable skills you will use the rest of your life, have input into programs and services offered to students at UCCS, contribute to the present and future of the university, and have great fun in the process.

Campus Activities Board (CAB)

(719) 262-3447

The CAB and members of its eight committees are dedicated to providing entertaining and educational programs for the UCCS community. Involvement in the selection and production of programs is open to any UCCS student. It's also a great way to meet people, learn new or improve upon skills, and explore career options. Programs include musical

events, dances, comedy nights, films, cultural events, speakers and more. Most programs are free to students and all programs are open to UCCS students, faculty, staff, their families, and the community. For information about programs or how to get involved call 262-3128 or 262-3532 or come by the CAB office in the ROAR.

Student Government and Student Organizations

(719) 262-3470

All students at UCCS are automatically members of the Student Government Association, the official voice of the student body. Student Government provides a wide variety of activities and services. For more information call or visit the office in the ROAR.

In addition, there are more than 100 student clubs and organizations at UCCS. They include academic, social, religious, sports, political, honorary, and special interest. Enjoy the satisfaction of being part of a group and getting things done, meeting people with similar interests, and developing leadership skills. For information about how to join an organization or to form a new organization, call or come by the ROAR Office.

Campus Recreation Office

University Center, second floor
(719) 262-3463
web.uccs.edu/recsports/

The Campus Recreation Office provides indoor and outdoor facilities, equipment, programs and services that support the leisure and wellness needs of UCCS students, faculty and staff. This is accomplished in a variety of ways including:

- **Club Sports** — university approved clubs sponsor instructional, recreational and competitive programs for their members. Club teams include, but are not limited to, cycling, karate, fencing, rodeo, baseball, women's soccer, martial arts, mountain biking, and ice hockey.
- **Intramurals** — provides broad recreational and competitive opportunities through team and individual leagues and special event activities. A few of the intramural leagues include softball, volleyball, basketball, soccer, floor hockey, tennis, table tennis, bowling, and miniature golf.
- **Open Recreation** — free student access to the gym and fitness center during posted hours.
- **Outdoor Equipment Rental** — an ever-increasing inventory of outdoor equipment is available for a nominal fee and on a first come-first served basis.
- **Outdoor Facilities and Programs** — access to sports facilities by reservation and various outdoor trips.

Student Health Center

University Hall
(719) 262-4444
Fax: (719) 262-4446
E-mail: hlthcntr@uccs.edu

The Student Health Center provides convenient and affordable access to quality medical care for eligible students. Medical insurance is not required to be seen for an appointment.

The Center provides health care services 40 hours per week during fall/spring semesters including Monday evening hours, and abbreviated hours for all breaks and summer semester. Services include, but are not limited to diagnosis and treatment of minor injuries and illnesses, administration of MMR, allergy, and other shots, routine gynecological exams, health education, and referral to community health resources as needed. Limited lab and medication are also available on-site.

Immunization Requirement

The Colorado Department of Health and Environment requires any student who: 1) is enrolled for one or more classes at a college or university, 2) who is physically present at the institution, including auditing classes but excluding correspondence/distance learning classes, and 3) born January 1, 1957 or later, to be immunized against Rubeola measles, Rubella measles and mumps (MMR), or provide documented proof of immunity to all three. Individuals born before January 1, 1957 are presumed immune and are exempt from the immunization requirement.

In order to comply with this State law, you must do one of four things:

1. Provide a copy of documentation from a health care professional that you have met the requirements of two MMR immunizations. Records must include month, day and year of each shot, an official signature or stamp or official letterhead. Note: obtain CERTIFIED records from your former college, high school, doctor's office, military records or family (certified) records.
2. Provide a copy of proof of immunity by blood lab tests for the Rubeola measles, mumps and Rubella measles.
3. Request an exemption from the law on personal, religious or medical grounds.
4. Get two MMR immunizations (30 days apart) immediately.

Please bring (or fax to 719-262-4403) a copy of your immunization records to the Health Center. The Health Center will assist you in complying with this state law. MMR immunizations are available at a reduced cost at the Health Center; call for an appointment. You may also receive the immunizations from your personal health care provider or your county health department.

Student Health Insurance

Main Hall, room 202
(719) 262-3258

UCCS offers a group health insurance program to students enrolled in six (6) or more credit hours as an undergraduate or three (3) or more credit hours as a degree seeking graduate student. Brochures and enrollment cards are available in the Office of the Dean of Students.

Student Multicultural Affairs

Main Hall, room 322
(719) 262-3040

The Office of Student Multicultural Affairs promotes a campus environment that is inclusive and supportive of students from diverse backgrounds. Works with student organizations and campus departments to provide activities and programs.

Student Success Center

Main Hall, second floor
(719) 262-3260
Fax: (719) 262-3645
web.uccs.edu/studentsuccess

The Student Success Center is a "one stop" location on campus for meeting students' needs. Services include academic advising for all undergraduate students, new student orientation, career services, testing, CU Opportunity, and University Connection.

Career Services

Main Hall, room 201
(719) 262-3260 or -3340

The Career Development Center is open to students and alumni from all colleges on campus. Assistance and information are available for career exploration and job searches. Undecided students have the opportunity to receive career advising for help in choosing a major and thinking about career options.

Students preparing to graduate have access to employers through the Career Services link on the campus website, on-campus and on-line recruiting, and Career Fairs. One-on-one assistance is available for help with resumes and interview skills. Students can post resumes and link with recruiters at www.ecampusrecruiter.com/uccs.

CU Opportunity Program (CUOP)

(719) 262-3260 or -3747

CUOP is a special program that seeks to provide equal educational opportunity for students who have not traditionally been a part of the university environment. The program strives to recruit, admit, retain, and graduate a representative number of minority students – or any otherwise economically or academically disadvantaged person.

The primary focus of CUOP is to increase the minority student population, but it is also CUOP policy not to exclude anyone showing a need for the services offered by the program. The program has a cooperative relationship with the office of admissions, financial aid and academic departments. This relationship allows the staff to be available to assist CUOP students who experience difficulties in any of these areas. Interested students should contact the Student Success Center, preferably before admission to the university.

Orientation for New Students

(719) 262-3260

Orientation programs are held preceding each term to acquaint new students with the academic programs, out-of-class activities, and services. Academic advising, registration for classes, and introduction to campus life constitute the main orientation activities. New students will be informed of planned events by mail and are required to attend an orientation session before being permitted to enroll.

Testing Services

Main Hall, second floor
(719) 262-3260

Contact the Testing Office for scheduling and information.

ACT – American College Test. Residual test for prospective UCCS students. It is administered once per month.

RST – Reasoning Skills Test is administered by appointment only.

MAT – Miller Analogy Test is administered once per month.

MPT – Math Placement Test. The Algebra Diagnostic Test and the Calculus Readiness Test are administered by appointment only.

University Connection

(719) 262-3260

UCCS has entered into agreements to assist students in two-year academic programs who complete their A.A. or A.S. degrees and plan to transfer to UCCS. The program provides transfer advising and close coordination with the academic colleges at UCCS. University Connection scholarships are also available.

University Connection offers these transfer services to the following community colleges: Pikes Peak Community College, Arapahoe Community College, Red Rocks Community College, Otero Junior College, Lamar Community College, Pueblo Community College, and Trinidad State Junior College. Students attending other two year institutions not listed can contact the program staff to make special arrangements for assistance with transfer to UCCS.

University Center

(719) 262-3450

The University Center is the community center for the university; serving students, staff, faculty, administration, and guests. The University Center complements the academic programs by providing support to the out-of-classroom experience through an extensive array of cultural, recreational, social and educational programs. The University Center is a student-centered organization that values participatory decision-making and volunteerism. The University Center provides programs through the services and facilities that are within the Center: Refuge for Organizations, Activities and Recreation (ROAR), including the Campus Activities Board, Student Government Association and Student Organizations, Recreational Sports, The Scribe, Information Desk, Intercollegiate Athletics, Meeting Rooms, Lounges, Game Room, Overlook Snack Bar, Bookstore, Convenience Store, and Copy Center.

The University Center is supported by mandatory student fees. These fees finance repayment of the bond debt, and support entertainment, cultural and educational programs and services not supported by the university's general fund. The University Center fees are $33 base per head and $9.50 per credit hour.

Veteran Affairs Office

Main Hall, room 101
(719) 262-3253

The Office of Veteran Affairs (OVA) assists veterans and others eligible for Department of Veterans Affairs education benefits. The office is supervised by the university and bound to complete documentation and maintain records according the guidelines Department of Veterans Affairs (DVA) and the Colorado State Approving Agency for Veterans Education and Training.

Veterans Education Benefits

Chapters 30, 31, 32, 35, 106, 901 and 903: The veteran must establish eligibility for educational benefits from the DVA by filing the appropriate paperwork at this office. Applicants wishing to receive advance payment must complete the appropriate form no later than 45 days prior to the first day of classes. The student must be registered in classes before this office can release the check. A request for an advance does not guarantee the check will arrive before tuition deposits are due. Finances should be planned accordingly.

Procedures

After registration each semester, the veteran must submit a course load work sheet to the OVA for review and for the certification of the student's course load to the DVA. Any changes in course load (i.e., adds, drops, withdrawals) must be reported to the Department of Veterans Affairs through the office at UCCS.

Dependents, Education Assistance Act, Chapter 35

Students between the ages of 18 and 26 who are eligible for educational benefits

because of the death of a parent during active military duty or because of service-connected disability rated by the DVA as 100% permanent and total should file appropriate forms with the OVA according to the preceding paragraphs. The registration procedure is also the same as described above.

Chapters 30, 32, and 35 are eligible for tutorial assistance. The tutoring must be essential to correct a deficiency as certified by the instructor.

Technology Services

El Pomar Center, first floor
(719) 262-3536
www.uccs.edu/~it/

Computing labs

All university students, staff, and faculty may use computing laboratories and obtain an e-mail / UNIX account. Windows NT and Cyber-class accounts are created automatically. Information on labs can be obtained from the following:

IT Help Desk (719) 262-3536
El Pomar Center, first floor

Columbine Hall Lab (719) 262-4229
Columbine Hall, room 231

El Pomar Lab (719) 262-3422
El Pomar Center, second floor

CU-NET

(719) 262-3597

UCCS offers live, interactive, credit-bearing classes over the CU-NET instructional television system. CU-NET broadcast classes are regular courses and off campus students will have access to the instructor through a standard telephone link, and will be able to ask any questions as they arise. Off-campus students will be expected to follow the same syllabus and meet the same course requirements as in-class students.

Course offerings vary semester-to-semester. CU-NET classes are available to adult learners over Adelphia Communications (channel 11). Anyone subscribing to Adelphia will receive the classes as part of their basic service, however, to receive credit for classes students must enroll through the Extended Studies division of the College offering the course.

A four-campus fiber system provides video, voice and data transmission among the four campuses and supports, in addition to academic courses, administrative teleconferencing and professional development training.

Teleconferencing

CU-NET provides professional teleconferencing services to the campus community and public and private enterprises in the Pikes Peak Region. Downlinking services are available on campus and uplinking services can be arranged.

Information Technology

UCCS makes the power of technology accessible. The Information Technology department provides a 150-station computer commons area and nine computer equipped labs with an average of 25 computing stations per lab. Of those nine labs, 7 are dedicated classrooms; 1 is an open lab and the remaining lab is open except when occasional classes are scheduled there. (Open labs are computing labs that are available to students on a walk-in basis seven days a week, per the prevailing lab schedule.)

Each of the computing labs and computing classrooms provide a Windows or Macintosh computer per student station, a high speed network connection, printers in each room and access to a wide range of software. Our extensive list of software includes Microsoft Windows, Microsoft Office, Macromedia web design studio, Photoshop, First Class, Internet applications such as internet explorer and FTP and specialized software (i.e. Accounting, Statistical and Group Systems.)

In addition to the seven computerized classrooms, Columbine Hall provides a 50 station open lab. This lab includes 42 Pentiums and 8 Macs, 4 black and white lasers, 1 color laser and 1 color scanner. Columbine Hall also provides easy access to technology in 22 general classrooms. This technology is in the form of a PC and DVD/VCR combination deck for the instructor and a built-in video projecting unit. The PC is connected by a state of the art switched network. The video projecting unit also remotely accesses audio and/or video media. This equipment allows easy integration of Internet or video examples or a PowerPoint presentation to create a more robust lecture.

University Policies

Academic Policies

Academic Records

How Academic Work Is Recorded On Transcripts.
Courses are grouped by the term or semester in which they were taken. When a college or school is unique to a particular campus of the university (the College of Letters, Arts and Sciences on the UCCS campus) and the student has completed the degree requirements, the degree and field of study will be designated on the transcript as follows:

Example: Degree — B.A. Conferred (date) at Colorado Springs Sociology

For students graduating from colleges and schools represented on two or more campuses, there may be no campus designation.

Example: Degree — B.S. Conferred (date) Business

Students completing a double major will be listed as follows:

Example: Degree — B.A Conferred (date) at Colorado Springs Psychology and Sociology

College of Letters, Arts and Sciences students graduating in Distributed Studies will show all the disciplines used to meet the unique degree requirements:

Example: Degree B.A. Conferred (date) at Colorado Springs Distributed Studies–Fine Arts History, Communication, and English

Academic minors (completed at time a degree is awarded) are recorded on the transcript.

General and departmental honors are recorded on the transcript.

Auditing Courses

All persons who wish to attend regularly scheduled classes and who are not registered students must obtain auditor's status. Auditors, whether in-state or out-of-state, pay in-state tuition for 3 semester hours at the lower division undergraduate rate for fall, spring, or summer term and receive class instruction and library privileges only. Auditors may attend as many courses as they wish. An auditor's card must be presented to the instructor when requesting permission to attend a class. Cards may be obtained from the Bursar's Office in Main Hall after classes begin. To

qualify as an auditor, an individual must be 21 years of age or older. Persons are not eligible to audit courses if they are under suspension from the university. Auditors may attend as many courses as they wish (except those courses with laboratories or where equipment is used), provided they have permission from the instructor.

If a regular degree student wishes to participate in a class without receiving credit, the student must register for the course for No Credit. Tuition for courses taken for No Credit is the same as for courses taken for credit. Auditors should note that the Office of Admissions and Records does not keep any record of courses audited; therefore, credit for these courses cannot be established. See Grading System, Drop/Add, and Auditing.

Commencement — Policy

The bulletin that governs a student's graduation requirements is the one in effect at the time of a student's most recent admission into the college of the student's degree program.

Students seeking to participate in commencement and other academic ceremonies will need to complete all academic requirements in advance. Participation in academic ceremonies that recognize or honor students for the completion of an academic program or specific academic accomplishment is based on the understanding that all requirements have been completed. Every effort will be made to determine eligibility in advance and only students who have met requirements will be permitted to participate.

Course Load Definitions

The definitions for full-time/part-time enrollment are:

1. A full-time undergraduate degree student is one who is enrolled for at least 12 credit hours. Undergraduate degree students are considered part time when they are enrolled for fewer than the hours described above. These criteria also apply for unclassified students without a degree.
2. A full-time graduate student is one who is enrolled for 5 semester hours of graduate level course work, or at least 8 semester hours in a combination of undergraduate/graduate course work acceptable for graduate credit, or any number of thesis hours. Graduate degree students need only enroll for half this amount to be considered full time during summer terms. The definition of "full-time" may be different for graduate students seeking financial aid.
3. Unclassified students with a degree-seeking student loan deferment must be enrolled for 12 semester hours to be considered full-time.

Course Numbering System

The word preceding the course number identifies the department offering the course. The first digit in the number indicates in a general way the class level of the course: 100/1000-level courses are primarily for freshmen, 200/2000-level courses for sophomores, 300/3000-level for juniors, 400/4000-level for seniors and 500/5000- and 600/6000-level for graduates. The digit after the dash denotes the credit-hour value of the course. Thus, "CHEM 101-4" signifies that the course is in chemistry, that it is freshman level, and that it carries 4 hours of credit.

Level of Courses Numbered 900-998

900-929.....Lower division, undergraduate

930-949.....Upper division, undergraduate

950-959.....Graduate, Level 1

960-979.....Graduate, Level 2

980-998.....Other

Courses Taken for "No Credit"

Students wishing to enroll for no credit are required to pay regular tuition and fees. In order to register for no credit, the student should complete a Credit Change Form indicating the course for which no credit is desired. Deadlines and rules for changing are the same as for Drop/Add.

Diplomas

Diplomas will carry the designation of the campus where the majority of the academic work was done at the upper division level.

General and departmental honors are shown on the diploma. The discipline is indicated in award of departmental honors.

The Bachelor of Science or Arts (B.S. or B.A.) will indicate the field of study, such as business, chemistry, electrical engineering, or physics.

In the Graduate School, the designation is Master of Arts, Master of Basic Science, or Master of Science. The Graduate School of Public Affairs designates its degree Master of Public Administration.

The Graduate School of Business Administration designates its degree Master of Business Administration.

Commencement exercises for graduates of the summer term, fall and spring semesters are held at the end of the spring semester. Graduates will receive diplomas approximately eight weeks after the end of the term in which the degree is conferred.

Dropping and Adding Courses

1. Students will be allowed to drop and add through census date (the 12th day of classes of the regular semester or the 6th day of classes of the summer term). Courses that meet less than the full 16 week term in fall and spring and 8 weeks in the summer have special prorated drop and add deadlines. Drop and add deadlines are published in the *Schedule of Courses*.
2. After this time the instructor's and dean's signatures (of the college offering the course) are required for adds. For drops, if the instructor chooses to sign the Course Change Form, he/she is indicating that the student is in good standing and the drop will be processed. If the instructor judges the student to be failing the course, he/she will not sign the form and the student will not be dropped from the course. (Course Change Forms will not be accepted without required signatures.)
3. After the 10th week of the regular semester or the 5th week of the summer term, courses may not be dropped unless there are circumstances clearly beyond the student's control (accident, illness, etc.). In addition to the instructor's certification (as in 2 above), the dean of the college offering the course must approve the drop.
4. Students receiving financial aid or veterans benefits must also obtain the signature of the appropriate certifying official.
5. Courses may be added without instructors' signatures during the first 12 class days of the regular semester or the first six class days of the summer term. After this time courses

may be added only with the approval of both the instructor of the course and the dean of the college offering the course.

6. Tuition assessment for courses added after initial registration, which would result in additional tuition charges, will be added to the student's bill.

Eligibility to Return Each Session

Eligibility to Return – Degree Students

Degree students should refer to the appropriate school or college section of this bulletin for information regarding eligibility to return.

Eligibility to Return – Unclassified Students

Continuation as an unclassified student (Major Code NOLD, NOUD, NOHS or NODW) is contingent upon maintaining an overall grade point average of 2.0 upon completion of 12 or more semester hours. Failure to maintain the required average will result in an unclassified student being suspended. The suspension is for an indefinite period of time and becomes part of the student's permanent record at the university. While under suspension, enrollment at the university is restricted to summer terms or courses offered through the Division of Extended Studies.

Unclassified students are not placed on academic probation prior to being suspended.

Final Examination Policy

It is the policy of UCCS to adhere to the final examination schedule as published in the *Schedule of Courses* each semester. While it may be appropriate not to give a final in some cases, such as laboratory courses, seminars, and colloquia, final examinations should be given in all other undergraduate courses.

Exceptions to this policy should be agreed upon by the faculty member and the chair of the department no later than the beginning of the semester in which an exception is requested. The resulting decision should be announced in writing to students in the class during the first week of classes.

In addition to the principles stated above, the following guidelines should be followed by all faculty members and administrators in order to assure fairness and the best possible educational experience for students:

1. The scheduled final examination period should be considered an important part of the course and used as a final examination period or for additional instruction.
2. The final examination in a course should be given as scheduled and not at other times even if the faculty member and all students in a course agree to such a change.
3. The week of classes preceding the scheduled final examination period should be used primarily for continued instruction and may include the introduction of new material. No hourly examinations are to be given during the week preceding final examinations.
4. Individual students may be granted a variance from these policies provided the instructor is satisfied that:
   a. the exception is based on good and sufficient reasons (such as religious observances), and
   b. such an exception for an early or late examination will not prejudice the interests of other students in the course.
5. When students have three or more examinations on the same day, they will be entitled to arrange an alternative examination time for the first exam or exams scheduled on that day. Such arrangements must be made no later than the end of the 10th week of the semester (i.e., at the end of the drop period). Students will be expected to provide evidence that they have three or more examinations in order to qualify for exceptions.
6. This policy applies to all undergraduate students, including seniors. Graduating seniors should not be exempted from final examinations. Such exemptions are inappropriate on both procedural and academic grounds.

The actual schedule for final exams appears in the Schedule of Courses for the appropriate semester or term.

Grading

Grades

Grades, when posted, are available on the Student Online Center at www.uccs.edu.

Grade Symbols
The instructor is responsible for whatever grade symbol (A, B, C, D, F, P, IF, IW, or IP) is to be assigned. Special symbols (NC and W) are indications of registration or grade status and are not assigned by the instructor but are automatically converted by the grade application system, explained under Pass/Fail Procedure.

Each College or School individually determines the use of +/- grading.

Standard Grades	Quality Points for Each Hour of Credit
A = superior/excellent	4.0
A (–) =	3.7
B (+) =	3.3
B = good/better than average=	3.0
B (–) =	2.7
C (+) =	2.3
C = competent/average	2.0
C (–) =	1.7
D (+) =	1.3
D =	1.0
D (–) = minimum passing	0.7
F = failing	0.0

Special Symbols

NC indicates registration on a no-credit or audit basis

W indicates withdrawal or drop without discredit

IF incomplete – regarded as F if not completed within one year.
Students should be aware that IF grades are automatically changed to F grades, without formal notification, when the one-year time allowance has passed.

IW incomplete – regarded as W if not completed within one year (the College of Business does not give IW grades; for incomplete work it uses the IF grade only).

IP in progress – thesis or dissertation at the graduate level only.

P/F pass/fail – P grade is not included in the grade point average; the F grade is included; up to 16 hours of pass/fail course work may be credited toward a bachelor's degree; a letter grade of D- or above is considered passing.

Explanation of IW and IF

An IF or IW is an incomplete grade. Policies with respect to IF/IW grades are available in the individual college and school dean's offices. Use of the IF or IW is at the option of the academic dean's office.

The student must ask for the incomplete grade. An incomplete grade is given only

when students, for reasons beyond their control, have been unable to complete the course requirements. It is understood that a substantial amount of work must have been satisfactorily completed before approval for such a grade is given.

If an instructor decides to grant a request for IF or IW, the instructor sets the conditions whereby the course work will be completed. The instructor may set less time than one year for completion. The student is expected to complete the requirements within the established deadline.

The instructor, with approval of the department, determines if the course should be retaken. If a course is retaken, the student must register for the course and pay the appropriate tuition.

The final grade (earned by completing the course requirements or by retaking the course) does not result in deletion of the IF or IW grade symbol from the transcript. A second entry is posted on the transcript to show the final grade for the course.

At the end of one year, IF and IW grades for courses that are not completed or repeated will be regarded as F or W, respectively. Requests for an extension of time to complete the course beyond the one-year deadline can not be approved.

Pass/Fail Enrollment

1. Students who wish to register for a course on a pass/fail basis do so during regular registration.
2. Changes to or from a pass/fail basis may be effected during the first 12 class-days of the fall or spring semesters or the first six class-days of the summer term. After this period it will not be possible to change registration unless it is approved by the dean as a specific exception.
3. Only 6 hours of course work may be P/F in any given semester.
4. Students should refer to the rules of their particular school, college, and/or department for additional information regarding the guidelines and limitations of pass/fail registration.
5. The record of pass/fail registration is maintained by the Office of Admissions and Records. Academic deans and faculty will not be aware of specific pass/ fail registrations. All students who are registered on a pass/fail basis appear on the regular class roster and a normal letter grade is assigned on the final grade roster by the professor. When grades are received in the Admissions and Records Office, registrations which require a P/F designation are converted by the grade application system. Grades of D- and above convert to a grade of P. Grades of F remain.

Computing a Grade Point Average

The grade point average is computed by multiplying the credit points per hour, (A=4, A-=3.7, B+=3.3, B=3, B-=2.7, C+=2.3, C=2.0, C-=1.7, D+=1.3, D=1.0, D-=0.7, F=0) by the number of hours for each course, totaling the hours and the credit points, and dividing the latter by the former. For example:

ENGL 131	-3	B=	9 credit points
PSY 210	-4	C+	= 9.2 credit points
HIST 101	-3	B	= 9 credit points
CHEM 103	-5	A	= 20 credit points
		15 hours	= 47.2 credit points

The grade point average is therefore 47.2 divided by 15 = 3.147. The grade point received at another institution will not be used in computing the student's grade point average at the University of Colorado.

Grades of P, H, NC, Y, W, IP, IW, and IF are not included in the grade point average. IFs that are not completed within one year are calculated as F in the G.P.A. at the end of the one year grace period.

It is University of Colorado policy that the undergraduate G.P.A., the graduate nondegree (unclassified) G.P.A. and graduate degree G.P.A. are calculated separately.

If a course is repeated, all grades earned are used in determining the university G.P.A.

Students should refer to their academic dean's office for individual grade point average calculations as they relate to academic progress and graduation from their college or school.

Individual Academic Records

All credentials (high school and/or college transcripts, test reports, etc) used for admission become the property of the University of Colorado. When a student has been out of school for five years, the file is destroyed.

The Permanent Record Card showing all academic work done at any of the University of Colorado campuses, including credit courses through the Division of Extended Studies, will be maintained in perpetuity.

Major Declaration

Policy of the Board of Regents requires that students declare a major by the time they have 60 hours towards their degree — by the start of their junior year.

No Credit

Students wishing to enroll for no credit are required to pay regular tuition and fees. In order to register for no credit, the student should complete a Credit Change Form indicating the course for which no credit is desired. Deadlines and rules for changing are the same as for Drop/Add. See also, Auditing Courses.

Schedule Changes

The university reserves the right to cancel, postpone, or combine scheduled classes and to change instructors.

Transcripts

(719) 262-3376

How to Order

Transcripts of records should be ordered from the Office of Admissions and Records by written request or over the web via the Online Student Center (www.uccs.edu). Written requests should include the following:

1. Student's full name (include maiden or other name if applicable).
2. Student number.
3. Birthdate.
4. The last term student was in attendance.
5. Whether the current semester grades are to be included when a transcript is ordered near the end of a term.
6. Agency, college, or individuals to whom transcripts are to be sent with complete mailing addresses.
7. Student's signature. (This is the student's authorization to release the records to the designee.)

There is no additional charge for transcripts beyond the matriculation fee paid by all new students. Special fees are charged for special handling (rush, fax, etc.). Transcripts are prepared only at the student's request. A student having financial obligations to the university that are due and unpaid will

not be granted a transcript. Copies of transcripts from other institutions cannot be furnished.

Withdrawal

1. Withdrawal means that the student is dropping all courses for which he or she is registered.
2. A student will be allowed to withdraw during the first ten weeks of the semester or the first five weeks of the summer term. After this time, a student may not withdraw unless the circumstances are clearly beyond the student's control and requires the signature of the dean of the student's academic unit.
3. A student receiving financial aid or veterans benefits must obtain the signature of the appropriate certifying official.
4. The student must obtain approval from the Bursar/Cashier office.
5. A withdrawal becomes effective on the date the withdrawal form, completed by the student and signed by the student's dean and required certifying officials, is received by the Admissions and Records Office. Eligibility for refund is determined by the date the form is received in the Admissions and Records Office, not the date the student stops attending class.
6. Unless the student follows these procedures, the withdrawal is not effective and grades of F will be recorded for all courses not completed.

Writing Competency Requirement for Graduation

No student will be awarded a bachelor's degree (B.A. or B.S.) unless he or she can demonstrate competency in writing. Students may demonstrate such competency in either of the following ways:

1 By passing English 131, fulfilling the other composition course requirements stipulated by their college, and then passing the writing competency portfolio assessment administered after the completion of their final 3 credit hours of composition coursework.

2 By completing their composition requirements at a major two-year or four-year institution (C or better), and upon transferring to UCCS, passing the writing portfolio assessment administered by the Writing Program. Students have one year from their initial enrollment to demonstrate competency by earning a pass on the portfolio. Students who do not pass the competency within one year must alternately complete an advanced writing course at the 300-level. This course will be in addition to other 300-level composition courses stipulated by their college as part of their degree requirements. The "final" composition course for each undergraduate program is listed below:

- for LAS and Nursing students: ENGL 141
- for BUS students: ENGL 307 or COMM 324
- for EAS students: ENGL 307 or 309

For further information about the writing portfolio assessment, see the Schedule of Courses, or contact the Writing Program, (719) 262-4038 or (719) 262-4040. Transfer students who have completed all composition requirements before enrolling at UCCS should contact the Writing Program concerning the portfolio assessment during their first semester in order to progress toward graduation in a timely manner.

Accountability

Office of Institutional Research
Main Hall, room 301
(719) 262-3167

Campus

UCCS has adopted the following campus goals for undergraduate general education:

The purpose of general education is to cultivate students' intellectual, personal and ethical development and thus equip them to be life-long learners, able to adapt to an ever-changing environment. Specifically, students will:

1. Be able to read, write, listen and speak in a manner that demonstrates critical, analytical and creative thought.
2. Achieve a depth of understanding in their majors and a breadth of experience in other fields.
3. Understand and apply the tools and methodologies used to obtain knowledge.
4. Be prepared to participate as responsible members of a pluralistic society — locally, nationally and globally.

In addition, each academic department has adopted assessable goals for its graduates. Listed below are the accountability goals for each major or department.

College of Business and Administration

Business- B.S.

- Have a foundation in accounting, behavioral science, economics, mathematics, and statistics
- Understand perspectives on ethical and global issues, and political, social, technological, and diversity issues as they relate to the business environment
- Develop competency in oral and written communication, quantitative, analytical, and reasoning skills
- Gain basic business knowledge and experience required to function in a business-related career

College of Education

Principal and Administrator Licensure

The program is built upon Colorado Standards for Principals. They are:

- Model and set high standards to ensure quality learning experiences that lead to success for all students
- Lead and support a school community that is committed to and focused on learning
- Behave ethically and create an environment that encourages and develops responsibility, ethics, and citizenship in self and others
- Recognize, appreciate, and support ethnic, cultural, gender, economic, and human diversity throughout the school community while striving to provide fair and equitable treatment and consideration for all
- Be a continuous learner who encourages and supports personal and professional development of self and others
- Organize and manage human and financial resources to create a safe and effective working and learning environment

College of Engineering and Applied Science

Computer Engineering - B.S.

- Read, interpret, and critically assess literature in computer engineering and

evaluate its impact on current issues in engineering and society
- Write reports and present oral reports of a technical nature
- Use basic knowledge in science and mathematics as well as knowledge and tools in engineering disciplines to analyze and synthesize real-world engineering problems
- Design processes, devices, circuits or systems using computer engineering knowledge and tools while considering economics, safety, ethics, ergonomics, and aesthetics
- Function effectively, alone or as part of a team, in an engineering capacity
- Appreciate the importance of staying current with the engineering field

Computer Science - B.S.

- Design and implement software solutions using state-of-the-art hardware, software design methodologies, and programming languages
- Use new design methodologies, operating systems, languages, and other software development tools

Electrical Engineering - B.S.

- Read, interpret, and critically assess literature in electrical engineering and evaluate its impact on current issues in engineering and society
- Write reports and present oral reports of a technical nature
- Use basic knowledge in science and mathematics as well as knowledge and tools in engineering disciplines to analyze and synthesize real-world engineering problems
- Design processes, devices, circuits or systems using engineering knowledge and tools while considering economics, safety, ethics, ergonomics, and aesthetics
- Function effectively, alone or as part of a team, in an engineering capacity
- Appreciate the importance of staying current with the engineering field

Mathematics - B.A. and B.S.

- Analyze problems and formulate appropriate mathematical models
- Understand mathematical techniques and their application
- Recognize phenomena and abstract, generalize and specialize these patterns in order to analyze them mathematically
- Write and orally express oneself in an articulate, sound and well-organized manner

Mechanical Engineering - B.S.

- Have a strong foundation in engineering science along with the ability to apply this knowledge to solve engineering problems
- Gain proficiency in modern computational methods and in the use of current computational tools for engineering applications
- Understand the methods, standards, and conventions that are followed in the practice of engineering
- Formulate and solve large scale design problems; understand the design process and develop creativity, general knowledge, engineering intuition, and skills in problem formulation, project management, leadership, communication/presentation, and teamwork
- Develop knowledge of the theory and practice of experimental methods in engineering
- Understand the social and cultural environment, particularly in the context of professional responsibilities and ethics

Graduate School

Applied Geography - M.A.

- Understand and appreciate the interactions between the human and natural world
- Synthesize, analyze, and evaluate diverse social and physical information
- Conceptualize spatial relationships for problem solving
- Clearly communicate policy solutions or recommendations

Applied Mathematics - M.S.

- Understand core graduate mathematics material
- Deliver written and oral presentations demonstrating comprehension of complex mathematical content
- Prepare for employment requiring mathematical skill and sophistication at the master's level
- Develop a more sophisticated view of mathematics than is achieved in the undergraduate program
- Gain exposure to mathematical research and advanced applications

Basic Science - M.B.S.

- Increase knowledge of the major theories and concepts in two major areas of study in the basic sciences
- Apply the fundamentals of research methodology and statistical analysis to the interpretation and evaluation of scientific data and research reports
- Communicate orally and in writing knowledge of two major areas of study in the basic sciences
- Prepare for jobs or advanced education in a field of science

Business Administration - M.B.A.

- Integrate state-of-the-art theory and practice in business disciplines and gain an integrated perspective of what makes an organization successful
- Gain process skills in leadership, management, people and team building, and technical and analytical skills in a chosen area of emphasis
- Become an ethically principled professional who is committed to enhancing the value of organizations and communities

Communication - M.A.

- Gain proficiency in designing and conducting original research
- Gain knowledge and understanding of communication processes and theories
- Develop communication skills that prepare for success in the workplace and in further graduate studies

Computer Science - M.S.

- Possess knowledge of fundamental areas of computer science
- Read, understand, and evaluate professional literature in computer science
- Write technical reports and make oral presentations of technical information
- Gain in-depth knowledge of at least one area of computer science

Computer Science - Ph.D.

- Gain knowledge of computer science in three fundamental required areas (operating systems, design and analysis of algorithms, and automated

theory) and two additional areas chosen by the student

- Gain in-depth knowledge of the specific area of computer science in which thesis research is conducted
- Read, understand, and evaluate professional literature in computer science
- Write reports and make oral presentations of technical information
- Demonstrate capability to make fundamental and significant contributions in the area of computer science using contemporary approaches to research and development

Counseling and Human Services - M.A.

- Develop mastery of the body of knowledge of professional counseling and the skills necessary to perform as a successful professional counselor
- Develop insight into their own personalities, identifying the strengths and limitations they will bring to the counseling profession

Curriculum and Instruction - M.A.

- Reflect upon and evaluate development toward becoming an instructional leader within a school setting
- Develop professional expertise through examining educational issues and use research and its applications in instructional settings
- Enhance instructional leadership skills through increasing professional knowledge in a cognate area

Electrical Engineering - M.S.

- Read, interpret and critically assess literature in specialized areas of electrical engineering and evaluate its impact on current issues in engineering and society
- Write reports and give oral presentations of a technical nature
- Apply basic and advanced knowledge in science, mathematics, and engineering disciplines to perform analysis and synthesis of engineering problems

Electrical Engineering- Ph.D.

- Read, interpret, and critically assess literature on advanced topics in electrical engineering
- Make fundamental contributions to the advancement of electrical engineering, using basic and advanced knowledge of science, mathematics, and engineering disciplines, along with research tools to perform analysis and synthesis and to visualize potential areas of application
- Write technical reports and other documentation reporting the results of fundamental investigations
- Give oral presentations of the procedures used and conclusions reached in investigations

Engineering - M.E.

- Perform independent research in a field of specialization
- Prepare to become a national and international expert in the chosen field of specialization
- Set a professional example of engineering knowledge and be a credit to the profession

History - M.A.

- Understand the basic historiography of chosen fields of study
- Know how to ask historical questions, research those questions using primary source material, and answer those questions in the form of academic writing

Mechanical Engineering - M.S.

- Perform independent research in a field of specialization
- Prepare to become a national and international expert in the chosen field of specialization
- Set a professional example of engineering knowledge and be a credit to the profession

Nursing - M.S.N.

- Demonstrate competence in the role of an advanced practice nurse
- Integrate theory and research into practice
- Manage client health problems in a variety of settings
- Use creativity and critical thinking to facilitate transpersonal healing
- Promote holistic healthcare through collaborative relationships
- Integrate the moral caring imperative in advanced nursing practice

Psychology- M.A.

- Demonstrate competency in conducting scientific research
- Prepare for doctoral degrees in psychology or related fields
- Develop clinical competency (clinical track)

Sociology - M.A.

- Integrate theory and research methods (critical thinking), and demonstrate command of the literature of a specific area within sociology
- Integrate and synthesize materials learned in course work to provide a comprehensive understanding of the discipline and in-depth knowledge in an area of specialization

Special Education - M.A.

- Work collaboratively with general educators and communicate in an effective, professional manner with parents, staff, administrators, students and related service personnel.
- Use assessment data to plan instruction, monitor student progress, and determine effectiveness of instruction.
- Develop new special education knowledge and translate special education and related research into practice
- Promote and model excellence in special education practice

Graduate School of Public Affairs

Public Administration - M.P.A.

- Demonstrate knowledge of the concepts and principles conveyed in the School's core curriculum and apply that knowledge to the analysis of contemporary issues in public administration or criminal justice
- Effectively communicate in writing and oral presentations

College of Letters, Arts and Sciences

Anthropology - B.A.

- Read and assess arguments in the field that is notorious for its contentiousness
- Be familiar with the basic concepts of the field and the major theoretical positions that have influenced anthropological thinking
- Be familiar with the nature of data in at least one sub field and be able to construct arguments using that data

Art History - B.A.

- Have a general knowledge of all periods in the history of art and architecture and a specialized knowledge of selected historical and geographical areas
- Have a general knowledge of studio practices
- Demonstrate progressively advanced undergraduate level research, communication, and critical thinking skills
- Analyze and discuss forms of visual art visual using the specialized vocabulary and analytical methods of art history.
- Have increased value for the cultural role of artistic expression
- Articulate an advanced thesis using art historical methodologies in a public presentation and a written paper

Biology - B.A.

- Critically read, assess, and discuss biological literature
- Assess and synthesize information from a variety of scientific disciplines
- Independently formulate hypotheses, design and carry out rational tests of such hypotheses, and interpret and defend the results of such tests
- Recognize and analyze alternative explanations and models
- Use technology and mathematics to improve investigations and communications
- Effectively compete in the job market and in professional and graduate schools

Chemistry - B.A. and B.S.

- Have knowledge of general organic, analytical, physical and inorganic areas of chemistry and biochemistry, and an integrated overview of chemistry
- Have knowledge of additional areas of biology, mathematics, physics, and technology and be able to manipulate experimental data and facilitate the understanding and derivation of fundamental relationships
- Compete for a position in the workplace as a professional chemist, for admission to graduate or professional schools, or for careers in other fields
- Communicate effectively about chemistry

Communication - B.A.

- Have a thorough background in the discipline of communication
- Have the knowledge and abilities to prepare for employment and future graduate studies and research

Economics - B.A.

- Be able to gain access and display command of existing economic knowledge
- Be able to detail existing economic knowledge and explore economic issues

English - B.A.

- Have knowledge of the world in which we live, the cultures which have shaped that world, and the behavior of the people who inhabit it
- Develop capacities for rational and logical thought and analysis
- Have written and oral skills to express rational and logical thought clearly and effectively

Ethnic Studies (Minor)

- Examine knowledge from specific U.S. racial/ethnic minority perspectives
- Examine relationships among racial/ethnic groups and the nature or basis of racial/ethnic formation, and its intersections with class, gender and sexuality
- Develop competencies from working with people in different ethnic backgrounds and foster an appreciation of ethnic diversity
- Evaluate Euro-centric knowledge constructions

Geography and Environmental Studies - B.A.

- Understand the general configuration and processes associated with the earth's landforms
- Have a general knowledge of the variety and processes of human geography that are reflected in various cultures
- Understand the methods of analysis used to solve geographic problems

Gerontology (Minor)

- Understand the age structures of diverse populations and the impact of demography on the individual life course, family and social structures
- Identify and analyze changes in psychological, social, and biological domains that occur with increased frequency in later life and discriminate between those that are caused by aging and those that are merely correlated with aging
- Apply the research methodologies used to study aging phenomena and analyze the life stories of older adults in the context of historical, developmental, and contextual influences.
- Gain a realistic appreciation for older adults, appreciating their contributions but not idealizing them in a stereotypic way
- Synthesize the impact of biological, psychological, and social factors in aging
- Analyze the life context of older adults and identify relevant resources for specific needs

History - B.A.

- Develop knowledge and understanding of historical processes
- Develop research skills to locate information, collect data and continue productive inquiry on historical problems
- Develop cognitive skills to make sense of information collected in research on historical questions
- Develop skills in writing clearly, succinctly, logically, and persuasively
- Develop reasoning skills to follow the flow of logic in historical argumentation

Philosophy - B.A.

- Read and discuss critically and in detail at least one classic philosophic text in its entirety from two of the major periods in the history of philosophy
- Articulate and assess some of the major issues raised in the classic texts of philosophy and their connections to their historical and cultural context
- Write and defend a senior thesis on some philosophical issue approved by the department
- Undertake graduate work in philosophy or enter a professional school in law, medicine or business

Physics - B.S.

- Be prepared in fundamental physics necessary for admission into a graduate program in physics or related technical fields, such as in education, industry, research, and the military

- Understand the fundamental ideas and methods of physics and apply them to problems
- Prepare and present several research topics and defend them before peers and faculty

Political Science - B.A.

- Understand domestic and foreign governments and the relations between them
- Think critically about and find rigorously defensible answers to political questions
- Use analytical and empirical methods in the pursuit of answers to political questions

Psychology - B.A.

- Have knowledge of the major theories and concepts of psychology to attain a deeper understanding of a sub-discipline
- Understand and apply the fundamentals of research methodology and statistical analysis to the interpretation and evaluation of psychological data and research
- Demonstrate ability to locate and gather information
- Communicate knowledge orally and in writing of the field of psychology
- Prepare for jobs or advanced education in the field of psychology

Sociology - B.A.

- Read critically, write in a clear logical manner, and verbally communicate effectively
- Have a broad knowledge about society and social behavior and provide credible explanations that satisfy an individual's curiosity about how and why social development has taken a particular direction
- Be aware, understand and appreciate the complexity of the human experience as related to social institutions
- Analyze society's development, including the social phenomena of racism, sexism, and other forms of structured inequality
- Be able to identify and question ethnocentrism
- Have analytic, evaluative, and critical skills, and apply appropriate methods of data collection and analysis to the learning process
- Prepare for graduate work or professional study
- Apply sociological thinking, social scientific methods, and substantive knowledge in professional and community settings

Spanish - B.A.

- Speak the language to satisfy routine social demands and limited nonspecific work-related tasks
- Comprehend face-to-face speech in standard language spoken at a normal rate with some repetition and rewording by a native speaker not accustomed to dealing with foreigners
- Have sufficient comprehension to read authentic printed material or edited texts and material within a familiar context
- Write routine social correspondence, simple discourse, and cohesive summaries, resumes, short narratives and descriptions on factual topics in the past, present, and future times
- Have a broad understanding of the history and civilization of the target culture
- Have a critical and theoretically-based awareness of the literary traditions, periods, genres and theories of the target language

Studio Art - B.A.

- Have knowledge of two-and-three dimensional media at all levels of instruction
- Have general knowledge of all periods of the history of art and architecture
- Articulate orally and in writing personal aesthetics in two-and-three dimensional media
- Analyze and discuss forms of visual art
- Have specific knowledge of modern and contemporary art and techniques
- Use the vocabulary, scholarly rhetorical methods, and critiques of contemporary art theory and criticism in writing and in spoken communication

Women's Studies (Minor)

- Understand U.S. culture and society from multiple gender perspectives and intersections of race, class and gender
- Demonstrate a broad understanding of women's historical material and cultural conditions in a variety of cultures
- Acquire a measurable degree of positive self-knowledge and self-validation in a society that often does not value women's participation and a diversity of gender roles
- Develop ability to actively participate in changing attitudes toward women

Beth-El College of Nursing

Nursing - B.S.

- Master the required core knowledge for professional basic nursing practice
- Function in the beginning role of a professional baccalaureate nurse in a variety of settings
- Communicate with individuals and the community to maintain collegial professional relationships
- Be proficient in the core nursing competencies of critical thinking, communication, assessment and technological skills
- Demonstrate values of a professional baccalaureate nurse

Health Care Science - B.S.

- Have the knowledge and skills necessary to function in the specialty health care area
- Demonstrate professional oral and written communication skills and ethical decision-making skills
- Incorporate research and theory in health care services
- Demonstrate professional responsibility and accountability
- Apply leadership and management skills with the context of interdisciplinary teams

Core Values

EXCELLENCE: We will attract, develop and retain outstanding faculty, staff, and students, and focus on those programs and services that we can offer at an exemplary level.

STUDENT SUCCESS: We will help traditional and non-traditional students succeed in their academic endeavors by assuring a stimulating, supportive, and safe environment in a naturally beautiful setting. We will encourage students to recognize their responsibility to participate fully in their own educational

success and to contribute to the quality of all aspects of campus life.

COMMUNITY INTERACTIONS: We will make known our vision, values, and goals and provide a demonstrated return on investment to the citizens of Colorado. We will link the university more closely to the communities we serve. We will communicate the value of the university to the citizens and elected leaders of our state, alumni, and potential students everywhere.

ENRICHING ENVIRONMENT: We will aggressively seek the development of a multicultural campus environment in which each person contributes unique talents to make the university a better place. In turn, each person will be fully valued and supported. We will reaffirm the tradition of shared governance and encourage all members of our campus community to join together in creating a positive working environment where all enjoy respect, fair treatment, and a voice in campus decisions.

QUALITY TEACHING: We will promote and reward teaching excellence. We will strive to maintain predominantly small classes taught by dedicated and accessible faculty.

RESEARCH AND CREATIVE WORK: We will promote and reward research and creative work that advances knowledge, that makes a valuable contribution, that enhances our teaching and service missions, and that encourages collaboration between students, both graduate and undergraduate, and faculty.

SERVICE: We will attract and reward members of the campus community who place a high value on service and who are committed to contributing their expertise to the university and the public good.

STAFF CONTRIBUTION: We will value the vital role that staff play in supporting and enhancing the mission of the university.

INNOVATION AND CHANGE: We believe that universities both preserve the past and help create the future. We will encourage innovation in teaching, research, and service and prepare our students to succeed in a rapidly changing global and technologically advancing environment.

LIFE-LONG LEARNING: We will commit to serving the educational needs of members of our community at many points along life's path—as K-12 students, as university students, as they enter the work force, as they retrain for new careers, and as they continue to learn and grow throughout their lives.

Diversity

The University of Colorado recognizes its responsibility to prepare students to live and prosper in a pluralistic global society. All members of the university community are encouraged and empowered to aggressively develop a campus culture in which each individual is fully valued.

The university's goal is to provide opportunities for all to learn and interact. Central to this goal is the respect and acknowledgement of diverse cultural and ethnic heritages. This respect will be reflected in all areas of campus life, including the composition of all constituencies of the campus community. To achieve this end, the university will actively recruit and retain students, faculty, administrators and staff who reflect the population of Colorado and the nation. Such an inclusive university best prepares students to succeed in a world in which an understanding of human diversity is essential.

This commitment to diversity will be embraced throughout the university's programs, colleges and schools, and by our administration, faculty, staff and students.

Student Learning Outcomes

Office of Institutional Research
Columbine Hall, Room 203D
(719) 262-4186

UCCS students are a valuable source of information for helping to determine whether the educational programs are meeting the stated goals. Through the use of surveys, tests, and other instruments, information is gathered that assists in making improvements to curriculum and teaching that, in turn, can lead to increases in learning by students. Since these efforts are critical to achieving the university's goals, students may be required to participate in the assessment program.

UCCS reports results from various surveys and assessments to the Colorado Commission on Higher Education, The Higher Learning Commission of North Central Association, as well as other state and public constituents.

UCCS faculty and staff also use assessment results to evaluate and improve the quality of general education, major, and distance education programs.

Information collected in assessment processes is kept strictly confidential. Information shared with governmental and accreditation agencies is aggregated and individual student identities are not revealed.

At several points as an undergraduate, a student may be asked to complete a survey or a test. The following is a summary of what might be expected:

Freshman Year:

- Entering Freshmen Survey
- National Survey of Student Engagement (NSSE) - a random sample is selected for this survey

Sophomore/Junior Years:

- ETS Academic Profile (general education test)

Senior Year:

- Graduating Seniors Survey
- ETS Academic Profile
- National Survey of Student Engagement

Please note that in addition to these institution-wide assessments, some departments have special assessment requirements, such as a senior test or exit survey, for example.

Student Rights and Responsibilities

Academic Honor Code

Academic honesty and integrity are vital elements of a dynamic academic institution. The responsibility for ethical conduct rests with each individual member of the academic community — students, faculty, and staff.

UCCS has an ongoing commitment to maintain and encourage academic integrity. Therefore, the university has created a set of standards of academic honesty and procedures governing violations of these principles. Copies of the Academic Honor Code document may be obtained at the Kraemer Family Library, from the offices of the deans of the various schools/colleges, from the office of the Dean of Students, or from the Office of the Vice Chancellor for Academic Affairs.

Forms of Academic Dishonesty

1. Plagiarism – use of distinctive ideas or words belonging to another person, without adequately acknowledging that person's contribution.
2. Cheating – intentionally possessing, communicating, using, or attempting to use unauthorized (by the instructor) materials, information, notes, study aids, or other devices, in any academic exercise.
3. Fabrication and Falsification – intentional and unauthorized alteration or invention of any information or citation in an academic exercise.
4. Multiple Submission – submission of substantial portions of either written or oral academic work which has previously earned credit, when such submission is made without instructor authorization.
5. Misuse of Academic Materials – intentionally or knowingly destroying, stealing, or making inaccessible, library or other academic resource material.
6. Complicity in Academic Dishonesty – intentionally or knowingly contributing to the academic dishonesty of another.

These examples of academic dishonesty shall not be construed to be comprehensive, and infractions will be dealt with on an individual basis. It is the obligation of each student to assist in the enforcement of academic standards; infractions – whether by students or faculty – should be first brought to the attention of the instructor.

Detailed instructions about reporting a suspected infraction; appealing an alleged infraction; and sanctions for an infraction are outlined in the UCCS Academic Honor Code document. Questions about the academic honor code should be addressed to the Dean of Students, Main Hall, room 202, (719) 262-3258.

Affirmative Action

Main Hall, room 318
(719) 262-3215

UCCS follows a policy of equal opportunity in education and employment. In pursuance of this policy, no campus department, unit, discipline, or employee shall discriminate against an individual or group on the basis of race, color, religion, sex, age, sexual orientation, national origin, individual handicap or veteran status. This policy applies to all areas of the university affecting present and prospective students or employees.

The institution's educational programs, activities, and services offered to students and/or employees are non-discriminatory and consistent with State affirmative action guidelines, as well as with Federal laws and orders.

For information about these provisions on equity, discrimination, or fairness, as well as internal and external complaint procedures, contact (719) 262-3436.

Colorado Rioting Act

No person who is convicted of a riot offense shall be enrolled in a state-supported institution of higher education for a period of twelve months following the date of conviction.

A student who is enrolled in a state-supported institution of higher education and who is convicted of a riot offense shall be immediately suspended from the institution upon the institution's notification of such conviction for a period of twelve months following the date of conviction; except that if a student has been suspended prior to the date of conviction by the state-supported institution of higher education for the same riot activity, the twelve month suspension shall run from the start of the suspension imposed by the institution. Nothing in this section shall be construed to prohibit a state-supported institution of higher education from implementing its own policies and procedures for disciplinary actions, in addition to the suspension regarding students involved in riots stipulated above. (Colorado Revised Statues, 23-5-124).

E-Mail Policy

There is an expanding reliance on electronic communication among students, faculty, staff, and administration at UCCS. This is motivated by the convenience, speed, cost-effectiveness, and environmental advantages of using e-mail rather than printed communication. Because of this increasing reliance and acceptance of electronic communication, e-mail is considered an official means for communication within the university.

This ensures students have access to this critical form of communication. For the majority of students, this will not represent any change from what is currently done; it will, however, ensure that all students can access, and be accessed by, e-mail as the need arises.

Guidelines

1. **UCCS use of e-mail** E-mail is an official means for communication within the university. Therefore, the university has the right to send communications to students via e-mail and the right to expect that those communications will be received and read in a timely fashion.
2. **Assignment of student e-mail addresses** Information Technology (IT) will assign all students an official UCCS e-mail address. It is to this official address that the university will send e-mail communications.
3. **Redirecting of e-mail** A student may have e-mail electronically redirected to another e-mail address. If a student wishes to have e-mail redirected from his or her official address to another e-mail address (e.g., @aol.com, @hotmail.com, or an address on a departmental server), they may do so, but at his or her own risk. UCCS will not be responsible for the handling of e-mail by outside vendors or by departmental servers. Having e-mail redirected does not absolve a student from the responsibilities associated with communication sent to his or her official e-mail address.
4. **Expectations regarding student use of e-mail** Students are expected to check their official e-mail address on a frequent and consistent basis in order to stay current with university communications. UCCS recommends checking e-mail once a week at a minimum; in recognition that certain communications may be time-critical.
5. **Educational uses of e-mail** Faculty may determine how e-mail will be used in their classes. It is highly recommended that if faculty have e-mail requirements and expectations they specify these requirements in their course syllabus. Faculty may expect that students' official e-mail addresses are being accessed and faculty may use e-mail for their courses accordingly.
6. **Appropriate use of student e-mail** In general, e-mail is not appropriate for transmitting sensitive or confidential information unless its use for such purposes is matched by an appropriate level of security.

a. All use of e-mail, including use for sensitive or confidential information, will be consistent with the .

b. Confidentiality regarding student records is protected under the Family Educational Rights and Privacy Act of 1974 (FERPA). All use of e-mail, including use for sensitive or confidential information, will be consistent with FERPA.

c. E-mail shall not be the sole method for notification of any legal action.

Family Educational Rights and Privacy Act (FERPA)

Annual Notice to Students: The University of Colorado complies fully with the provisions of the Family Educational Rights and Privacy Act (FERPA) of 1974. The act was designed to protect the privacy of education records, to establish the right of students to inspect and review their education records in all offices, and to provide guidelines for the correction of inaccurate or misleading data through informal and formal hearings. Students also have the right to file complaints with the FERPA office concerning alleged failures by the institution to comply with the act.

Local guidelines explain in detail the procedures to be used by the institution for compliance with the provisions of the act. Copies of the guidelines can be found in the Admissions and Records Office.

The Admissions and Records Office has been designated by the institution to coordinate the inspection and review of student education records located in various university offices. Students wishing to review their education records must come to the Admissions and Records Office and present proper identification. All other records inquiries must be directed to the proper office, i.e., financial aid, bursar, etc.

Students may not inspect the following, as outlined by the act: financial information submitted by their parents, confidential letters that they have waived their rights to review, or education records containing information about more than one student, in which case the institution will permit access only to that part of the record that pertains to the inquiring student. Records that may be inspected include admissions, academic, and financial aid files, and cooperative education and placement records.

The Family Educational Rights and Privacy Act (FERPA) affords students certain rights with respect to their education records. They are:

The right to inspect and review education records within 45 days of the day the university receives their request for access. Students should submit to the registrar, dean, head of the academic department, or other appropriate official, written requests that identify the educational record(s) they wish to inspect. The university official will make arrangements for access and notify them of the time and place where the records may be inspected. If the records are not maintained by the university official to whom the request was submitted, that official shall advise them of the correct official to whom the request should be addressed.

The right to request the amendment of students' education records that they believe are inaccurate or misleading. They may ask the university to amend a record that they believe is inaccurate or misleading. They should write the university official responsible for the record, clearly identify the part of the record they want changed, and specify why it is inaccurate or misleading. If the university decides not to amend the record as requested by the student, the university will notify the student of their right to a hearing regarding the request for amendment. Additional information regarding the hearing procedures will be provided to them when notified of the right to a hearing.

The right to consent for disclosures of personally identifiable information contained in their education records, except to the extent that FERPA authorizes disclosure without consent.

One exception that permits disclosure without consent is disclosure to school officials with legitimate educational interests. A school official is a person employed by the university in an administrative, supervisory, academic, research, or support staff position (including law enforcement unit personnel and health staff); a person or company with whom the university has contracted (such as an attorney, auditor, or collection agent); a person serving on the Board of Regents; a student employee; or a student serving on an official committee, or one assisting another school official in performing his or her task.

A school official has a legitimate educational interest if the official needs to review an education record in order to fulfill his or her professional responsibility.

Upon request, the university discloses education records without consent to officials of another school in which a student seeks or intends to enroll.

4. The right to file a complaint with the U.S. Department of Education concerning alleged failures by the university to comply with the requirements of FERPA. The name and address of the office that administers FERPA is:

The Family Compliance Office
U.S. Department of Education
600 Independence Avenue, SW
Washington, DC 20202-4605
202-260-3887

The following items of student information have been designated by the University of Colorado as public or "directory" information: name, mailing and permanent addresses, telephone numbers, e-mail address, dates of attendance, registration status, class, account balance, previous educational institutions attended, major field of study, awards, honors, degree(s) conferred, past and present participation in officially recognized sports and activities, physical factors (height and weight) of athletes, prior schools attended, and date and place of birth. Such information may be disclosed by the institution at its discretion.

Students have the right to withhold directory information from inquirers. The privacy option prevents all directory and enrollment information from being released to all who do not have a clear educational interest for access to this information.

Sexual Harassment

Main Hall, room 318
(719) 262-3215

Sexual Harassment Policy

UCCS is a collegial academic community whose mission requires an open learning and working environment which values and protects individual dignity. UCCS' educational process is based upon mutual trust, freedom of inquiry, freedom of expression, and the absence of intimidation and exploitation.

As a place of work and study, UCCS must be free of inappropriate and disrespectful conduct and communication of a sexual nature, of sexual harassment, and of all forms of sexual intimidation and exploitation. Unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature constitute sexual harassment when: submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment, living conditions and/or academic evaluation; submission to or rejection of such conduct by an individual is used as the basis of employment or academic decisions affecting such individual; or such conduct has the purpose or effect of unreasonable interfering with an individual's work or academic performance or creating an intimidating, hostile, or offensive working or educational environment.

Any person who desires information, has questions about procedures, or feels that he/she may have been sexually harassed is encouraged to speak with the Sexual Harassment Officer. Copies of the university Policy on Sexual Harassment are available on the campus website, www.uccs.edu, and from the campus Sexual Harassment Officer and in most offices on campus.

Standards of Conduct

Dean of Students
Main Hall, room 202
(719) 262-3258

Purpose

UCCS has established a code of conduct to maintain the general welfare of the university community. The university strives to make the campus a place of study, work, and residence where people are treated with civility, respect, and courtesy. Admission to the university carries with it the expectation that students will be responsible members of the campus community. This includes respecting the personal safety and individual rights of all in the university community, acting in accordance with accepted standards of social behavior, and abiding by the regulations of the university and the laws of the city, state, and nation. The Standards of Conduct clearly state the university's expectations for student behavior.

Students are expected to become familiar with these standards and fully understand their responsibility as university community members.

Jurisdiction

The Standards of Conduct apply to all students at UCCS, regardless of designation, program, or residence. These regulations apply primarily to misconduct on university premises; however, off-campus violations that may impact the university's mission fall under the jurisdiction of the Office of Student Conduct and may lead to disciplinary action. Students may be held accountable to both civil and criminal authorities as well as to the university, by breaking a law that also violates the university standards. Disciplinary action by the university will not be subject to challenge or postponement on the grounds that criminal charges involving the same incident have been dismissed, reduced, or are pending in any state or federal judicial system. In addition, the university can pursue disciplinary action if a student violates a standard of conduct and then withdraws from the university.

Standards

Standards of conduct help promote a safe and civilized campus environment. All students enrolled at UCCS are required to abide by these standards, or they will be subject to discipline. An attempt to commit an act prohibited by these standards, or attempts to aid, abet, or incite others to commit acts prohibited by these standards, are subject to discipline to the same extent as a completed act. Similar standards of conduct apply to other members of the university community - faculty, staff, and visitors.

Prohibited acts are enumerated in the document, "Students' Rights and Responsibilities: Standards of Conduct," which is available in the Office of Student Conduct. Allegations of any violations should be directed to the Office of Student Conduct for resolution.

Complaints

Any member of the university community may file a written complaint with the Office of Student Conduct alleging that a student has violated the Standards of Conduct. The complaint must include a statement of the facts describing the alleged violation. The Office will not accept anonymous complaints. The Office may also initiate charges. Upon receipt of a complaint, the Office decides whether there is substance to the complaint; whether the complaint falls within the jurisdiction of the Standards of Conduct; and whether disciplinary proceedings should occur. In order to make this determination, the Office may need to gather additional information about the incident.

Rights and Responsibilities

The Standards of Conduct document details the rights and responsibilities of students accused of misconduct as well as victims of alleged student misconduct.

Additional Information

Questions regarding behavioral issues should be directed to the Office of Student Conduct.

Student Appeals

The university has established systematic procedures for students who believe that inappropriate decisions have been made that affect them. Academic issues (for example, graduation requirements or course grades) should be addressed to the office of the dean of the appropriate school/college. Appeals of administrative actions (for example, financial aid awards or parking tickets) should be directed to the office who made that decision. Advice and assistance on appeal procedures are available from the Dean of Students, Room 202, Main Hall, 262-3258. There is a one-year statute of limitations on appeals concerning financial matters.

Vision 2010

Vision CU 2010 is a bold systemwide agenda intended to map the future of the University of Colorado (CU) for the next decade. CU 2010 consists of five action areas:

- A university without walls
- A culture of excellence
- Increasing resources and using them wisely
- Diversity
- Integrated Infrastructure

Vision Statement

UCCS will provide unsurpassed, student-centered teaching and learning, and outstanding research and creative work that serve our community, state, and nation, and result in our recognition as the premier comprehensive, regional research university in the United States.

College of Business and Administration

Gary Klein, Interim Dean

Dwire Hall, room 179

Telephone: (719) 262-3113
Fax: (719) 262-3100

business.uccs.edu

The College of Business was established with the University of Colorado at Colorado Springs in 1965. The College serves the needs of the Pikes Peak Region and Southern Colorado for competent and responsible managers, for continued education of those already in such positions, and for research. It also serves the needs for business education throughout the world with its Distance M.B.A. program. The College is committed to providing its students with the knowledge, skills, and ethical framework to be effective leaders and managers in the contemporary business environment. Both the undergraduate and the graduate degree curricula have an applied perspective and offer students the opportunity for in-depth study in one of the primary business disciplines. The College works closely with the local business community in the professional development of its students. The Minority Advisory Council (MAC) assists the College in the recruitment and retention of ethnic minority students and in promoting a community that values individual differences and perspectives.

College faculty contribute to the advancement of knowledge in their fields through research and publication, and by serving in positions of leadership in business, civic, and professional organizations locally, nationally, and worldwide.

The College regularly interacts with business leaders and students to incorporate their recommendations into its programs.

Both the undergraduate and the graduate business degree programs are fully accredited by AACSB International — The Association to Advance Collegiate Schools of Business.

Vision

To be the College of Business of choice for those who are committed to excellence in education, scholarship, and life-long learning in the markets we serve.

Mission

The mission of the College of Business is to build futures. To achieve this mission, we will:

- Provide an innovative, learner-focused education of superior quality and value that integrates theory and practice;
- Cultivate strong partnerships;
- Create and disseminate knowledge through excellent teaching and nationally recognized publications; and
- Motivate students, faculty, and staff to achieve their potential, be principled professionals and positively impact the organizations and communities in which they work.

Core Values

Student Success

Student success is paramount to our thinking, teaching, programs, and processes and is the key to our success.

Excellence, Integrity, and Professionalism

We commit to creating quality and value as the hallmark of the College, living our ideals, treating others with respect, and working collaboratively for the best interests of the College and the University.

Building Lasting Relationships

We will establish and maintain mutually beneficial relationships with all of those individuals and organizations who have an interest in our success.

Research Centers

Small Business Development Center

The mission of the El Paso and Teller County Subcenter of the Small Business Development Center (SBDC) is to enhance economic development through assisting small businesses in reaching their growth and profit potential. Sponsored jointly by the U.S. Small Business Administration, the State of Colorado, UCCS, and Pikes Peak Community College, the SBDC offers seminars, workshops, and one-on-one counseling for startup and ongoing small businesses in the region.

Southern Colorado Economic Forum

The Forum provides businesses in El Paso county with information to assess local economic conditions in order to help them make more informed and better decisions. The objective of the Economic Forum is to provide timely and useful information focused specifically on the Pikes Peak Region. This information serves as a community progress report, identifying areas where the local community excels as well as areas where it faces challenges.

International Small Business Development Center

The College of Business has been named as the host of the International Small Business Development Center for the State of Colorado. Services include counseling, training programs, and web-based services. The Center will have a special emphasis on Spanish language material to assist companies interested in doing business with NAFTA-related industries.

The Center for Entrepreneurship

The Center for Entrepreneurship is an innovative education environment established by the College of Business and based upon the student learning environment paradigm. The Center for Entrepreneurship is tasked with exposing students at UCCS to the ideas and concepts behind entrepreneurial activities. The Center's primary mission is to provide a real-world, learning lab by creating a company-like environment wherein students can apply the concepts studied in their business curriculum.

Faculty

Interim Dean and Couger Professor: Gary Klein; Associate Dean and Associate Professor: Venkateshwar Reddy; El Pomar Professor: Robert Keeley; Professors: Alan Davis, Richard Discenza, Jeffery Ferguson, Donald Gardner, Lexis Higgins, Robert Knapp, Paul Miller, John Milliman, Eric Olson, James Rothe, Donald Warrick, Thomas Zwirlein; Associate Professors: Charles Beck, Margaret Beranek, Rebecca Duray, Benjamin Martz, Kenneth Meisinger, Morgan Shepherd, Robert Weigand, Kirkland Wilcox; Assistant Professors: Scott Butterfield, Andrew Czaplewski,

Monique French, Thomas Gruen, Ann Hickey; Associate Research Professor: Fred Crowley; Instructors: Bill Ayen, Michele O'Brien-Rose, Gordon Stringer, Sheri Trumpfheller, Sally von Breton, and Sam White.

Academic Policies

All students are responsible for knowing and following the provisions set forth in this Bulletin and in the Schedule of Courses. Any questions concerning these provisions are to be directed to the College of Business Administration M.B.A. advising office (graduate inquiries) or the Student Success Center (undergraduate inquiries). It is the responsibility of the student to know and observe program requirements and deadlines.

In an effort to incorporate new business techniques and paradigms into our business programs, as well as to meet the needs of our students on a timely basis, we periodically make changes to our curriculum. These changes may not be reflected in this catalog. We therefore encourage you to visit our web site at business.uccs.edu.

The bulletin that governs a student's graduation requirements is the one in effect at the time of a student's most recent admission into the college of the student's degree program. Students who find that program requirements have changed since they began attending as admitted degree students should work closely with their advisor in planning their schedules as they proceed toward graduation. Students transferring from both two- and four-year public higher education institutions of Colorado should consult the articulation agreements and transfer guides which are in effect between the College of Business and these institutions.

The academic policies and regulations stated herein are in effect at the time this bulletin is printed but may be subject to change. Any questions should be directed to the Student Success Center or the M.B.A. advising office.

Administrative Drop

Individual faculty or the dean may initiate the process to drop students who do not have the proper prerequisites and/or class standing for classes. Students who fail to meet written class attendance policies may also be administratively dropped. Business faculty may also drop students who do not attend the first class without prior permission from the instructor.

Attendance Policy

It is the expectation of the College of Business that students will attend all classes. However, classroom attendance policy is left to the discretion of the faculty member. Students are responsible for knowing the attendance policies of their instructors. Students registering late for classes must obtain approval from faculty member prior to enrolling. Business faculty may drop students who do not attend the first class without prior permission from the instructor. This policy allows the adding of waitlisted students who attend the first class.

Degree Credit

To be considered for the degree, all academic credit must be listed by the Office of Admissions and Records on the student's official University of Colorado transcript or on the University Transfer Credit Evaluation report. Credit listed on these documents is then evaluated by the appropriate College of Business advising office for degree applicability.

Transfer Credit

The College of Business reserves the right to disallow any credit that it determines not to be appropriate. Only credit from regionally accredited institutions will be considered for transfer to the undergraduate degree program, and from AACSB accredited graduate programs to the M.B.A. degree. See the following Undergraduate Degree Program and M.B.A. Program sections for more detail.

Independent Study

Junior, senior, and graduate business students desiring to work beyond regular business course coverage may take variable credit courses (1- 3 semester hours) under the direction of a full-time member of the faculty who approves the project. The student must also have the prior approval of the dean. Information and request forms are available in the advising offices.

To receive degree credit for independent study and experimental studies courses in non-business areas, students must obtain the approval of the College of Business dean prior to registering for the course. The College does not grant credit for work experience or cooperative education programs. Tutoring of lower division courses is considered a form of work experience, and is not accepted for academic credit.

A maximum of 6 hours of preapproved independent study credit may be applied to the undergraduate degree or M.B.A. degree.

Pass/Fail Course Registration

With the exception of BUAD 301, 302, 303, internships numbered 496 and 696, and certain experimental courses, students in the College of Business may not use courses taken on a pass/fail basis to satisfy required business or non-business courses, or business elective courses. Only 9 hours of non-business electives may be taken on a pass/fail basis and applied toward the undergraduate degree. Pass/fail determination must be made within the first two weeks of the semester and is irreversible.

Grading Policies

Failed Courses

Although failed courses may be repeated, the F will remain on the student's transcript and will be included in his/her grade point average.

Grade Changes

Final grades as reported by instructors are to be considered permanent and final. Grade changes must be approved by the associate dean or the dean. Please visit the website for the grade appeal policy: business.uccs.edu.

No Credit

The College will not approve business courses for no credit.

Incomplete Grades

The only incomplete grade authorized by the College of Business is IF; IW is not used. IFs are appropriate for students who have completed a substantial portion of the semester but who then become ill or encounter other documentable extenuating circumstances beyond their control that prevent them from completing their coursework.

Students who receive an IF must meet with their instructors to be advised of the terms and deadline for remedy. Students must make up the missing work and may not register for nor attend the course a second time. The student is responsible to ensure that incomplete grades are

removed at least four weeks prior to his/her scheduled graduation date. To resolve an IF the student must complete the specified work by the specified deadline. In all cases where an IF is not remedied, the IF grade automatically converts to an F on the student's permanent record one calendar year after award of the IF.

Graduation Requirements

By the beginning of the first semester of their senior year, students must schedule a senior audit with the business academic advisor to determine status with respect to graduation requirements. At this time, students are required to file a diploma card giving notice of intention to complete graduation requirements. Failure to complete the diploma card in a timely manner may delay a student's graduation.

Commencement

Students seeking to participate in commencement and other academic ceremonies will need to complete ALL academic requirements in advance. Participation in academic ceremonies that recognize or honor students for the completion of an academic program or specific academic accomplishment is based on the understanding that all requirements have been completed. Every effort will be made to determine eligibility in advance, and only students who have met requirements will be permitted to participate.

Internships

The College of Business offers internships for business degree students, undergraduate and graduate, both for credit and not for credit. To register for an undergraduate internship for academic credit, students must be in good academic standing in their junior or senior year. Internships are 1-3 credit hours, pass/fail only, and at the undergraduate level may be used as business elective credit or as area of emphasis credit if so specified in this Bulletin. At the graduate level, internships may be used as elective credit or may be approved for credit toward an area of emphasis.

Information on business internships is available at the College of Business Career and Placement Center.

Career and Placement Center

The Career and Placement Center for undergraduate and graduate business students is located in Dwire 239. The Center assists students searching for business internships and M.B.A. students by assisting in the search for part-time and full-time positions, resume writing and career direction. The Center can also introduce you to the Experience E-Recruiting Network. This web site links M.B.A. students and alumni to area and national employers who are looking for qualified employees to fill open positions. Email the Career and Placement Center at career@uccs.edu or call 719-262-3587 to set up an appointment. Visit the Career and Placement website at business.uccs.edu, go to Current Student, then Career and Placement Center.

Student Organizations

Student organizations provide opportunities for professional development and for recognition of scholastic achievement of students are supported by the College of Business. Following are the Student Organizations in the College of Business:

Delta Sigma Pi: International fraternity for students of business

SHRM: Student chapter of the Society for Human Resource Management

MAC: Minority Advisory Council.

MISA: Management Information Systems Association

SIFE: Students in Free Enterprise

BGS: Membership in Beta Gamma Sigma is an honor, which must be earned through outstanding scholastic achievement. Students are invited to apply for membership. Such membership is one of the highest scholastic honors that a student in a business or management program can attain.

To be eligible for Beta Gamma Sigma membership, students must rank in the top 7 percent of their junior class, the top 10 percent of their senior class, or in the top 20 percent of those students receiving Master's degrees. Beta Gamma Sigma chapters may be chartered only in those schools of business and management accredited by AACSB.

For information on all student organizations, please visit ROAR (Refuge for Organizations and Recreation) in the University Center, or call 262-3470.

Bachelor of Science – Business

The student bears primary responsibility for the fulfillment of degree requirements. Any questions that a student might have should be directed to the Student Success Center. The College reserves the right to disallow any credit that is not appropriate academic degree credit. Students approaching graduation must complete a graduation audit the semester before their final semester.

General Requirements

Total Credits. A minimum of 120 semester hours of appropriate academic credit as follows:

Required Business hours.....40
Required non-business hours.....34
Business Area Electives.....11-14
Area of emphasis (minimum).....18-21
Required General Electives 14

A minimum of 45 hours must be upper level (300-400) course work.

A maximum of 60 semester hours of appropriate academic credit taken at a junior or community college may be applied toward the baccalaureate degree in business. A maximum of 90 hours can be transferred from two and four-year colleges, combined.

A maximum of 12 semester hours completed as an unclassified student may be applied toward a baccalaureate degree in business.

Course work at the graduate level is not applicable to the baccalaureate degree.

Residency. Students must complete at least 30 semester hours of business course work at UCCS, including 18 hours in the area of emphasis, and senior capstone course, BUAD 450. These courses must be completed AFTER the student has been admitted to the College of Business.

Undergraduate Admission

Freshmen

Students who rank in the upper 30th percentile of their high school graduating class and who satisfy the suggested high school units and the entrance test score requirements are assured admission. Test scores for assured admission are: (a) for the SAT, a combined score of 1080 or above; or (b) for the ACT, a composite score of 24 or above, with

an English minimum score of 24 and a math minimum score of 22. Students not meeting the above standards will be considered on the basis of a combination of several factors including class rank and performance in college prep classes.

Suggested High School Course Units

English 4
(one year of speech/debate and two years of composition are strongly recommended)

Mathematics 4
(including at least two years of algebra and one year of geometry)

Natural science.....3
(laboratory science courses)

Social Science 2

Foreign language.....2

Academic electives.....1
(additional courses in English, foreign language, mathematics, natural or social sciences; not to include business courses)

Total 16

Students with strong mathematics and verbal skills are encouraged to apply even though their test scores and/or class rank may vary from the indicated admissions criteria.

Transfer Students

Transfer students must demonstrate proficiency in English and mathematics. Prospective transfer students should have completed 30 or more semester hours of courses equivalent to those taken by the business freshman and sophomore.

For admission to the College of Business, transfer students must meet either one or the other of the following standards:

A. Overall 2.5 GPA and 2.0 GPA in Business classes to include English 131, and Math 111 or 112; or

B. Overall 2.0 GPA and 2.5 average in the following five courses or their equivalents: Econ 101 and 202, Math 111 and 112, and Engl 131. Minimum grade of "C".

Applicants with less than 30 semester hours of college level work will be required to submit a high school transcript and SAT or ACT test scores. Applicants with 30 semester hours or more of college level work who submit a high school transcript and SAT or ACT test scores will be considered for admission. Applicants who lack a high school transcript and/or test scores, but who have completed 30 or more semester hours of college level work comparable to the freshman year business curriculum, will be considered for admission. Additional credentials may be required in individual cases. The College of Business adheres to the University Minimum Academic Preparation Standards that are listed in the General Information section of the Bulletin. This includes Freshman, Transfer and Intrauniversity transfer students.

College of Business does not allow students who already possess a bachelor's degree in a business area to pursue a second bachelor's degree in business. Students who already have a bachelor's degree in business are encouraged to inquire about admission criteria for the College's M.B.A. programs and/or undergraduate certificate program.

Intrauniversity Transfer

Students who wish to transfer to the College of Business from another degree program at UCCS may submit an application in the Student Success Center upon completion of at least 15 semester hours of graded work on campus. Students must demonstrate proficiency in English and math by completing freshman English and at least one required math course. Academic standards for intra-university transfer admission are those listed above for Transfer Students. Please see the business advisor in the Student Success Center once standards are met. The College of Business adheres to the University Minimum Academic Preparation Standards that are listed in the General Information section of the Bulletin. This includes Freshman, Transfer and Intrauniversity transfer students.

The Pre-Business Program

Students admitted to the College of Business are initially designated as Pre-Business students. They follow the freshman and sophomore sequence of courses listed in the Model Degree Program. Students should choose an intended emphasis at this time. Business students will not be allowed to take 400 level business courses until all the skills courses are completed with a C- or better. Students must apply to the Professional Business Program to take 400 level business courses.

Skills courses

Engl 131 3

Econ 101, 202 6

Math 111 and 112.....6

INFS 110.....3

ACCT 201, 202.....6

QUAN 201, 202 6

BUAD 300 3

Total 33

*Information Systems majors must also complete skills course, INFS 205.

Completion of lower division requirements does not ensure acceptance to the upper division Professional Program. See Admission to the Professional Program below for admission standards.

The Professional Program

The junior and senior years constitute the Professional Program of the undergraduate curriculum. Admission to the Professional Program is based on completion of all skills courses. Students must apply to the Professional Program when the skills courses are completed in order to declare an emphasis. Students must maintain a 2.0 overall GPA and a 2.5 business course GPA to graduate from the Professional Program. Students not maintaining this GPA will receive a General Business degree at the completion of the program.

Admission to the Professional Program

After admission to the College of Business, an overall GPA of 2.5 and a business course GPA of 2.5 are required for admission to the Professional Program. To apply to the Professional Program, students must have completed each of the above skills courses with a C- or better and at least 60 hours. Students will not be eligible to register for any 400-level business course without acceptance into the Professional Program. Students not in the Professional Program must request special permission to take 400 level courses. Students not meeting the requirements for the Professional Program maintain a Pre-Business designation. Board of Regents policy requires that students declare a major by the time they have 60 hours toward their degree, or by the start of their junior year.

Students must submit an application, generally as second semester

sophomores. Please visit the business advisor in the Student Success Center to apply to the Professional Program.

Admission to the Professional Golf Management Program

The College of Business Administration does not allow students to register for Professional Golf Management classes or participate in PGM internships until they are officially admitted to the program.

Graduation Requirements

To graduate from the Professional Program, students must have an overall GPA of 2.0, a Business course GPA of 2.5, and a 2.5 GPA in their area of emphasis courses with no grade below a C- (1.7) in the area of emphasis.

The General Business Degree

Students not meeting the graduation requirements for the Professional Program but who have an overall 2.0 GPA, a 2.0 Business course GPA, and a 2.0 area of emphasis GPA with no grade below C- (1.7), will receive a General Business Degree.

Model Degree Program

The following four-year plan lists all the specific course requirements for the bachelor of science (business) degree. Equivalent courses taken at other institutions prior to admission to this degree program may satisfy these requirements subject to College of Business policies regarding the transfer of academic credit. The order in which these courses are taken may vary with course availability. However, normal degree progress in the College of Business requires that students complete the degree in a freshman, sophomore, junior, senior sequence. All courses listed are degree requirements. Students are responsible for completing all course prerequisites. Course prerequisite and class standing requirements are enforced by the College of Business.

Freshman Year

Engl 131. Composition (Note 1) 3

Econ 101, 202. Micro and Macroeconomics.....6

Math 111 and 112. Linear Algebra and Calculus 6

Social Science elective 3

INFS 110. Information-Based Decision Making 3

General Elective Approved List (Note 6) 6

Humanities elective (Note 2).....3

Sophomore Year

Natural science with Lab (Note 3).....4

BLAW 200 Business Law 3

General Elective Open (Note 6).....6

Comm 210. Public Speaking 3

ACCT 201, 202. Financial and Managerial Accounting.....6

QUAN 201. Business Statistics and QUAN 202 Process and Statistics-Based Decision 6

BUAD 300. Integrated Skills for Management (Note 4).....3

Junior Year

Non Freshman communication elective (Note 1).....3

Humanities elective (Note 2).....3

BUAD 302. Resume Writing and Interviewing Skills.....1

FNCE 305. Basic Finance.....3

MKTG 300. Prin of Marketing 3

ORMG 330. Intro to Management and Organization 3

OPTM 300. Fundamentals of Operations Management 3

Area of Emphasis (Note 5).....6

General Elective Open (Note 6).....2

Area Elective (Note 7).....2

Senior Year

BUAD 400. Government, Law, and Society (Note 8).....3

BUAD 450. Cases and Concepts in Business Policy (Note 8) 3

Area of Emphasis (Note 5).....12

Area electives (Note 7) 6

Area electives (Note 7) 6

Minimum to graduate 120

Curriculum Notes:

1. Composition and Communication. To fulfill the 6 hour composition requirement, students take Engl 131 in their freshman year and may choose from Engl 307, Business and Administrative Writing; ENGL 309, Technical Writing and Presentation; or Comm 324, Business and Professional Communication, their junior year. Students must also complete a competency requirement by turning in an English portfolio or completing an additional upper-division writing course. Please consult the Writing Program, Columbine Hall 1041 or 1045 for more details on the writing competency requirement.

2. Humanities Electives. Six credit hours are required. A complete list of acceptable courses is available from the Student Success Center or College of Business. Courses must come from the approved list to apply as a Humanities elective.

3. Natural Science with Lab. Requirement is 4 credits. Students may apply additional natural science credit toward general electives.

4. BUAD 300, Integrated Skills for Management. BUAD 300 should be taken during the second semester of the sophomore year. It is a required skills course for entry into the College of Business Professional Program.

5. Area of Emphasis. 18 hours required. Business students admitted to the Professional Program will select one of the following areas of emphasis: Accounting, Business Administration, Finance, Human Resources Management, Information Systems, International Business, Marketing, Organizational Management, or Service Management. Students may also elect to obtain a double area of emphasis or a business minor. General Business is available to business students who do not meet the GPA requirement as they near graduation.

6. General electives. The business degree requires 14 hours of General electives. Electives should be chosen carefully based upon the student's interests and objectives. The student will choose 6 hours from an approved list and will have 8 hours of open electives. These credits provide a means to take elective courses geared toward expanding the breadth of their education to other topics pertinent to their course of study in business.

7. Business Area Electives. Courses in this area can be used to fulfill a business topic that is taught at a level above the introductory level of the core classes. Students may elect to utilize the Area Electives for a minor in business or minors offered through the College of Letters, Arts and Sciences, Engineering or Nursing.

The following special sources of credit may be appropriate for general electives:

a. A maximum of 9 hours upper division ROTC credit if the student completes the ROTC program.

b. A maximum of 2 hours of physical education activity, health, or first aid credit.

The College of Business does not accept courses that are considered redundant to courses in the business curriculum. This includes, but is not limited to: CS 100, 103, and 104.

The above examples are not exhaustive, but are intended to provide guidelines. The College of Business reserves the right to disallow any credit that is not appropriate academic credit as determined by the College. Students should direct questions and obtain a written approval to the Student Success Center prior to undertaking these classes.

8. Business Seniors. Registration in BUAD 400 and 450 is restricted to business seniors only.

Professional Program Areas of Emphasis

Each candidate for the Bachelor of Science-Business degree in the Professional Program must complete the prescribed courses in an area of emphasis comprising a minimum of 18 semester hours taken at UCCS. A grade point average of 2.5 is required for the area of emphasis courses, with no grade below a C-; a 2.5 is required for all business courses; and a 2.0 is required overall. Students who graduate with area of emphasis and/or business grade point averages from 2.0 to 2.49 will graduate as General Business majors.

By completing extra courses it is possible for a student to earn a second area of emphasis. In order to earn a double area of emphasis, a student must fulfill all the requirements for both areas. If there are not at least 15 hours of unique courses in the areas, then the student cannot earn a double area of emphasis.

Accounting

The principal areas of study in accounting are financial accounting, managerial accounting and systems, taxation, and auditing. The major is designed to prepare students for careers in public accounting, business and industry, and not-for-profit and governmental organizations.

Course work in accounting is intended to convey a comprehensive understanding of the theory and concepts that underlie accounting practice. Emphasis is placed on logical reasoning to enable students to solve problems in accounting and to make sound accounting policy decisions.

In addition to training in accounting, a thorough knowledge of the social, legal, and political environments is essential. Because solid communication skills are indispensable to the professional accountant, course work in English composition, report writing, and speech are highly recommended.

The undergraduate area of emphasis in accounting consists of a minimum of 18 semester hours beyond Accounting 201 and 202 plus 3 semester hours selected from a list of specified courses. The basic requirements for all accounting majors are as follows:

Required Courses
ACCT 201 Intro to Financial Accounting.....3
ACCT 202 Intro to Managerial Accounting .3
ACCT 301 Intermediate Accounting I.....3
ACCT 302 Intermediate Accounting II.....3
ACCT 311 Cost Accounting 3
Accounting electives.....9
One course from the following.....3
ACCT 496 Internship in Accounting
FNCE 400 Advanced Corporate Finance
Total 27

The 27-hour program outlined above provides minimum preparation for a general career in accounting. Students planning to take the Certified Public Accountant's (CPA) exam must take the required 27 hours in accounting to comply with the law in the State of Colorado and to be more fully prepared for the exam. In addition to the 200-300 level courses listed above, the State Board of Accountancy requires 12 hours of accounting electives covering the following subjects:

Required Courses (by state law)
ACCT 461 Auditing 3
Recommended electives (minimum of 9 hours)
ACCT 401 Advanced Financial Accounting .3
ACCT 402 Financial Accounting Theory 3
ACCT 421 Individual Income Tax.....3
ACCT 422 Corporate and Partnership Taxation 3
ACCT 441 Fund Accounting for Government and Nonprofit Organizations.....3
ACCT 496 Internship in Accounting.....3

In addition, the applicant for the exam must have at least 24 semester hours in at least four other areas of business such as business law, finance, management, marketing, statistics, business communications, information systems, and ethics.

Students who are not planning to take the CPA exam are encouraged to select a specialty track. These tracks can be in either managerial accounting/systems or taxation. In order to specialize in one of these tracks, it is recommended that the accounting electives be selected as described below:

Managerial/Systems Track
Recommended electives
ACCT 422 Corporate and Partnership Taxation.....3
ACCT 431 Introduction to Accounting Systems 3
ACCT 441 Fund Accounting for Government and Nonprofit Organizations 3
ACCT 496 Internship in Accounting.....3

Taxation Track
Recommended electives
ACCT 421 Individual Income Tax.....3
ACCT 422 Corporate and Partnership Taxation.....3
ACCT 496 Internship in Accounting.....3

While it is permissible to take as many hours in accounting as the student desires, not more than 30 hours of accounting will be applied toward the total requirements for the undergraduate degree. Students should work closely with accounting faculty and the undergraduate business advisor in planning their accounting programs.

Graduate study in accounting is receiving increasing emphasis by professional organizations and employers. In Colorado, for example, individuals may be certified as CPAs with no experience in the profession if they have 30 semester hours of course work above the baccalaureate degree and a total of 45 hours of accounting and related courses in their combined undergraduate and graduate studies. Students meeting admission requirements might consider continuing their education at the graduate level.

In addition, many states now require a minimum of 150 semester hours to be eligible to take the CPA exam. Students who plan to move from Colorado should check the requirements of the state to which they anticipate moving for specific requirements.

Business Administration

The Business Administration area of emphasis is part of the Professional Program. It allows the student to select 18 semester hours of upper division business course work based on the

individual's particular interests and objectives. Courses are upper division and must be selected from at least two different subject areas to provide a solid business foundation. Course work selected for the area of emphasis must be preapproved via a contract. Please see the business advisor in the Student Success Center for a contract.

Finance

Finance encompasses both the science and the art of managing money and investments. The finance curriculum is divided into three primary areas: financial management, financial markets and institutions, and investments. The study of finance provides students with an understanding of numerous financial theories such as the relation between risk and return, the factors that determine asset values, and strategies for minimizing the risk exposure of both corporations and investors. An understanding of these theories helps students develop the ability to make sound and practical business and personal investment decisions. The importance of finance in the economy and the functions and purposes of monetary systems, credit, prices, money markets, and financial institutions are stressed throughout the area of emphasis. Students are trained to think logically regarding financial problems and to formulate sound financial decisions, policies, and practices.

The finance emphasis prepares students for jobs in a corporate industrial setting or for the financial services industry. Students who study corporate finance prepare for careers managing corporate assets. Specific jobs in the corporate setting can include cash and receivables management, capital budgeting decision making, short- and long-term financial planning and analysis, risk analysis and management, and financing decisions. Financial services careers include positions in investment counseling, insurance, personal asset management and other financial planning careers.

To meet the 18 credit hours of upper division course work in the finance emphasis, students must complete the following required courses and one of the elective courses listed below.

Required Courses
FNCE 400 Advanced Corporate Finance 3
FNCE 410 Cases and Concepts in Finance 3
FNCE 420 Investment and Portfolio Management 3
FNCE 440 International Financial Management 3
FNCE 450 Money and Banking 3

Select one course from the following:
FNCE 430 Bank Management 3
FNCE 460 Financial Modeling 3
FNCE 496 Internship in Finance 3
ACCT 302 Intermediate Accounting II 3
ACCT 311 Cost Accounting 3
Total 18

Human Resources Management

The goal of the human resources management (HRMG) function in organizations is to develop and maintain effective relationships between employers and employees. HR managers achieve this in a number of ways — matching people's skills to job requirements, developing fair compensation practices, appraising employees' performance levels, developing employees' skills and abilities through training and career planning, implementing productivity improvement programs, and many other activities. HR managers perform these roles ethically and legally, in an ever-changing environment. These changes include new employment laws, the changing skills and demographics of the work force, people expecting more and different things from their employers, and companies becoming increasingly globalized in their operations. The HR manager's job is challenging and HR managers are in high demand. The HRMG major prepares students for careers in HRMG by covering such topics as recruiting, staffing, training and development, performance appraisal, compensation, career planning, safety and health, equal employment opportunity and affirmative action, and labor relations.

Required Courses
HRMG 438 Human Resource Management3
HRMG 439 Legal and Social Issues in Human Resources Management 3
HRMG 441 Motivating, Rewarding and Developing Employees 3
HRMG 485 Directed Research in Human Resources and Management.....3
HRMG 434 Labor Relations and Negotiation 3

and one of the following:
ORMG 411 Experiences in Leadership 3
ORMG 436 Organizational Processes and Design 3
ORMG 437 Organizational Development and Change 3
HRMG 496 Internship in Human Resources 3
BUAD 390 Improving Personal and Team Creativity 3
MKTG 330 Marketing Research 3
MKTG 440 Service Management and Marketing 3
Total 18

Information Systems

The use of information technology is pervasive in the business world today. No matter what career is chosen, virtually all students will have to work with and understand the basics of information technology to be successful. As a business major, the information systems curriculum helps prepare students for this technology-centric world. The curriculum includes an introduction to basic computer hardware and software, programming, databases, networking, along with the fundamentals of analysis and design and project management. The continuous advances in the use of decision support systems and management information systems make the field one from which to build a productive career in business.

Required Courses
INFS 205 Intro to Information Technology (business elective credit).....3
INFS 308 Business Programming I 3
INFS 340 Database Concepts and Application.....3
INFS 370 Computer Networks and Telecommunications.....3
INFS 410 Systems Analysis and Design....3
INFS 450 Information Systems Project Management 3

and one of the following three courses
INFS 310 Business Programming II 3
INFS 440 Emerging Technologies 3
INFS 496 Internship in Information Systems 3
Total 21

International Business

Economies are intertwined as never before, and in most industrial sectors competition is increasingly global. Simultaneously, there are a number of new and dynamic events and processes that influence the world economic, cultural, and political arenas. It is essential that managers understand the implications of these changes. They affect managers in at least three ways.

First, firms that see themselves as primarily domestic companies are facing increased competition by foreign firms in their domestic market. Secondly, foreign markets and resources are increasingly becoming important in terms of incremental revenue, profitability, sources of technology, and capital. And third, U.S. world-wide economic influence has diminished in a relative sense, and it has become more important than ever for executives to be aware of international influences. This area of emphasis addresses these issues and introduces students to the challenges and basic skills required for effective international business management.

Required Courses
INTB 360 International Business.....3
FNCE 440 International Financial Management 3
MKTG 490 International Marketing.....3
INTB 480 International Management.....3

and two of the following electives
INTB 461 Regional Business Environment: Europe 3
INTB 496 Internship in International Business 3
COMM 328 Intercultural Communication...3
ECON 328 International Political Economy 3
ECON 341 International Economics 3
P SC 421 International Politics 3
P SC 425 International Law 3
SOC 438 Globalization and Global Culture 3
one preapproved upper division business course that has significant emphasis on International issues.....3
Total 18

Foreign Language – Students majoring in international business are strongly encouraged to use their lower-division electives for learning another language and/or taking a language immersion program.

Marketing

Global and national economies are directly influenced by marketing, a dynamic and challenging activity relevant to profit and nonprofit organizations alike. Marketing is the guiding force in conceiving and designing products and services, pricing them according to perceived value in the marketplace, promoting them through advertising and personal selling to potential buyers, and providing acceptable distribution arrangements for customers. Customer-oriented planning and implementation provide the cornerstone of modern marketing techniques and strategies. Marketing is a vital ingredient in an organization's formula for success, the essential bridge, the crucial link in effecting mutually beneficial exchanges between buyers and sellers. The field of marketing is eclectic in applying such disciplines as economics, psychology, statistics and sociology to creative work, problem solving and strategic management. For the graduate, career opportunities are plentiful in sales, advertising, marketing research, product development, retailing, wholesaling, and related endeavors, both domestically and internationally.

Required Courses
MKTG 330 Marketing Research.....3
MKTG 465 Promotion Management and Strategy.....3
MKTG 480 Marketing Policies and Strategies.....3

and three of the following eight courses
MKTG 440 Service Management and Marketing 3
MKTG 455 Contemporary Issues in Marketing 3
MKTG 460 Business Marketing Management 3
MKTG 470 E-Commerce 3
MKTG 485 Marketing Analysis and Planning Project.....3
MKTG 490 International Marketing 3
MKTG 496 Internship in Marketing 3
BUAD 470 Emerging Businesses and Entrepreneurship.....3
Total 18

Additional recommended business elective:
BUAD 390 Improving Personal and Team Creativity

Marketing/Professional Golf Management

The purpose of the Marketing/ Professional Golf Management major is to prepare students to be professional managers in the golf industry holding the distinction of membership in the Professional Golfers' Association of America (PGA). These individuals will be qualified to fill any of a number of roles in a variety of positions and specific entities.

The program involves a three-part preparation process: (a) completion of the requirements for a bachelor's degree in marketing, (b) completion of 16-18 months of supervised internships, and (c) completion of the PGA/PGM™, including passing the Playing Ability Test (PAT).

Individuals will generally enter the PGM Program as freshman business majors; in addition to meeting standard academic entrance requirements, these students must have a certified handicap (USGA certification or by a PGA Professional) of no greater than 12.

All new freshmen students must start their program in the fall semester.

The undergraduate curriculum for the PGM includes the following required courses:

PGMT 100 Orientation to PGM 1
PGMT 101 Orientation to the PGA/PGM™ (Level 1).....3
PGMT 200 Orientation to the PGA/PGM™ (Level 2).....3
PGMT 300 Learning Styles and Teaching ..3
PGMT 400 Turf Grass Management.....3
PGMT 401 Food & Beverage Management 3
BIOL 345 Anatomy and Exercise Science for Golf.....4
MKTG 330 Marketing Research..... 3
MKTG 440 Service Management & Marketing 3
MKTG 450 Retail Merch. & Management . 3
MKTG 465 Promotion Management & Strategy 3
MKTG 480 Marketing Policies & Strategies3
One of the following two courses 3
MKTG 470 E-Commerce
MKTG 451 Sports Marketing

The following internships must be completed:
PGMT 110 Internship 1
PGMT 210 Internship 1
PGMT 211 Internship 1
PGMT 410 Internship 1
PGMT 411 Internship 1

PGMT 110 is to be taken in the summer following the freshman year. PGMT 210 and 211 are to be taken in successive Summer and Fall semesters following the sophomore year. PGMT 410 and 411 are to be taken in successive Fall and Spring semesters after the junior year.

The internships will take place under the supervision of a member of the PGA at facilities around the United States and approved by the PGM Program staff.

Students will enroll in the PGA/PGM™ Program during their freshman year. They are required to complete the program

before graduation. This program consists of seminar courses, self-study modules, and three checkpoint examinations. Cost of the program is additional to tuition and fees paid to UCCS. Students are encouraged to pass the Playing Ability Test as soon as possible, with a strong preference for completion prior to starting their second internship experience. The PAT must be taken once each semester until it is passed.

Organizational Management

Today's highly competitive, constantly changing global environment places a premium on skilled managers who know how to lead and motivate people, build high performance teams, develop world class organizations, and understand the dynamics of organization behavior. Organizations of all sizes and types need skilled managers. The organizational management curriculum provides a foundation for careers in management, human resource management, small business management and entrepreneurship, and public agency management. This area of emphasis addresses contemporary issues in management and the changing roles of managers and leaders at all levels of the organization.

Required Courses

ORMG 436 Organizational Processes and Design 3

ORMG 437 Organization Development and Change.....3

ORMG 411 Experiences in Leadership 3

HRMG 438 Human Resource Management 3

and two of the following courses:

HRMG 434 Labor Relations and Negotiation.....3

HRMG 439 Legal and Social Issues in Human Resources Management 3

HRMG 441 Motivating, Rewarding and Developing Employees..... 3

HRMG 485 Directed Research Projects in Human Resources and Management 3

HRMG 496 Internship in Human Resource Management 3

ORMG 496 Internship in Organizational Management 3

BUAD 390 Improving Personal and Team Creativity 3

MKTG 440 Service Management and Marketing 3

MKTG 330 Marketing Research..... 3

Total 18

Service Management

The Service Management area of emphasis is designed to provide skills and knowledge for those who will work in a management or professional capacity in the service sector, including customer service departments, call centers, help-desks, insurance, and other professional service organizations (e.g. law, accounting).

Required courses

ORMG 411 Experiences in Leadership 3

ORMG 437 Organizational Development and Change 3

MKTG 440 Service Management and Marketing 3

MKTG 480 Marketing Policies and Strategies.....3

and two of the following courses:

BUAD 390 Improving Personal and Team Creativity 3

HRMG 434 Labor Relations and Negotiation 3

HRMG 438 Human Resource Management 3

HRMG 439 Legal and Social Issues in Human Resources Management 3

HRMG 441 Motivating, Rewarding and Developing Employees..... 3

HRMG 485 Directed Research Project in Human Resources Management..... 3

ORMG 436 Organization Processes & Design 3

HRMG 496, ORMG 496 or MKTG 496 Internship in Human Resource Management, Organizational Management or Marketing 3

MKTG 330 Marketing Research..... 3

Total 18

Minors

Minors for Business Students

Professional Program students may minor in a second business area (9-12 credit hours) or business students may choose a minor through the Colleges of Letters, Arts and Sciences; Engineering; or Nursing (18 credit hours). All 9-12 credit hours of business courses for the minor must be taken in residence in the College of Business and must not already be counting toward area of emphasis. If the 9-12 hours are not unique courses, then a student cannot earn a minor. Courses taken for the minor will fulfill business electives. A minor GPA of 2.5 must be earned, and minor courses must have a C- grade or better.

Accounting: 301, 311, and 421
Finance: 400, 420, and 450
Human Resources Management: HRMG 438, 439, and one of 434, 441 or 485
Information Systems: 205, 340, 410, and one of 308, 370, or 440.
International Business: Choose three of the following: INTB 360, INTB 480, FNCE 440 or MKTG 490
Marketing: Any three 300-400 level MKTG courses, not to include MKTG 300
Organizational Management: ORMG 411, 436, and 437
Service Management: MKTG 440, 480, and ORMG 437

Minors in Business for Non-Business Students

Students admitted to undergraduate degree programs other than business may elect to pursue a minor in business with the approval of the appropriate advisor in the Student Success Center. It is a College of Business requirement that all course work in the area of specialty composing the minor and a minimum of 9 credit hours be taken in residence at UCCS. Non-business students seeking a business minor must have a 2.5 GPA in required courses for minor. Specifically the minors available to non-business students are in the areas of business administration, accounting, finance, information systems, international business, organizational management, and marketing, and require the following course work:

Business administration

Required courses

INFS 110 Information-Based Decision Making 3

ACCT 201 Introduction to Financial Accounting.....3

ACCT 202 Introduction to Managerial Accounting.....3

QUAN 201 Business Statistics 3

BUAD 300 Integrated Skills for Management 3

MKTG 300 Principles of Marketing.....3

ORMG 330 Introduction to Management and Organization 3

FNCE 305 Basic Finance or

OPTM 300 Fundamentals of Operations Management 3

Total 24

Accounting

Required courses

ACCT 201 Introduction to Financial Accounting.....3

ACCT 202 Introduction to Managerial Accounting.....3

BUAD 300 Integrated Skills for Management 3

ACCT 301 Intermediate Accounting I.....3

ACCT 302 Intermediate Accounting II.....3

ACCT 311 Cost Accounting or

ACCT 421 Individual Income Tax.....3

INFS 110 Information-Based Decision Making.....3

Econ 101 Introduction to Microeconomics or Econ 202 Introduction to Macroeconomics.....3

Total 24

Applied Management
Required courses

ACCT 201 Intro to Financial Accounting.....3

QUAN 201 Business Statistics.....3

QUAN 202 Process and Statistics-Based Decisions.....3

FNCE 305 Basic Finance.....3

HRMG 438 Human Resource Management.....3

MKTG 300 Principles of Marketing.....3

MKTG 440 Service Management & Marketing.....3

OPTM 300 Fundamentals of Operations Management.....3

Total 24

Students are also recommended to take INFS 110 and ECON 101 or ECON 202.

Finance
Required courses

ACCT 201 Introduction to Financial Accounting.....3

INFS 110 Information-Based Decision Making.....3

Econ 101 Introduction to Microeconomics.3

Econ 202 Introduction to Macroeconomics.....3

BUAD 300 Integrated Skills for Management.....3

FNCE 305 Basic Finance.....3

Electives in Finance Area (300-400 level)..9

Total 24

Human Resource Management
Required courses

ACCT 201 Introduction to Financial Accounting.....3

INFS 110 Information-Based Decision Making.....3

Econ 101 Introduction to Microeconomic or Econ 202 Introduction to Macroeconomics.....3

BUAD 300 Integrated Skills for Management.....3

ORMG 330 Introduction to Management and Organization.....3

Electives in Human Resources Management (400 level).....9

Total 24

Information Systems
Required courses

ACCT 201 Introduction to Financial Accounting.....3

INFS 110 Information-Based Decision Making.....3

INFS 205 Intro to Information Technology..3

BUAD 300 Integrated Skills for Management.....3

INFS 340 Database Concepts and Application.....3

INFS 370 Computer Networks and Telecommunications.....3

INFS 410 Systems Analysis and Design....3

Econ 101 Introduction to Microeconomics or Econ 202 Introduction to Macroeconomics.....3

Total 24

International Business
Required courses

ACCT 201 Introduction to Financial Accounting.....3

INFS 110 Information-Based Decision Making.....3

BUAD 300 Integrated Skills for Management.....3

MKTG 300 Introduction to Marketing.....3

FNCE 305 Basic Finance.....3

and three of the following courses:.....9

INTB 360 International Business

FNCE 440 International Financial Management

MKTG 490 International Marketing

INTB 480 International Management

INTB 461 Regional Business Environment: Europe

Total 24

Organizational Management
Required courses

ACCT 201 Introduction to Financial Accounting.....3

INFS 110 Information-Based Decision Making.....3

Econ 101 Introduction to Microeconomic or Econ 202 Introduction to Macroeconomics3

BUAD 300 Integrated Skills for Management.....3

ORMG 330 Introduction to Management and Organization.....3

Electives in Organization Management or Human Resources Management (400 level)9

Total 24

Marketing
Required courses

ACCT 201 Introduction to Financial Accounting.....3

INFS 110 Information-Based Decision Making.....3

Econ 101 Introduction to Microeconomics or Econ 202 Introduction to Macroeconomics3

BUAD 300 Integrated Skills for Management.....3

MKTG 300 Principles of Marketing.....3

Electives in Marketing Area (300-400 level).....9

Total 24

Students may not register for business courses for which they do not have the stated prerequisites including class standing.

Undergraduate Certificates

The College of Business offers undergraduate certificates to students who have already completed an undergraduate degree in business and would like to complete the course work for an additional area of emphasis. Certificates consist of 15-21 hours of course work and are offered in accounting, finance, human resources management, information systems, marketing, organizational management, and service management. Priority for registration for business courses is given to business degree students. A certificate GPA of 2.5 must be earned, and minor courses must have a C- grade or better.

Please contact the business advisor in the Student Success Center to apply for admission.

Accounting Certificate/CPA Track-21 hours

Prereqs: 6 hours fundamental accounting, ACCT 201, 202

ACCT 301 Intermediate Accounting I

ACCT 302 Intermediate Accounting II

ACCT 311 Cost Accounting

ACCT 421 Individual Income Tax

ACCT 422 Corporate & Partnership Taxation

ACCT 441 Fund Accounting for Gov't & Non profit

ACCT 461 Auditing

Accounting Certificate/General-15 hours

Prereqs: 6 hours fundamental accounting, ACCT 201, 202

ACCT 301 Intermediate Accounting I

ACCT 302 Intermediate Accounting II

ACCT 311 Cost Accounting

Select two additional 400 level Accounting courses

Finance Certificate-15 hours

Prereqs: Upper-level basic finance

FNCE 400 Advanced Corporate Finance

FNCE 410 Cases and Concepts in Finance

FNCE 420 Investment & Portfolio Management

FNCE 440 International Financial Management

FNCE 450 Money and Banking

Human Resources Management Certificate-15 hours
HRMG 438 Managing HR for Competitive Advantage

HRMG 439 Legal & Social Issues in HRM

HRMG 441 Motivating, Rewarding & Developing Empl.

Plus two of the following:

HRMG 434 Collective Bargaining and Labor Relations

HRMG 485 Directed Research Projects in HRM

ORMG 437 Organization Development and Change

Information Systems Certificate-15 hours
Prereq: INFS 110 (can be waived w/ department permission.)

INFS 205 Introduction to Information Technology

INFS 308 Business Programming I

INFS 410 Systems Analysis and Design

INFS 340 Database Concepts & Application

INFS 370 Computer Networks & Telecommunications

Marketing Certificate-15 hours
Prereq: MKTG 300

MKTG 330 Marketing Research

MKTG 465 Promotion Management & Strategy

MKTG 480 Marketing Policies & Strategy

Select two additional Marketing electives

Organizational Management Certificate-15 hours
Prereq: ORMG 330

ORMG 411Experiences in Leadership

ORMG 436 Organizational Processes & Design

ORMG 437 Organization Development & Change

Select two additional ORMG or HRMG electives

Service Management Certificate-15 hours
Prereq: MKTG 300 and ORMG 330

MKTG 440 Service Management & Marketing

MKTG 480 Marketing Policies and Strategies

ORMG 411 Experiences in Leadership

ORMG 437 Organization Development & Change

Select one additional HRMG elective

(If MKTG 300 and ORMG 330 were taken at UCCS, they will count towards the elective course.)

Academic Advising

Undergraduate:
Student Success Center
Main Hall, 2nd Floor
P.O. Box 7150
Colorado Springs, CO 80933-7150

(719) 262-3260 or (719) 262-3630
800-990-8227 ext 3630 or 3260

FAX (719) 262-3645
success@uccs.edu

Undergraduate Academic Policies

Registration and Enrollment Status

Course prerequisites as listed for individual courses in the Course Descriptions section of this Bulletin are enforced for all students, including non-business students. In addition, it is a requirement of business degree students that the Skills Courses listed in the Pre-Business Program section of this Bulletin be completed prior to taking 400 level business courses. Non-business students who register for upper division business courses are advised that the depth and breadth of instruction in these courses is geared to business students who have completed the Skills Courses. Priority for registration for business classes is given to business degree students.

Students enrolled in one section of a business course while attending a different section will receive a final grade of F for nonattendance. Students attending classes for which they are not enrolled will not be added after the add period is over.

Course Load

The normal scholastic load for a full-time undergraduate business student is 16 semester hours, with 18 hours the maximum during the fall/spring semesters. A maximum of 12 hours may be taken in the 8 week summer session, and 6 hours in the 4 week summer term.

Standards of Performance – Undergraduate

To be in good standing, a minimum scholastic cumulative grade point average of 2.0 is required for all courses attempted at UCCS, as is a 2.0 for all business courses. For a student to be eligible to graduate from the Professional Program, he or she must have a grade point average of 2.5 for the area of emphasis courses with no grade below a C-, a 2.5 for all business courses attempted, and a 2.0 overall. Students who graduate with area of emphasis and/or business grade point averages from 2.0 to 2.49 and at least a 2.0 overall grade point average will graduate with General Business area of emphasis degrees. These grade point averages apply to work taken at all University of Colorado campuses. Remedial course work is not included in the overall average.

College rules governing probation and suspension are as follows:

1. Any student whose overall grade point average or business course average is less than 2.0 shall be immediately placed on probation. A student may be removed from probation when the overall average and the business average have been raised to 2.0.
2. Students may remain on probation for up to four semesters as long as they maintain normal degree progress each semester as determined by the college and obtain no grade below a C-. Such probationary status may continue for a maximum of four semesters providing these provisions have been met. Please note that students may be on probation a maximum of four semesters during their entire academic career in the College of Business, and probationary terms are not necessarily consecutive. Summer is considered a semester. Failure to meet probationary provisions will result in suspension.
3. Indefinitely suspended students are not eligible to take College of Business classes for one calendar year from the time of their indefinite suspension.
4. A student who has been under indefinite suspension for one calendar year may apply for readmission to the College of Business. If readmitted, that readmission will be on a probationary status. After being readmitted under such probationary status, students who fail to comply with the requirements of their probation will be subject to permanent suspension.
5. Any student who is placed on suspension more than once will be permanently suspended from the College of Business and may not attend any campus of the University of Colorado as a business student.

6. Students who have been suspended at any time in the past by the College of Business will be automatically permanently suspended if their overall average or business course average again falls below 2.0.
7. Permanently suspended College of Business students who transfer into another degree program will not be eligible to register for business courses and will be subject to administrative drops. Suspended students who transfer into another degree program of the university are rarely readmitted to the College of Business, and then only by special consideration by petition to the college.
8. Any student earning all failing grades or no academic credit for the semester will be indefinitely suspended.

Honors Recognition

President and Dean's List Criteria. To qualify for semester honors, students must be enrolled in a minimum of 12 graded hours during a regular semester (Fall or Spring). Students who achieve a 3.75- 3.99 grade point average will be placed on the Dean's List. Students who achieve a 4.0 grade point average will be placed on the President's List.

Latin Honors. Upon recommendation of the faculty, undergraduate students who demonstrate superior scholarship are given special recognition at graduation. To qualify for Latin Honors, students must have a minimum of 60 hours at the University of Colorado. Students must achieve an overall CU grade point average of 3.7 and a grade point average of 3.9 in all business courses taken at the University of Colorado to be considered for summa cum laude. Those who achieve an overall CU grade-point average of 3.5 and a grade-point average of 3.7 in all business courses taken at the University of Colorado will be considered for magna cum laude. An overall CU grade point average of 3.3 and a business course average of 3.5 qualify a student to be considered for cum laude.

Business Courses — Transfer Credit

The college will limit transfer credit for business courses taken at a lower division level to such courses as the college offers at that level. Transfer students must be aware of the upper division minimum credit requirement of 45 semester hours for the Business degree.

A maximum of 60 semester hours of credit may be accepted from a community or junior college. Actual equivalent courses usually may be substituted for required courses. However, students must verify with the College of Business advising office that courses are equivalent. Students may be asked to provide additional information on courses completed at other institutions.

Information systems courses older than 5 years will not transfer toward any Bachelor of Science business degree.

A student admitted to a business degree program is required to take all course work from UCCS. Business students who wish to take course work at another institution or another campus of the University of Colorado and apply the work toward the degree must have the prior approval of the dean. Generally, only elective credit is acceptable in transfer from other institutions once the student has enrolled in the College.

Transfer students must take a minimum of 30 semester hours of business courses including the six area of emphasis courses and BUAD 450 in residency at UCCS after admission to the undergraduate degree program of the College of Business.

Student transfer agreements between the UCCS College of Business and the two-year public institutions in the Colorado system of higher education have been established and may be accessed through the advising offices of each institution. The College of Business adheres to the Business Statewide Articulation Agreement. This agreement varies depending on the student's specific catalog year.

Special Sources of Credit

The College reserves the right to accept or reject all special sources of credit which do not have prior approval of the dean. See Model Degree Program Curriculum Notes 3 and 10 for a discussion of elective credit for the business degree.

Correspondence Credit

Required business courses and area of emphasis courses may not be taken by correspondence. All correspondence courses are evaluated to determine their acceptability. Approval for degree credit is required prior to registration.

Credit by Examination

Please see the General Information section for information about Advanced Placement, International Baccalaureate, and College Level Examination Program (CLEP) credit.

Generally, CLEP credit is appropriate only for (a) lower division non-business requirements and (b) non-business electives. A maximum of 6 hours of credit in any one course area is allowed. CLEP may not be used in course areas where credit has already been allowed. General examinations are not acceptable. Credit for CLEP must have prior approval in writing from the business advisor.

ROTC Credit

Students who complete the ROTC program may apply a maximum of 9 hours of advanced ROTC credit toward non-business elective requirements for the business degree. Students must be enrolled as official ROTC students in order to receive degree credit for ROTC courses. No credit toward degree requirements is granted for basic (freshman and sophomore) ROTC courses. The ROTC advisor can provide more detailed information.

Master of Business Administration

The Master of Business Administration program is devoted to the concepts, analytical tools, and communication skills required for competent and responsible management. The management of an enterprise is viewed in its entirety and within its social, political, and economic environment. All on-campus graduate level courses are scheduled during the evening hours to accommodate employed students.

The Graduate School of Business Administration offers an M.B.A. program delivered via two modes —residence and distance (online.) Students may choose to complete their entire M.B.A. program through either of the two modes or take a combination of on-campus and on-line courses. However, on-line courses have a higher tuition. Please contact the M.B.A. advising office for more information.

Graduate Admission

The Graduate School of Business Administration seeks to admit students

who show a high likelihood of success in postgraduate business study. The following three basic indicators are used to evaluate candidates for admission:

1. Prior academic experience. A four-year baccalaureate degree from a regionally accredited institution or foreign equivalent is a condition for application. The applicant's complete academic record from all institutions attended is examined.
2. Graduate Management Admission Test (GMAT) scores. The total score as well as the individual verbal, quantitative and analytical writing scores of the applicant are examined. Results of other standardized graduate admission tests may be used with the approval of the M.B.A. advising office. In some special cases where the applicant has substantial business experience, the GMAT may be waived and a portfolio application process may be used. Please contact the M.B.A. Advising Office for more information.
3. Employment experience. Of particular interest is the candidate's progression of work. Recommendations from prior and current colleagues are optional. Though employment experience may be used to evaluate a candidate, it is not required.

Individuals may be admitted on a provisional status at the discretion of the admissions committee. If the terms of the provisional admittance are met, the student will be transferred to regular degree status. Students who do not meet the terms of the provisional admission are not eligible for admittance into the program.

Seniors in this university who have satisfied the undergraduate residence requirements and who need not more than 6 semester hours of advanced subjects and 12 credit points to meet their requirements for undergraduate degrees may be admitted to the M.B.A. program. They must meet regular admissions criteria and submit a completed application by the published deadline. They must complete their final undergraduate courses during their first semester as an M.B.A. student.

The application, GMAT or other test scores, one official transcript (not student copies) from each post-secondary institution attended, a resume, and the nonrefundable application fee should be submitted by April 1 for summer admission, by June 1 for fall admission, and by November 1 for spring admission. See M.B.A. web site: business.uccs.edu for the online application or contact the M.B.A. advising office by phone at 1-800-990-8227, ext. 3408 or by email at busadvsr@uccs.edu.

The mailing address for supporting materials is as follows:

Graduate School of Business Administration
UCCS
1420 Austin Bluffs Parkway
Colorado Springs, CO 80918

M.B.A. Preparatory Requirements

The College of Business provides the following series of business preparatory courses as required background courses for the graduate study of business. These courses, which are open only to admitted M.B.A. degree students, may be waived on a course-by-course basis with prior academic course work or successful scores on designated achievement tests.

Course/Title/Credit
BCOM 550 Professional Business Communication....3
BUAD 550 Fundamentals of Economics....3
BUAD 560 Business, Government and Society....3
QUAN 550 Fundamentals of Business Statistics....3

These preparatory courses are graduate level courses which — if required — are taken in addition to the 36 semester hours required for the M.B.A. degree.

Graduate students who are interested in waiving one or more of the M.B.A. preparatory courses based on related prior course work must consult with an M.B.A. advisor. Waivers of preparatory courses are based on a number of criteria including the age of the prior course work, the grade earned and other considerations determined by the faculty. Prior course work must have been completed at a regionally accredited institution. Preparatory course waivers are made at the discretion of the College of Business and are recorded on a degree plan approved by the dean.

M.B.A. Degree Requirements

In addition to any preparatory courses which may be required (see previous section), students must complete a minimum of 36 semester hours of course work for the M.B.A. degree. This course work consists of 21 hours of core courses, 9 hours in an area of emphasis, and 6 hours of 600-level business electives, of which at least 3 hours are outside the student's area of emphasis. (Accounting, Health Care Administration, and Information Systems Basic Technology Track majors complete 12 - 15 hours of emphasis courses and 3 hours of electives.) Students who do not choose to have an area of emphasis may select 15 hours of course work outside of the core which are tailored to the student's interest and which satisfy the requirements for a general M.B.A. All M.B.A. degree plans require the final approval of the dean.

M.B.A. Core Requirements (21 hours)
ACCT 600 Contemporary Issues in Accounting....3
FNCE 600 Corporate Financial Management....3
INFS 600 Information Systems....3
MGMT 600 Leading and Managing in Changing Times....3
MKTG 600 Marketing Strategy....3
OPTM 600 Operations: Competing through Capabilities....3
BUAD 650 Strategic Management....3

M.B.A. Areas of Emphasis

Students may choose to receive a general M.B.A. or decide to specialize in a functional or interdisciplinary area of emphasis as listed below.

Accounting – 12 hours

The accounting area of emphasis prepares students for accounting positions available in various industries and institutions. Students may either seek employment in the corporate or governmental arena or opt to sit for the CPA exam if they have an interest in public accounting.

Students who select a functional area in accounting will take 21 semester hours of the M.B.A. core courses, 3 semester hours of M.B.A. electives and 12 semester hours of accounting courses. The required courses for a functional area in accounting are as follows:

Students with an accounting undergraduate degree:

ACCT 601 Seminar: Financial Accounting Theory....3
ACCT 611 Seminar: Managerial Accounting Issues....3
ACCT 661 Seminar: Issues in Auditing....3

ACCT 4xx (Accounting elective with prior approval).....3

Students with non-accounting undergraduate degree:

ACCT 600 A survey of Accounting (may substitute ACCT 201 and ACCT 202).....3

ACCT 301 Intermediate Accounting I.....3

ACCT 302 Intermediate Accounting II.....3

ACCT 311 Cost Accounting 3

The three 600-level and one 400-level accounting courses as listed above (12 hours) 12

The 400-level accounting course included above should be selected after consultation with the accounting faculty and must be approved for graduate credit prior to enrollment. Course work assignments in the 400-level course will be appropriate to graduate degree course work. Accounting 301, 302, and 311, or their equivalents are prerequisites for 600-level accounting courses in the accounting major.

Those graduate students who are preparing for a career as a Certified Public Accountant (CPA) should read the legal requirements and recommendations for becoming certified in Colorado and other states as described in the undergraduate section of this bulletin for Area of Emphasis in Accounting.

Finance – 9 hours

All organizations, large and small, must effectively invest and manage their capital. The finance function is critical in both for-profit and not-for-profit organizations. Job opportunities exist for finance graduates in almost all industries including the financial services industry and positions within the finance area of corporations. Finance graduates manage capital for large organizations and their independent business units as well as for small organizations.

Complete any three of the following:

FNCE 610 Problems and Policies in Financial Management.....3

FNCE 620 Investment Management and Analysis 3

FNCE 640 International Financial Management 3

FNCE 650 Managerial Economics and the Business Cycle 3

FNCE 660 Financial Engineering and Corporate Risk Management.....3

General

A General M.B.A. allows the student to select 15 hours of 600 level business courses based on the individual's particular interests and objectives. Students should submit a proposal to the M.B.A. office for suggestions and final approval.

Health Care Administration Area of Emphasis – 15 hours

The many changes in government laws and regulations, technology, society needs and insurance plans create a large need for administrative and business education for health care professionals.

HCAD 619 Health Care Administration 3

HCAD 629 Health Care Policy..... 3

HCAD 639 Health Care Ethics and Law 3

HCAD 649 Health Care Budget and Finance 3

HCAD 659 Clinical Research Application .. 3

Information Systems – 9-12 hours

The Information Systems functional area is designed in tracks to be appropriate for several career choices in the Information Systems field. Each student should select the proper path in consultation with the M.B.A. advisor and one or more Information Systems faculty members.

Information Systems: Basic Technology Track

The basic technology track is for students with minimal skills in information systems who wish to be current in the field. This track is appropriate for persons who wish to change career fields or for those who have an interest in expanding their understanding of the technology that supports their chosen field (accounting, marketing, finance, etc.)

Required courses for the basic technology track are:

INFS 630 Principles of Programming.....3

(INFS 630 is a prerequisite course for INFS 640 and INFS 660 and may be replaced with an elective if prior programming courses or work experience is documented.)

INFS 640 Development of Information Systems 3

INFS 660 Database Principles.....3

INFS 681 Telecommunications and Networking Principles 3

Strongly recommended:

OPTM 630 Managing Projects for Competitive Advantage 3

Information Systems: Infrastructure Integration Track

The infrastructure integration track is for students who have significant Information Systems education or experience and seek to understand the integrating technologies that are deconstructing standard modes of organizational operations. The focus is on the marshalling and deployment of technology resources in a dynamic economic climate.

Required are three of the following four courses (offered alternate years) for the infrastructure integration track:

INFS 661 Data Warehouse Implementation and Applications.....3

INFS 671 Enterprise Systems 3

INFS 673 IT Portfolio Management.....3

INFS 683 Building Virtual Organizations....3

Strongly Recommended:

OPTM 630 Managing Projects for Competitive Advantage 3

International Business – 9 hours

An emphasis in International Business will prepare students to excel in the field of international business. This field of study is becoming more relevant and important as the global economy expands. Students are encouraged to take a foreign language to strengthen this area of emphasis.

Complete three of the following six courses:

BUAD 690 Managing in Global Markets 3

BUAD 691 Regional Business Environment: Europe 3

FNCE 640 International Financial Management 3

INTB 660 Contemporary Topics in International Business.....3

INTB 670 International Field Project.....3

MKTG 690 International Marketing and Export Management 3

Management – 9 hours

In today's highly competitive global environment, a premium will be placed on skilled managers who know how to motivate and lead people. This area of emphasis addresses these issues and other contemporary issues in management. Additionally, the changing roles of managers and leaders at management levels within the organization are explored. The Management emphasis also focuses on the development and maintenance of effective relationships between employers and employees.

Required courses:

MGMT 620 Managing Organization Development and Change 3

MGMT 630 Managing Human Resources for Competitive Advantage 3

and complete one of the following:
MGMT 610 Development of Groups and Organizations.....3

MGMT 640 Legal Issues in Managing Human Resources.....3

Marketing – 9 hours

An effective marketing program is necessary to the success of any business organization. Through the marketing efforts of a firm, products and services are designed and delivered that maximize customer satisfaction. Students choosing the marketing area of emphasis may find exciting careers in such diverse fields as product management, professional selling, customer support, advertising and marketing research. The marketing curriculum is designed to give the student hands-on marketing experience through applied classes and projects.

Required course:
MKTG 630 Marketing Research and Decision Making 3

and two of the following five courses:
MKTG 610 M.B.A. Seminar in Contemporary Topics in Marketing 3

MKTG 640 Services Marketing.....3

MKTG 650 Marketing Communications 3

MKTG 670 E-commerce 3

MKTG 690 International Marketing and Export Management 3

Operations and Technology Management – 9 hours

Both tangible products and services require effective process technology management. In the past few decades, changes have revolutionized how products are manufactured. Quality management has become a major focus of most contemporary manufacturing organizations.

Students completing this emphasis will be prepared to seek positions in manufacturing in virtually all industries.

Complete three of the following four courses:
BUAD 670 World Class Service Management 3

OPTM 610 Customer Focused Processes: Quality Management and Metrics 3

OPTM 620 Managing Supply Chains 3

OPTM 630 Managing Projects for Competitive Advantage 3

Project Management Area of Emphasis – 12 hours

Companies are turning to a project structure to manage the increasingly complex, cross-functional tasks present in today's business climate. As the number of both "successful" and "unsuccessful" projects continues to grow, the impact of project management on an organization is more visible. Students completing this area of emphasis can expect to master traditional project management skills and be prepared to manage in complex multiple project environments with a global reach.

OPTM 639 Managing Projects for Competitive Advantage 3

(OPTM 639 is a prerequisite course for the Project Management area of emphasis.)

OPTM 649 Organizational Skills for Project Management 3

OPTM 659 Project Estimation and Risk Management 3

OPTM 669 Bridging Strategy and Tactics in Project Management.....3

Services Management – 9 hours

Service industries are expected to continue to grow at a rapid rate in the 21st century. The services management emphasis is taught in an interdisciplinary fashion which allows students to explore several different areas within the firm. This enables students to better understand how to manage a service organization properly.

Required Courses:
BUAD 670 World Class Service Management 3

MKTG 640 Service Marketing.....3

Complete one of the following:
MKTG 630 Marketing Research and Decision Making 3

OPTM 610 Customer Focused Processes: Quality Management and Metrics 3

Technology Management – 9 hours

The development of technology continues to grow at an increasing rate both domestically and globally. Students completing this emphasis can expect to be prepared to function effectively in the many technology-based organizations in the business environment today. The technology management emphasis helps the student grasp and begin to master the complexities of managing both product technology and process technology.

Required courses:
BUAD 661 Managing Technology for Strategic Advantage 3

BUAD 671 Transforming Technology Organizations and Employees.....3

Complete one of the following courses:
BUAD 670 World Class Service Management 3

BUAD 680 New Venture Management 3

MGMT 610 Development of Groups and Organizations.....3

MGMT 620 Managing Organization Development and Change 3

MKTG 630 Marketing Research and Decision Making 3

OPTM 610 Customer Focused Processes: Quality Management and Metrics 3

OPTM 630 Managing Projects for Competitive Advantage 3

M.B.A. Electives – 6 hours

All M.B.A. students who complete a 9 hour area of emphasis must also complete 6 hours of 600-level M.B.A. electives beyond the core and area of emphasis requirements. Three of the 6 hours must be taken outside the area of emphasis. Students may choose their electives from any 600-level M.B.A. courses not counting towards their core or area of emphasis requirements. Students completing a 12 - 15 hour area of emphasis must complete 3 hours of 600-level M.B.A. electives beyond the core and area of emphasis requirements and outside the area of emphasis.

Distance M.B.A. Program

The Graduate School of Business Administration offers M.B.A. students the opportunity to earn their degrees from a distance. This program consists of 36 hours of course work delivered through web-based materials and communication among students and faculty. Students may be required to take up to 4 courses of M.B.A. preparatory course work. For additional information on this program, please visit our web site at business.uccs.edu or contact the M.B.A. Advising Office by phone at 1-800-990-8227, ext. 3408, or by e-mail at busadvsr@uccs.edu. The online application is available on our web site.

Technology Requirements

Access to a Pentium II or better computer with a minimum 56 KBPS modem, sound card, speakers, and web access – Internet Explorer 5.5 or higher (recommended) or Netscape Navigator 4.77, 4.78 or 4.9.

Adobe Acrobat 5.0 or higher

MS Office Suite

Course Requirements
(All courses are offered on line.)

M.B.A. Preparatory Courses
BCOM 559 Professional Business Communication.....3

BUAD 209 Macroeconomics for Managers 3

BUAD 569 Business, Government and Society 3

QUAN 559 Fundamentals of Business Statistics 3

M.B.A. Core Courses (21 hours)

ACCT 609 Contemporary Issues in Accounting 3

FNCE 609 Corporate Financial Management 3

INFS 609 Information Systems 3

MGMT 609 Leading and Managing in Changing Times 3

MKTG 609 Marketing Strategy 3

OPTM 609 Operations: Competing through Capabilities 3

BUAD 659 Strategic Management 3

Distance students may complete a General area of emphasis by choosing 15 hours of M.B.A. 600-level electives beyond the core courses. Students may also choose to complete an area of emphasis in Finance, International Business, Management, or Technology Management by completing 9 hours of course work in their area of emphasis and 6 hours of 600-level M.B.A. electives; they may select an emphasis in Information Systems by completing 9-12 hours of course work in the Information Systems emphasis and 3-6 hours of 600-level M.B.A. electives; they may select an emphasis in Project Management by completing 12 hours of course work in their area of emphasis and 3 hours of 600-level M.B.A. electives; or they may select an emphasis in Health Care Administration by completing 15 hours of course work in their area of emphasis. At least 3 hours of electives must be outside the chosen area of emphasis except for those in Health Care Administration.

Elective Courses

INFS 659 E-commerce Practice 3

QUAN 619 Research Tools for Managers...3

Finance Area of Emphasis – 9 hours

All organizations, large and small, must effectively invest and manage their capital. The finance function is critical in both for-profit and not-for-profit organizations. Job opportunities exist for finance graduates in almost all industries including the financial services industry and positions within the finance area of corporations. Finance graduates manage capital for large organizations and their independent business units as well as small organizations.

Complete the following courses:

FNCE 629 Investment Management and Analysis.....3

FNCE 649 International Financial Management 3

FNCE 659 Managerial Economics and the Business Cycle 3

Health Care Administration Area of Emphasis – 15 hours

The many changes in government laws and regulations, technology, society needs and insurance plans create a large need for administrative and business education for health care professionals.

HCAD 619 Health Care Administration 3

HCAD 629 Health Care Policy..... 3

HCAD 639 Health Care Ethics and Law 3

HCAD 649 Health Care Budget and Finance 3

HCAD 659 Clinical Research Application .. 3

Information Systems Area of Emphasis – 9-12 hours

Since the use of information technology is pervasive, all business students need a solid foundation in information systems to enable them to acquire increasing levels of sophistication in computer use. The continuous advances in technology and methodology for developing management information systems and decision support systems make the field an exciting and challenging area. Information Systems students complete 9-12 hours in their area of emphasis.

(INFS 639 is a prerequisite course for INFS 649 and INFS 669 and may be replaced with an elective if prior programming courses or work experience is documented.)

INFS 639 Principles of Programming.....3

INFS 649 Development of Information Systems 3

INFS 669 Database Principles.....3

INFS 689 Telecommunication and Networking Principles 3

International Business Area of Emphasis – 9 hours

An emphasis in International Business will prepare students to excel in the International aspect of International Business. This field of study is becoming more relevant and important as the global economy expands.

BUAD 699 Regional Business Environment: Europe 3

INTB 619 Managing in Global Markets 3

FNCE 649 International Financial Management 3

Management Area of Emphasis – 9 hours

In today's highly competitive global environment, organizations are increasingly placing a premium on managers and employees who know how to motivate and lead people. This area addresses these issues and other contemporary issues in management, including how to deal with rapid change, delivery of excellent customer service, cross-cultural communication, and management of technology and innovation. Employees who have both technical and management skills will be most likely to achieve successful careers and attain greater job mobility and security.

Complete 3 of the following 4 courses:

BUAD 669 Managing Technology for Strategic Advantage 3

BUAD 679 World Class Service Management 3

MGMT 629 Managing Organizational Change.....3

MGMT 639 Managing Human Resources for Competitive Advantage 3

Project Management Area of Emphasis – 12 hours

Companies are turning to a project structure to manage the increasingly complex, cross-functional tasks present in today's business climate. As the number of both "successful" and "unsuccessful" projects continues to grow, the impact of project management on an organization is more visible. Students completing this area of emphasis can expect to master traditional project management skills and be prepared to manage in complex multiple project environments with a global reach.

OPTM 639 Managing Projects for Competitive Advantage 3

(OPTM 639 is a prerequisite course for the Project Management area of emphasis.)

OPTM 649 Organizational Skills for Project Management 3

OPTM 659 Project Estimation and Risk Management 3

OPTM 669 Bridging Strategy and Tactics in Project Management.....3

Technology Management Area of Emphasis – 9 hours

The development of technology continues to grow at an increasing rate both domestically and globally. Students completing this emphasis can expect to be prepared to function effectively in the

many technology-based organizations in the business environment today. The technology management emphasis helps the student grasp and begin to master the complexities of managing both product technology or process technology.

BUAD 649 Transforming Technology Organizations and Employees.....3

BUAD 669 Managing Technology for Strategic Advantage 3

OPTM 639 Managing Projects for Competitive Advantage 3

Graduate Certificates

Graduate certificates are available to students who have already completed a bachelor's degree (not necessarily in a business field) at a regionally accredited institution and have demonstrated their admissibility to the graduate program. Certificates are also available to students with a graduate degree from any field. The application process will vary based on the student's academic background. Students in the certificate program are subject to the same Standards of Performance as all admitted M.B.A. Students. For additional information or an application for the certificate program, please contact the M.B.A. advising office, or see the website: business.uccs.edu.

Graduate certificates consist of 12-15 hours of course work beyond any prerequisites. Certificates are offered in accounting, finance, health care administration, information systems, international business, management, marketing, operations and technology management, project management, services management, and technology management. Certificates are available both on campus and online, but all certificates may not be available in both formats.

Graduate Academic Policies

Access to M.B.A. Courses

Students must be officially admitted to the M.B.A. program in order to register for graduate level courses.

Students who are officially admitted to other CU graduate programs may be eligible to register for M.B.A. courses. All course prerequisites must be met. Interested students should contact the M.B.A. advising office for more information.

Course Load

The normal course load for full-time graduate students is 12-15 semester hours during the fall and spring semesters. The normal course load for part-time graduate students is 3-6 hours during the fall and spring semesters.

Students are limited to 15 credit hours for the Fall and the Spring semesters. Students are limited to 9 credit hours for the summer semester. Credit hours over these limits require an academic petition be approved. Concurrent enrollment in both campus and distance classes are subject to the same credit hour limits.

Grade Point Average

Any grade below C (2.0) is not a passing grade for graduate students. A student may repeat a course once for which he or she has received a grade below C. Both the original grade and the grade for the repeated course count in the computation of the grade point average. Please see the Standards of Performance - Graduate section for more information.

M.B.A. Completion Timeframe

Candidates for the M.B.A. degree are expected to complete the degree within five years after they begin their first 600-level course. If course work is completed more than five years before the expected graduation date, the work will not be acceptable for the degree unless it is validated by the Graduate School of Business Administration dean.

Standards of Performance — Graduate

No individual grade below a C will count towards M.B.A. requirements.

To be in good standing, students must have an overall grade point average of not less than 3.0 for all degree program course work attempted.

1. The academic performance of each student will be reviewed at the end of each semester. Upon the completion of nine semester hours, any student who has a grade point average less than 3.0 in M.B.A. course work will be placed on probation immediately. In general, students will not be placed on probation until a minimum of nine semester hours has been completed.
2. After a student has been placed on probation, the student has a maximum of one calendar year to raise his or her grade point average to 3.0. Courses taken to raise the cumulative grade point average must be applicable to the degree, and must be taken in the three semesters (including summer) immediately following the semester in which the cumulative grade point average fell below 3.0. Failure to raise the cumulative grade point average to 3.0 in the time period outlined will result in immediate suspension.
3. In the event a student attains probationary status more than one time, the same time limits shall apply.
4. A suspended M.B.A. student is eligible to petition the dean for readmission after one calendar year.

Transfer Policy

A maximum of 6 semester hours of appropriate coursework from another AACSB graduate program may be considered for transfer to the degree program.

M.B.A. Academic Advising

Each student must meet with an M.B.A. advisor during the student's first term in residence to prepare a degree plan. Distance M.B.A. students will have a degree plan mailed to them which must be signed and returned to the M.B.A. advising office. Each degree plan requires the approval of an M.B.A. advisor and the dean. The preparatory courses which the student will complete (if any), and the student's area of emphasis will be discussed at that time.

Graduate School of Business Administration
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The College of Education (COE) professional education programs are accredited by the North Central Association of Colleges and Secondary Schools, the National Council for the Accreditation of Teacher Education (NCATE), the Colorado Department of Education (CDE), and the Colorado Commission on Higher Education (CCHE).

The COE offers the following programs in professional education:

- **Teacher licensure** - Initial preparation and recommendation for licensure at the undergraduate, post baccalaureate and graduate levels for elementary or secondary education. Students participating at the graduate level may earn a Master of Arts degree in Curriculum and Instruction with additional coursework.
- **Special Education Teacher licensure** – Initial preparation and recommendation for licensure at the undergraduate or graduate level. Students participating at the graduate level may earn a Master of Arts degree in Special Education.
- **Counseling** – Licensure preparation at the graduate level for school counseling or community counseling. Students completing the counseling program earn a Master of Arts degree in Counseling and Human Services. Additional areas of emphasis not associated with licensure are Student Affairs in Higher Education and Counseling and Leadership.
- **Educational Administration** – Preparation and recommendation for licensure for the principalship at the graduate level. Students participating in the leadership program may earn a Master of Arts degree in Curriculum and Instruction with an emphasis in Leadership.
- **English as a Second Language** – Preparation and recommendation for licensure at the undergraduate and graduate levels. Students participating at the graduate level may earn a Master of Arts degree in Curriculum and Instruction with additional coursework.
- **Reading** – Professional endorsement at the graduate level. Students participating in the Reading endorsement program may earn a Master of Arts degree in Curriculum and Instruction with an emphasis in Reading.
- **Development of additional expertise** – Teachers may earn a Master of Arts degree in Curriculum and Instruction in the following areas of emphasis: General Curriculum and Instruction (C&I), English as a Second Language (ESL), Leadership, Reading, and Science Education.

Faculty

Professors: Margaret Bacon, David Fenell, Nadyne Guzman, Mark Malone, David Nelson, Barbara Swaby; Associate Professors: Randall De Pry, Beverly Snyder, Martha Venn; Director of Teacher Education and Assistant Professor: Sylvia Nolte; Assistant Professors: Julie Armentrout, Michael Brunn, Dick Carpenter, Lindy Crawford, Kristan Enright, Clint Fisher, Catherine Kelly, Rhonda Williams; Instructors: Rob Danin, Laura Huber Marshall.

Teacher Education Programs

The bulletin that governs a student's graduation requirements is the one in effect at the time of a student's most recent admission into the college of the student's degree program.

Licensure and Endorsement Programs

General Licensure Requirements

All students in initial teacher education programs must pass specific required tests prior to licensure. Elementary, secondary, and special education licensure candidates must pass the PRAXIS II Content Test prior to student teaching. Special Education licensure candidates must also pass appropriate PLACE tests. Request specific information from the COE.

The Licensing Act of 1991 requires the completion of a background check. All students admitted into licensure programs must pass a background check as a condition of admission. Request specific information from the COE.

Provisional Licensure

All teachers initially licensed in Colorado first receive a provisional license. Provisional licensure through the Teacher Education Program (TEP), elementary or secondary, requires two semesters of study during the professional year plus one to four courses during the prior summer session for Elementary and two to four courses for Secondary and additional course work before the professional year. TEP and Special Education Licensure Program (SELP) coursework for undergraduates is included as a part of a four-year degree program in the College of Letters, Arts, and Sciences (LAS), or may be pursued after a bachelor of arts degree has been earned in a liberal arts program. The program is a one year program and requires a bachelor's degree to be accepted. The Alternative Licensure Program provides training for initial licensure for secondary only. Provisional Principal Licensure and Administrative Licensure are provided as a graduate program.

Additional Endorsement

Certified/Licensed teachers seeking an additional teaching area endorsement to an existing credential should see a TEP or ESL adviser to determine the requirements. Special programs can be developed to meet the requirements. The appropriate area of the PRAXIS II Content Test is required. Spanish and Special Education will take the appropriate PLACE test. ESL may be required to pass a competency examination in a foreign language.

Changes of Program Requirements

Program requirements may change without notification due to changes in licensure standards or state statutes.

Teacher Education Program (TEP)

The Teacher Education Program leads to initial licensure in elementary teaching or secondary teaching in the fields of English, foreign language (Spanish), mathematics, science or social studies.

Students who wish to enter the TEP should request information from the

COE office during the freshman year, if possible. Students planning on either elementary or secondary education must complete an undergraduate degree in the College of LAS as well as TEP. Students with undergraduate degrees from an accredited institution must meet similar requirements. Before applying to enter the program, students must attend a group-advising meeting for a full explanation of the nature of the program and the admission process.

Central features of the TEP are the integration of education courses with field experiences. The program requires students to have experiences with diverse populations and in diverse settings. The professional year preparation portion of the program is full-time, (fall and spring) consisting of 27 credit hours. Students participate in the professional year as a cohort group beginning the professional year with one course in the summer, completing the program the following spring semester. The 35-38 credit hours requirement consist of professional course work (foundations of education, educational psychology, curriculum, and methods) and field experiences (observations, co-teaching, and student teaching) in Professional Development Schools (PDS). Additional coursework may be required to meet all of the program requirements.

Course Requirements for Elementary Education Students

The specific course requirements for elementary education students fall into three categories: (1) general education, (2) subject specialization, and (3) professional courses.

General Education

Students should see the LAS undergraduate requirements list for the roster of courses which will fulfill the requirements for the 12 hours in three of the areas of general education identified below.

1. Humanities: 13 credit hours
2. Social Sciences: 13 credit hours
3. Natural Sciences: 13 credit hours, including a laboratory experience
4. Mathematics: two courses in mathematics, MATH 301 and 302, are required. Students must receive a grade of at least a C in each course.
5. English Language: All students must complete English 131 – Composition I and English 141 – Composition II.

Subject Specialization for Elementary Education Students

To ensure that they have adequate background in the subjects they will teach in elementary school, undergraduate students interested in elementary education must complete a major in an academic subject area. Approved majors for elementary teachers are English, geography, history, biology, and Spanish. Students must meet LAS requirements. The LAS adviser will assist students in this process. Completion of a major does not meet all the teaching field requirements. Students must see the subject field advising sheets for the specific certification field requirements.

Professional Courses

Teacher Education courses required for an elementary emphasis are:

SPED 300/500-3 Introduction to Special Education

CURR 5701-3 Methods and Materials for Multicultural Education (Graduate students only)

T ED 300/500-3 Contemporary American Education

T ED 301-1-3 Early School Experience

T ED 441/551-1 Children's Literature

T ED 452/552-3 Educational Psychology

T ED 460/560-3 School Experience
T ED 457/557-3 Elementary Literacy Methods

T ED 458/558-2 Curriculum and Instruction

T ED 462/562-3 Elementary Reading Methods

T ED 463/563-(8-12) Student Teaching Elementary

T ED 464/564-3 Elementary Math Methods

T ED 465/565-2 Elementary Science Methods

T ED 466/566-1 Elementary Social Studies Methods

Course Requirements for Secondary Education Students

The specific course requirements for secondary education emphasis areas fall into three categories: (1) general education, (2) subject specialization, and (3) professional courses.

General Education

Students should see the LAS Undergraduate Requirement List and an advisor in the Student Success Center for the courses which will fulfill the requirements for the 12 hours in three of the areas of general education identified below.

1. Humanities: 12-13 credit hours
2. Social Sciences: 12-13 credit hours
3. Natural Sciences: 12-13 credit hours
4. English Language: English 131-Composition I and English 141-Composition II
5. Quantitative: 3 credit hours

Subject Specialization for Secondary Education Students

Secondary students must complete a major in their field. This may be in an individual discipline (e.g. English, history, biology, physics, chemistry, Spanish, or mathematics).

Individual requirements for licensure in particular subject areas are available with either LAS or COE advisers. Completion of a major does not meet all the teaching field requirements. Students must see the subject field advising sheets for the specific certification field requirements.

Professional Courses

Teacher education courses required for secondary education majors are:

SPED 300/500-3 Introduction to Special Education

T ED 300/500-3 Contemporary American Education

T ED 301-1-3 Early School Experience

T ED 452/552-3 Educational Psychology

CURR 5701-3 Methods and Materials for Multicultural Education (Graduate Students Only)

T ED 470/570-2-6 Field Experience

T ED 471/571-1-3 Methods for Secondary Education

T ED 472/572-3 Teaching Reading and Writing in the Content Area

T ED 473/573-(8-12) Student Teaching

Secondary Content Methods Courses:

T ED 491/591-3 Secondary English Methods

T ED 492/592-3 Secondary Math Methods

T ED 493/593-3 Secondary Science Methods

T ED 494/594-3 Secondary Social Studies Methods

T ED 495/595-3 Secondary Spanish Methods

T ED 479/579-(3-4) Secondary Curriculum, Instruction, and Evaluation

Teacher Education Student Teaching

Students in the TEP complete field experiences and student teaching in an assigned Professional Development

School (PDS). PDS are regular elementary, middle, or high schools that are selected to work in partnership with the University to prepare teachers for licensure. Each PDS supports the development of student teachers through co-teaching, research and inquiry, and professional development for in-service teachers.

TEP Admission Requirements

Admission to the TEP is a selective process. Students are admitted twice a year, in November and April.

Undergraduate Teacher Education Admission

The undergraduate program has an admission process beyond the admission requirements of the University.

Attend undergraduate group advising session.

Undergraduate students apply to the TEP at two levels:

- First tier Introductory level
- Second tier Professional level

Prerequisites/requirements: Appropriate content courses for major and grade level in order to meet content requirements.

Complete the following core courses before applying to the first tier:

T ED 300 – 3 Contemporary American Education

T ED 301 – (1-3) Early School Experience Practicum

First Tier: Introductory Year Application Process and Criteria

Application dates: October 1 for spring admission; February 1 for summer admission; and May 1 for fall admission.
Upper division status or consent of TEP Director

Appropriate major for content and level

SAT or ACT scores

Scholarship: GPA 2.5 or better in all course work

Completion of T ED 300-3

Experience: Completion of T ED 301 or 45 hours of early school experience

References: Two references from teacher(s) with whom applicant worked in T ED 301 or early school experience.

Background check with CDE

First Tier: Introductory Year required course work:

T ED 452-3 Educational Psychology

SPED 300-3 Introduction to Special Education

Second Tier: Professional Year Criteria

Career Goals Statement (describing motivation, interest, decision, and personal qualities)

Interview with COE team

Additional experience with children or youth

Additional reference (a minimum of 1, a maximum of 3)

Completion of or enrollment in all core courses:

SPED 300-2 Introduction to Special Education

T ED 452-2 Educational Psychology

Current GPA: 2.5 or better in all college course work

Second Tier: Professional Year

(set sequence of required courses from June to May)
27 credit hours for Secondary; 31 credit hours for Elementary

Fall: Deadline to apply – October 1; Acceptance – November 1

Spring: Deadline to apply – February 1; Acceptance – April 1

PRAXIS II Content Test must be taken no later than the June test date prior to beginning TEP.

Additional testing requirements may need to be met. It is essential to keep in contact with the COE and the Student Success Center to learn what these requirements may be. All students admitted to the TEP at UCCS whether undergraduate or graduate must take the Academic Profile Test before beginning the Professional Year. Test dates are available in the COE.

All courses taken for completion of TEP and licensure must be completed with a grade of B- or better and the stated level of achievement on all levels of performance demonstration assessments.

Post-Baccalaureate and Graduate Program Admission

Process:

- Attend Group Advising Session
- Individual transcript review and advising appointment
- Application
- Interview

Prerequisites/requirements:
Appropriate courses for major and level in order to meet content requirements for licensure. A checklist will be completed by the appropriate TEP content advisor.

Admission dates:
Fall: Deadline to apply – October 1; Acceptance – November 15

Spring: Deadline to apply – February 1; Acceptance – April 1

Post-Baccalaureate Selection Criteria:
Academic Degree completed or nearly completed

GPA. of 2.75 or better

Experience with children and youth (45 hours)

Recommendations (TEP)(minimum of 3, maximum of 5) and graduate school references (minimum of 2)

Career Goals Statement (describing motivation, interest, decision, and personal qualities)

Content area requirements met or timeline for completion before licensure (TEP Checklist)

Timeline for completion of prerequisites (TEP checklist)

Background check (CDE Educator Licensing)

Graduate Application and Recommendations

Completion of the PRAXIS II Content Test and scores. If PRAXIS II Content Test has not been taken by application date the candidate must furnish a copy of the confirmation of Registration. Applicants should plan to take the PRAXIS II Content Test on the test dates in fall or spring prior to applying to the program. PRAXIS II Content Test must be passed prior to student teaching.

Completion of, enrollment in, or timeline for completion for all core courses:

T ED 300/500-3 Contemporary American Education

SPED 300/500-3 Introduction to Special Education

T ED 452/552-3 Educational Psychology

CURR 5701-3 Methods and Materials for Multicultural Education

Extended Support Program (ESP) for First Year Teachers

Although the initial preparation that TEP teachers receive from TEP is excellent, the challenges of the first year of teaching are considerable and may often extend beyond the ability of even the best first year teacher. The Extended Support Program (ESP) is a special program provided by The College of Education to assist first year TEP teachers who request assistance from the appropriate faculty. There is no cost to the TEP teacher, school, or district. ESP will provide the edge necessary to make the first year experience a

more positive experience and provide a better foundation for the future years of teaching. Students will be the ultimate beneficiaries of ESP.

Alternative Licensure Program (ALP)

Students who wish to enter the secondary Alternative Licensure Program (ALP) should request information from the COE office. Students planning on secondary licensure must have completed an undergraduate degree. Before applying to enter the program, students should attend a group-advising meeting for a full explanation of the program and the admission process.

The professional preparation program in ALP is a twelve month program of three semesters: summer, fall, spring. Classes during the summers are held both during the day and evenings. Classes during the fall and spring semesters are held in the evenings and/or Saturdays. All of the classes consist of a combination of professional coursework, which includes foundations of education, educational psychology, curriculum and content methods, classroom management and instruction, and resident teaching. The program emphasizes a commitment to working with at-risk students. Secondary ALP requires 30 credit hours to complete the licensure portion of the program.

A feature of ALP is the option to obtain alternative licensure and to serve as a resident teacher/learner for an entire school year having full classroom responsibility with supervision and assistance by a support team from the University and the district. While the COE will help market ALP candidates, students must obtain their own resident teaching positions.

The ALP leads to provisional licensure. Coursework from the ALP may be used as a part of the Master of Arts in Curriculum and Instruction.

Alternative Licensure Program Admission Requirements

Admission to the ALP program is a selective process. Students must submit completed applications by February 1 using the ALP application packet, which includes the standard graduate application process for the COE. A complete application includes records (transcripts) of all previous work, a career goals statement, references, and evidence of experience with children and youth. In addition, students must hold at least an undergraduate degree and be able to meet CDE subject area review requirements. Individual interviews are scheduled for applicants during the spring semester.

Students who pursue the master's degree apply 33 credit hours from the ALP coursework. The degree involves six additional credit hours of Research Methods CURR 5001-3 and a research paper/project for three hours of credit.

Admission is based on a combination of the following factors:

1. Past academic record, including a GPA of 2.75.
2. Personal commitment and motivation for teaching, ability to adapt quickly to the school setting, and capability of completing a rigorous fast-paced program, as determined by an interview, the career goals statement, and the quality of the candidate's references.
3. Experiences with children and youth.
4. Individual interview with a team of professional educators.

ALP Secondary Education Program Requirements

Students planning to work toward secondary teaching licensure (grades 7-12) in English, social studies, science, Spanish, or mathematics, must complete the following requirement: confirmation by the CDE after a transcript review as having the necessary knowledge of the subject matter to teach in the appropriate endorsement area (generally a major in the endorsement area). This content knowledge is validated by successful completion of the PRAXIS II Content Test or PLACE test (for Spanish).

ALP Secondary Education Professional Course Requirements

Professional Courses – Secondary (33 credit hours):

T ED 500-3 Introduction to Contemporary American Education

T ED 552-3 Educational Psychology

SPED 500-3 Introduction to Special Education

CURR 5701-3 Methods and Materials for Multicultural Education

CURR 5014–3 Instruction and Classroom Management Strategies I, Secondary

CURR 5016-3 Instruction and Classroom Management Strategies II, Secondary

CURR 5018-3 Resident Teaching and Seminar

CURR 5020-3 Resident Teaching and Seminar

CURR 5400-3 Reading and Writing in the Content Areas

Secondary Content Courses for specific area of endorsement:

CURR 5491-3 Secondary English Methods

CURR 5492-3 Secondary Math Methods

CURR 5493-3 Secondary Science Methods

CURR 5494-3 Secondary Social Studies Methods

CURR 5495-3 Secondary Spanish Methods

Additional coursework to complete the Master of Arts in Curriculum and Instruction:

LEAD 570-3 Introduction to Research and Statistics

CURR 5090-3 Research Project

Special Education Programs

The Special Education Program provide professional preparation for undergraduate and graduate students as special education teachers through exemplary teaching, scholarship, and community service for the purpose of increasing the quality of life for individuals with disabilities and those at risk for societal failure. The Special Education Program offers courses leading to licensure in special education. A non-licensure option is also available. Application packets are available from the COE. The Master of Arts degree in Special Education is also available (see Graduate Programs section.)

Undergraduate Special Education Licensure Program (SELP)

The COE, in collaboration with the College of LAS has adopted a program of study that allows undergraduate teacher candidates to major in one of five content areas: biology, English, geography, history, or Spanish. Students who are accepted into the undergraduate special education program will choose their undergraduate major and complete degree-related coursework (79-80 credit hours), complete core coursework in special education (21 credit hours), and take courses from one of the following endorsement areas: Track 1-Moderate Needs and Severe Affective Disabilities (20 credit hours); Track 2-Moderate Needs and Severe Cognitive Disabilities (20 credit hours); or Track 3-Severe Affective and Severe Cognitive Disabilities (23 credit hours). The undergraduate SELP allows all teacher candidates to complete a content major

within LAS and two endorsement areas in special education in four years (120 to 124 credit hours). The undergraduate special education core courses and endorsement areas are outlined below:

Undergraduate SPED Core Courses
SPED 300 Introduction to SPED 3
SPED 405 Applied Behavior Analysis 3
SPED 471 Practicum II 3
SPED 401 SPED Policies and Procedures .3
SPED 410 Assessment and Instructional Monitoring 3
SPED 428 Self-Determination and Transition 3
SPED 452 Educational Psychology.....3

21 Credit Hours

Track 1: Moderate Needs and Severe Affective Endorsements
SPED 407 Language Arts I.....3
SPED 455 Language Arts II.....3
SPED 420 Behavior and Social Skills I.....3
SPED 421 Behavior and Social Skills II.....3
SPED 481 Elementary Student Teaching Moderate/Affective 4
SPED 482 Secondary Student Teaching Moderate/Affective 4

20 Credit Hours

Track 2: Moderate Needs and Severe Cognitive Endorsements

SPED 407 Language Arts I.....3
SPED 455 Language Arts II.....3
SPED 416 Significant Support Needs 3
CURR 4103 Technology for Learners with Special Needs.....3
SPED 481 Elementary Student Teaching Moderate/Severe Cognitive.....4
SPED 482 Secondary Student Teaching Moderate/Severe Cognitive.....4

20 Credit Hours

Track 3 Severe Affective and Severe Cognitive Endorsements
SPED 407 Language Arts I.....3
SPED 420 Behavior and Social Skills I.....3
SPED 421 Behavior and Social Skills II.....3
SPED 416 Significant Support Needs 3
CURR 4103 Technology for Learners with Special Needs.....3
SPED 481 Elementary Student Teaching Affective/Severe Cognitive.....4
SPED 482 Secondary Student Teaching Affective/Severe Cognitive..... 4

23 Credit Hours

Special Education Student Teaching

1. **Student Teaching**. Students seeking licensure will participate in student teaching at the completion of their core and endorsement-area coursework. Students MUST complete two 16-week student teaching experiences (16 weeks in an elementary setting and 16 weeks in a secondary setting). One of the two student teaching placements may be completed during a summer semester. Student teaching must be completed with a 50 mile radius of the CU-Colorado Springs main campus.
2. **Paraprofessionals**. Students employed as special education paraprofessionals may complete a student teaching experience in their place of employment. The special education teacher and principal must agree that opportunities are available for you to complete the course competencies with students in your targeted licensure areas. Paraprofessionals are required to complete a 16-week experience including a minimum of five visits to special education classrooms in other schools, and a second 16-week student teaching experience at a different level.

Special Education Graduate Licensure Program (SELP)

Admission

To enter the SELP graduate program:

Request a graduate application and information packet from the COE.

Schedule an appointment with a special education faculty member to develop a graduate plan.

Application deadlines:

Spring Semester-October 15;
Summer Semester-April 1; and
Fall Semester-June 15.

Requirements

Students who are accepted into the graduate special education licensure program receive their Master of Arts degree in Special Education after successfully completing a minimum of 33 credit hours of specified core coursework. Students may also work on licensure courses in the following endorsement areas: Track 1-Moderate Needs and Severe Affective Disabilities (17 credit hours); Track 2-Moderate Needs and Severe Cognitive Disabilities (20 credit hours); or Track 3-Severe Affective and Severe Cognitive Disabilities (17 credit hours). The graduate special education core courses and endorsement areas are outlined below:

Graduate SPED Core Courses
SPED 500 Introduction to SPED 3
SPED 505 Applied Behavior Analysis 3
SPED 585 Practicum II 3
SPED 502 SPED Policies and Procedures 3
SPED 507 Language Arts Instruction I 3
SPED 510 Assessment and Instructional Monitoring 3
SPED 528 Self-Determination and Transition 3
SPED 539 Behavior and Social Skills II ...3
SPED 550 Applied Research Projects 3
T ED 552 Educational Psychology.....3
LEAD 570 Intro. to Research and Statistics..... 3

33 Credit Hours

Track 1: Moderate Needs and Severe Affective Endorsements
SPED 555 Language Arts II.....3
SPED 519 Behavior and Social Skills I.....3
SPED 532 Mathematics Instruction 3
SPED 581 Elementary Student Teaching Moderate/Affective 4
SPED 582 Secondary Student Teaching Moderate/Affective 4

17 Credit Hours

Track 2: Moderate Needs and Severe Cognitive Endorsements
SPED 555 Language Arts II.....3
SPED 516 Significant Support Needs 3
SPED 532 Mathematics Instruction 3
CURR 5122 Technology for Learners with Special Needs.....3
SPED 581 Elementary Student Teaching Moderate/Severe Cognitive.....4
SPED 582 Secondary Student Teaching Moderate/Severe Cognitive..... 4

20 Credit Hours

Track 3 Severe Affective and Severe Cognitive Endorsements
SPED 420 Behavior and Social Skills I.....3
SPED 416 Significant Support Needs 3
CURR 5122 Technology for Learners with Special Needs.....3
SPED 581 Elementary Student Teaching Affective/Severe Cognitive.....4
SPED 582 Secondary Student Teaching Affective/Severe Cognitive..... 4

17 Credit Hours

Student Teaching

1. **Student Teaching.** Students seeking licensure will participate in student teaching at the completion

of their core and endorsement-area coursework. Students who do not hold a valid Colorado teaching certificate MUST complete a 16-week experience in an elementary setting and a 16–week experience in a secondary setting. One of the two student teaching placements may be completed during a summer semester. Student teaching must be completed within a 50 mile radius of the CU-Colorado Springs main campus.

2. **On-the-Job (OTJ) Student Teaching.** Participants who are employed as teachers and hold a current Temporary Teaching Endorsement (TTE) may complete an OTJ 16-week student teaching experience. OTJ teachers must work with special education students in their targeted endorsement areas and be evaluated by a district special education supervisor. To qualify for K-12 special education licensure, OTJ teachers must also complete: 1) a minimum of five visits to special education classrooms in other schools, and 2) a second student teaching experience during summer semester.
3. **Paraprofessionals.** Students employed as special education paraprofessionals may complete a student teaching experience in their place of employment. The special education teacher and principal must agree that opportunities are available for you to complete the course competencies with students in your targeted licensure areas. Paraprofessionals are required to complete a 16-week experience including a minimum of five visits to special education classrooms in other schools plus a second student teaching experience during summer semester at a different instructional level.

Reading Endorsement

The special education endorsement program in reading provides graduate preparation for state endorsement as K-12 reading teacher.

The program requires the completion of all master's degree requirements in Curriculum and Instruction with an emphasis in reading. Endorsement seekers must complete the PLACE exam in reading. The COE office should be contacted for information concerning application to this program. For specific course requirements, please see the reading endorsement in the Curriculum and Instruction section.

Principal Licensure/ Administrator Licensure

The Curriculum of the Educational Leadership Program has been structured to ensure the appropriate theoretical and professional development of school leaders. The program is designed for individuals who seek Principal or Administrator Licensure through the CDE or for individuals who wish to serve as non-administrator leaders in the schools and school community. Specific eligibility requirements for licensure should be discussed with a faculty advisor prior to enrollment. The Educational Leadership Program's underlying philosophy is that quality instructional leaders, whether classroom teachers or administrators, are essential to effective schools.

The curriculum of the program has been aligned with the requirements of the CCHE, the Colorado standards for principal and administrator licensure, the NCATE Curriculum Guidelines, and the AASA Professional Standards for the Superintendency.

Principal Licensure

Eligibility criteria for the Principal Licensure program are:

1. Eligibility for the MA in Curriculum and Instruction with an emphasis in Educational Leadership;
2. Documented successful experience as a licensed professional in education;
3. Demonstrated motivation and involvement in leadership activities;

and

4. Field recommendations.

Administrator Licensure

Eligibility criteria for the Administrator Licensure program are:

1. MA degree from an accredited institution;
2. Demonstrated motivation and involvement in leadership activities;
3. Field recommendations; and
4. Completion of an approved Principal Licensure program.

Individual questions about these criteria should be discussed with a faculty advisor.

Principal licensure with an MA degree in Curriculum and Instruction requires 42 credit hours of coursework. Administrator Licensure requires nine credit hours beyond the Principal Licensure. Individual exceptions can be discussed for students with extended previous coursework.

Master of Arts – Curriculum and Instruction (C&I)

The Curriculum and Instruction (C&I) Master of Arts degree is primarily designed for licensed, practicing teachers who desire to continue developing their professional expertise. The program is also open to students in the ALP or the master's level TEP, above, who may use selected coursework as part of their degree plan. The College offers a master of arts degree with five areas of emphasis including: General C&I Emphasis, English as a Second Language (ESL) Emphasis, Leadership Emphasis, Reading Emphasis, and Science Education Emphasis. A minimum of 30 credit hours of coursework is required for the degree. Some emphasis areas require more hours.

Most courses in this master's degree program emphasize the application of electronic technology in teaching. Students entering the program must be proficient in using electronic technology in C&I. Students who do not have adequate skills in word processing, Internet access, e-mail, and making electronic presentations, etc. are advised to seek out remedial training before beginning the program. All students complete a core of work that asks them: (1) to examine educational issues from the perspective of their social context and (2) to become intelligent consumers of research and apply research to their instructional settings. To this end the degree requires these core courses:

LEAD 560 –3 Social Foundations of Education Trends

LEAD 570 –3 Introduction to Research & Statistics

CURR 5090-3 Research Project (Should be taken at the end of the degree program. Replaces comprehensive exams.)

General Curriculum and Instruction Emphasis

The General C&I Emphasis is designed for students with broad interests in the field of education as opposed to those who wish to concentrate in a particular

area of the curriculum. Students in this area of emphasis are required to take CURR 5002-3 (Issues, Strategies, and Models in Curriculum Design) to further their understanding of curricular design and models of teaching.

The selection of a cognate field allows students to concentrate their coursework in an area of instruction in which they wish to develop their expertise while allowing them to use electives from other areas of the school curriculum to pursue a broad array of interests.

MA Core Courses – 9 credit hours

CURR 5002 - 3 credit hours

Cognate Fields - 9 credit hours

Students may choose their cognate field from the following areas: Counseling and Human Services, Leadership, Mathematics, Reading, Science Education, Special Education, Educational Technology, and English as a Second Language.

Electives – 9 credit hours
The 9 credit hours of elective courses may come from either the COE or the College of LAS.

English as a Second Language (ESL)
The Master of Arts program in English as a Second Language is designed primarily for teachers who wish to improve their effectiveness with English Language Learners or become leaders in the field of ESL. The program is appropriate for teachers at all levels (K-12) who wish to learn more about applying contemporary ESL teaching strategies in their schools.

The ESL program requires a total of 30 credit hours of coursework. A thesis is required.

Leadership

The program requires 42 credit hours of coursework. Requirements for completion of the program include a prescribed portfolio (described in the student handbook) and a final research paper. The master's degree program is combined with the program for principal licensure.

Reading

The Graduate Reading Program at UCCS consists of 40 credit hours. Of these, 33 credits (11 courses) are core requirements and seven credits (2 courses) are practicum experiences. The complete course requirement list follows:

Core Courses

CURR 5401 Teaching Reading in the Elementary School 3

CURR 5410 Diagnosis and Remediation of Reading Difficulties 3

CURR 5400 Teaching & Writing in Content Areas 3

CURR 5412 The Reading Writing Connection 3

CURR 5420 Literature for Children and Adolescents 3

CURR 5413 Developing and Implementing Literacy Programs.....3

CURR 5403 Introduction to Clinical Experiences 3

CURR 5701 Methods and Materials in ESL/ Multicultural Education 3

CURR 5411 Psycholinguistics and Reading.....3

CURR 5001 Introduction to Research and Statistics 3

CURR 5090 Research Project 3

Total: 11 courses/ 33 credits

Required Practica
CURR 5430/31 Reading Clinic Procedures: Supervised Practicum 1 4

CURR 4532/33 Practicum 11: Field Based Practicum in Reading.....3

Total: 2 courses/ 7 credits

The coursework culminates in a research project that investigates a specific question related to literacy, analyzes the relevant data, and comes to a conclusion that may be useful in the practical instruction of reading.

Science Education Emphasis

The Master of Arts program in Science Education is designed primarily for teachers who wish to improve their science teaching skills or become leaders in the field of science education. The program is appropriate for teachers at all levels (K-12) who wish to learn more about applying contemporary science teaching strategies in their schools.

The program is designed to provide classroom teachers with a sound background in current science education research, theory and practice. Emphasis is placed on utilization of inquiry strategies, manipulative activities, and science process skills as a basis for science instruction. Teachers completing this program will be prepared to: teach science in a self-contained setting, serve as science teachers for schools utilizing departmentalization, serve as a science resource teacher at the school or district level, or pursue an advanced degree in science education.

The Science Education program requires a total of 33 credit hours of coursework. A thesis option is available but not required. Coursework hours required include:

12 to 18 hours of science education (offered through the COE)

12 to 18 hours of other COE courses

0 to 6 hours of courses for the College of LAS (300 or level or above)

Additional requirements:
Core courses of the Curriculum and Instruction Degree: CURR 5000-3 (was SFND 500), CURR 5001-3 (was REM 501), and CURR 5090-3 (was CURR 587).

Master of Arts – Special Education

Students may earn the Master of Arts degree in Special Education after completing a minimum of 32 specified credit hours as outlined in their graduate plan. In the final course (SPED 550 Applied Research Project) students complete a field-based research project and present data to faculty and peers. Students must complete additional coursework as outlined on their graduate plan to be eligible for licensure.

Master of Arts – Counseling and Human Services

The primary objective of the graduate programs in Counseling and Human Services is to prepare counselors and other human services personnel to serve as competent agents of change in a globally diverse world. Four tracks are available for students in Counseling and Human Services. Track One is designed to prepare professionals for work as school counselors. Track Two is designed to prepare professionals for work in mental health centers, agencies, business and industry, and private practice. Track Three, Leadership and Counseling, is offered in collaboration with the Air Force Academy for military personnel. Track Four, Student Affairs in Higher Education, is designed for students who wish to work on a college campus in a variety of positions.

The Professional Core is a six course (18 credit hour) sequence lasting one full academic year (two semesters + summer). Students admitted to the program must commit to completing these courses in sequence beginning the summer semester of their first year in

the program. Students are also required to complete a practicum of 100 clock hours and a two-semester internship of 600 clock hours in a school or agency.

School Counseling

The COE offers a Counseling and Human Services Program with an emphasis in School Counseling. The School Counseling program meets the requirements of the CDE and is based on CACREP standards recommended for the preparation of school counselors. In accordance with these standards, the school counselor program requires the completion of 51 credit hours of appropriate academic credit.

School counselors are specifically credentialed professionals who work in school settings with students, parents, educators, and others within the community. They design and manage comprehensive developmental guidance programs to help students acquire skills in the social, personal, educational, and career area necessary for living in a multicultural society. School counselors accomplish this by employing such interventions as guiding and counseling students individually or in small groups, by providing information through group guidance, by contributing to the development of effective learning environments, by providing student advocacy, and by providing consultation with others.

The CU-Colorado Springs School Counselor program is designed to prepare students to work in elementary, middle, or secondary levels. Students are endorsed in either elementary or secondary counseling depending on their career goals and through the appropriate selection of practicum and internship sites. School counseling graduates may meet the academic requirements for licensure as a professional counselor in Colorado.

Community Counseling

The COE also offers a Community Counseling area of emphasis within the Counseling and Human Services Program. This emphasis is designed to prepare graduate students to assume positions as counseling professionals in mental health centers, community agencies, business and industry, and in private practice. Students are prepared in the areas of human development, research and testing, professional ethics, career development, theories and practice of individual, group, and marriage and family counseling, conflict resolution, and the etiology of mental illness and dysfunctional behavior. They may provide professional services to individuals, couples, families, and groups for the purposes of treating psychopathology and promoting optimal mental health. Promotion and enhancement of healthy, self-actualizing, and satisfying life-styles are the primary goals of community counseling.

The Community Counseling program is based on national training standards and is designed to meet the academic requirements for licensure as a professional counselor in Colorado. To prepare Community Counselors for licensure a 51 credit hour training program is required.

Through the appropriate selection of electives, the student in the Community Counseling program may develop a specialization area such as addictions counseling, reality therapy, play therapy, hypnotherapy, marriage and family counseling, or counseling in business and industry. Students with specialized interests should make these known to their adviser for inclusion in degree planning.

The Counseling and Leadership

The Counseling and Leadership track within the Counseling and Human Services Program is designed to prepare active-duty military leaders to effectively apply counseling and leadership skills to their professional work settings. This 44 credit hour track does not necessarily lead to licensure as a professional counselor but offers a strong foundation in applying counseling skills to leadership roles and functions. It has the same core requirements as other students' programs and includes 400 hours of field experiences.

Student Affairs in Higher Education

The Student Affairs in Higher Education track is offered to students who wish to work in a counseling/administrative capacity in higher education. This includes Admissions, Student Success, Financial Aid, the Counseling Center, Housing, and other areas. This 51 credit hour program may lead toward licensure as a professional counselor and requires a total of 700 hours of field experiences.

Application Procedures

The Counseling and Human Services Program begins with admission for the summer semester. Admission to the program is a selective process with limited enrollment in two cohort groups. Complete applications must be submitted by February 28th for consideration. After this date, a rolling admission occurs in which eligible students are accepted as their application materials are completed.

The application includes:

1. Official transcripts of all previous academic work;
2. Career goals statement and self-evaluation;
3. Scores from the Miller Analogies Test (MAT) or the Graduate Record Exam (GRE);
4. The Minnesota Multiphasic Personality Inventory (MMPI);
5. Four letters of recommendation; and
6. An admissions interview and other admissions activities.

Applicants will be notified of the results of this review by May 31st each year.

Admission Requirements

Graduate Programs

An applicant to the Graduate School must:

1. Hold a baccalaureate degree from a college or university of recognized standing and equivalent to the degree given at this University or have done work equivalent to that required for such a degree and have completed at least 96 credit hours of work that would be acceptable toward a corresponding degree at this University.
2. Show promise of ability to pursue satisfactorily advanced study and research, as reflected by previous scholastic records and other data.
3. Have an adequate preparation to enter graduate study in the field chosen.

Specific Graduate Admission Requirements of the College of Education

In addition to the general requirements, the student admitted to regular graduate standing in the COE must meet the following requirements.

1. Satisfactory Graduate Record Examination (GRE) or Miller Analogies Test (MAT) scores. Special Education does not require GRE or MAT tests.
2. Attainment of an undergraduate GPA of 2.75 or higher on a 4.0 scale for regular admission. Occasionally students with an undergraduate grade point of 2.74 or below may be admitted provisionally if other factors warrant acceptance. These may include marked improvement in upper division work compared with lower division work, high GRE or MAT scores, excellent references from paid or volunteer work experiences relating to the area of proposed graduate study, and/or well articulated verbal and written statements of goals. A student who seeks admission but does not have an acceptable grade-point average may take graduate course work as an unclassified student to demonstrate ability to do graduate work. A maximum of 9 credits may apply toward the degree.
3. Preference will be given to students who have a sound program of undergraduate work in the liberal arts and in a teaching field, a valid teaching certificate, and teaching experience (with the exception of counseling students).
4. An interview with at least one faculty member prior to applying is required.

Transfer Students

Students transferring from accredited collegiate institutions must meet the same requirements as students entering teacher education. Formal application along with the required documentation must be made both to the University and to the COE within the stated deadlines.

College work more than seven years old may not count or may require updating, especially in the teaching field and in professional education.

Credits transferred from other institutions to the University of Colorado will be limited to the type and amount of credit given for similar work in the University of Colorado. A maximum of 10 credit hours of education credit may be transferred to the TEP. The TEP Director will determine transfer of education credit.

Unclassified Students Graduate Programs

Many persons professionally engaged in education feel the need to update their competence or are required to complete a specified amount of graduate study for certificate renewal, advancement in salary, change of assignment, or the like. If they are not interested in earning a graduate degree, they should apply to the Office of Admissions (not the COE) for admission as University unclassified students. Upon admission they may enroll, and after the term receive an official record of work completed. They may confer with COE faculty about courses in which to enroll. If unclassified students should decide at a later date to apply for graduate student status they should know that only 9 credit hours taken in unclassified student status may apply toward a graduate degree.

Academic Policies

Transfer Credit

Work already applied toward a master's degree received at another institution cannot be accepted for transfer toward a master's degree at the University of Colorado; extension work completed at another institution cannot be transferred; and correspondence work, except to make up deficiencies, is not recognized. Course work completed at another CU campus will most likely transfer.

All work accepted by transfer must come within the six-year time limit or be validated by special examination.

Credit will not be transferred until the student has established, in the Graduate School of this University, a satisfactory record of at least one semester in residence. Such transfer will not reduce the residence requirement at this University, but it may reduce the amount of work to be done in formal courses.

Excess undergraduate credits from another institution may not be transferred to the Graduate School. Seniors in this University may, however, transfer a limited amount of advanced resident work (up to 9 credit hours) provided such work:

1. Is completed with distinction in the senior year at this University.
2. Comes within the six-year time limit.
3. Has not been applied toward another degree.
4. Is recommended for transfer by the department concerned and is approved by the dean of the Graduate School. To be eligible for courses to be considered for transfer, a student must have an overall B average in all courses taken at the University of Colorado in Graduate School.

Special Sources of Credit

Transfer of Unclassified Student Credit

A department may recommend to the graduate dean the acceptance of as much as 9 hours of credit toward the requirements for a master's degree for courses taken either as a student at another recognized graduate school, as an unclassified student at this University, or both.

Extended Studies Coursework

Students may take graduate courses through Extended Studies in the pursuit of graduate study if they obtain prior academic approval from the major department and the dean.

Computer Literacy Requirements

All students admitted into COE programs after January 1, 1983 must demonstrate proficiency in computer literacy prior to graduation or completion of certification.

Access to Teacher Education Courses

The following 300-level courses in teacher education may be taken by students who are at least at the sophomore level and are considering entering Teacher Education:

T ED 300-3 Contemporary American Education

T ED 940-(1-6) Independent Study

The following 500 level course in teacher education may be taken by students who are considering entering one of the graduate teacher education courses:

T ED 500-3 Contemporary American Education

All other T ED courses may be taken only by students who have been accepted into the TEP of the COE or who have received special permission from the TEP Director.

Graduate Program Policies

Please refer to the Graduate School section of this Bulletin for this information.

Graduation Procedures

Please contact the COE at the end of the semester prior to the intended semester of graduation for appropriate paper work. Failure to submit required graduation materials prior to the first day of classes in the semester of intended graduation may result in a delay of graduation.

Course Fees

Students enrolled the following courses within the College of Education will be charged course fees:

COUN 511 Lab - Group Coun Skills Devel $10

COUN 570 Internship in Sch. Coun. $100

COUN 572 Internship in Comm. Coun. ...$100

CURR 4101/5101 Intro Micros in Education Lab $25

CURR 4130/5130 Multimedia Development $25

CURR 4140/5140 Graphics Design $25

CURR 5017 Sch.Res. & Tchg. Sem., Elem. $25

CURR 5018 Sch.Res. & Tchg. Sem., Sec. $25

CURR 5019 Teaching Seminar – Elem. $25

CURR 5020 Teaching Seminar – Elem. $25

CURR 5153 Authoring $25

CURR 5501 Exploring the Science Curriculum $10

CURR 5502 Developing Manipulative Materials for Science Teaching $10

CURR 5503 Integrating Reading and Science $10

CURR 5510 Science and Environmental Education for Gifted Students $10

CURR 5511 Teaching Energy and Environment $10

CURR 5512 Energy and Environmental Activities $10

CURR 5513 Activities for Teaching Earth Science $10

CURR 5514 Activities for Teaching Weather $10

CURR 5520 Activities for Teaching Physical Science $10

CURR 5521 Activities for Teaching Electricity and Magnetism $10

CURR 5530 Cutting-Edge Science for Cutting-EdgeTeachers $10

CURR 5704 Practicum in ESL/Mulicultural Education $100

LEAD 682 Practicum: The Principalship ..$100

LEAD 688 Practicum in Central Office Leadership & the Superintendency $100

SPED 410/510 Academic Assessment and Instruction $35

SPED 428/528 Self-Determination and Transition I $35

SPED 436/536 Student Teaching Elem. $100

SPED 437/537 Student Teaching Sec. ..$100

SPED 471/585 Practicum II $100

SPED 476/576 & 477/577 Student Teaching $100

CURR 5704 Practicum in ESL/Mulicultural Education $100

SPED 481/581 Elem S.T. Mod. Aff. Cog. $100

SPED 482/582 Sec S.T. Mod. Aff. Cog. $100

T ED 374 Practicum in ESL/Mulicultural Education $100

T ED 460/560 School Experience – Elem. $25

T ED 463/563 Student Teaching – Elem. $100

T ED 464/564 Elem. Math Methods $25

T ED 465/565 Elementary Science Methods $25

T ED 470/570 School Experience – Sec. $25

T ED 473/573 Student Teaching – Sec. $100

NOTE: Fees listed above are based on the best information available at the time of publication. Actual fees may differ.

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Vision

To be an active and respected leader in the education, research and production community in the region.

Mission

Support the needs of the region by providing unparalleled undergraduate and graduate engineering and applied science education and by engaging in research of international stature, which supports these needs.

Academic Programs

Bachelor of Arts
- Mathematics

Bachelor of Science
- Computer Engineering
- Computer Science
- Electrical Engineering
- Mathematics
- Mechanical Engineering

Master of Science
- Applied Mathematics
- Computer Science
- Electrical Engineering
- Mechanical Engineering

Master of Engineering
- Software Engineering
- Information Assurance
- Engineering Management
- Space Operations (distance only)

Doctor of Philosophy
- Engineering

Engineering Advisory Council

The College of Engineering and Applied Science (EAS) has an Engineering Advisory Council, which consists of leaders (Chief Executive Officers, Presidents, Engineering Managers, etc.) of many of the large electronics/computer/aerospace companies in the region. In addition, there are representatives from organizations such as Air Force Space Command, Economic Development Corporation, Air Force Academy and Chamber of Commerce. This Engineering Advisory Council works closely with the Dean and faculty of the College to develop first-class programs to meet present and future needs of the region. The Council helps provide the financial and human resource support to the College. The Council also advises the College on areas of excellence to be developed, degree programs needed, courses needed, equipment available, joint research areas, and cooperative faculty and student programs.

Engineering and Applied Science

Engineering is the application of scientific theories and resources of nature for the benefit of humanity. Mathematics provides the fundamental theories and basis for all of the sciences. Computer science provides the essential computational and process control tools for nearly every aspect of modern society. Computer engineering offers a mixture of half computer science and half electrical engineering. The disciplines of computer science, computer engineering, electrical engineering, and mechanical engineering all require a significant study in mathematics. Graduates of these four disciplines, along with those of mathematics work primarily in technical careers, either public or private, but some also become teachers, managers, or entrepreneurs with their own businesses.

Requisite Qualifications

The prospective computer scientist, engineer or mathematician should appreciate mathematics and have a keen interest in science and its methods. The ability to express ideas in both written and verbal form is of primary importance. The ability to understand problems and produce creative and innovative solutions is also a necessary prerequisite. Personal qualities such as initiative, energy, willingness to take responsibility, reliability, honesty, good judgment, understanding diversity, the ability to work and cooperate with others, and to work through to the conclusion of an assignment are important. Obviously, the fundamentals of sound citizenship are necessary in any profession.

Employment

Employment demand for computer scientists, computer engineers, electrical engineers, mechanical engineers, and mathematicians is expected to grow faster than the average of all professions well into this century. Abundant opportunities will present themselves to graduates of these disciplines, in both public and private laboratories, in industry, and in commercial enterprises. Financial rewards to be earned compare favorably with those of other professions; however, no one should enter any profession solely for monetary rewards. Rather, the dominant consideration should be the opportunity to use a lifetime for the advancement of society and the consequent personal satisfaction and enjoyment.

Laboratory Facilities

Computer Science

The Computer Science Department laboratories provide students (of all majors) with access to the latest programs in support of their degrees. The well-equipped laboratories contain a wide variety of computing resources. The Software Development Laboratory contains 27 networked Windows XP Workstations. The Advanced Computing and UNIX Laboratory contains 30 Windows XP and 8 Linux workstations. The Graphics and Networks Laboratory contains several Silicon Graphics workstations and NT/Linux workstations. This laboratory supports research in graphics, computer communications networks and multimedia computing.

Electrical and Computer Engineering

The Electrical and Computer Engineering Department has a wide variety of labs to enhance the learning of the undergraduate and graduate in his/her education and research. With state of the art technology, the students will get hands-on experience in many aspects of the Electrical and Computer Engineering Areas. The labs include: the Communications and Signal Processing Laboratory, Control-Systems Laboratory, Electronics Laboratory, Electromagnetics Laboratory, Microelectronics Research Laboratories, VLSI Circuit Design/Embedded Systems Laboratory, and the Multi-purpose Laboratory. A short description of each lab follows.

The Communications and Signal Processing Laboratory (CSPL) provides a focus for sponsored and unsponsored research in communication systems, communication theory, and signal processing. Research projects have included analyses, computer simulation, and hardware experimentation involving spread spectrum communications, space communications, and wireless mobile communications.

The Control-Systems Laboratory (CSL) comprises a number of student and research work centers. Each work center has at least one device to control, which includes Educational Control Products' (ECP) Magnetic Levitation and Control-Moment Gyroscope systems and a Rhino Robotics six-degree-of-freedom robotic arm. Each center has a full complement of test-and-measurement equipment.

The Electronics Laboratory (ECL) is used for instruction in basic circuits design, digital circuits design, microcomputer systems design, and electronic circuits design. The laboratory is equipped with personal computers, power supplies, function generators, oscilloscopes, logic analyzers, and other components needed to support required laboratories in the Electrical Engineering and Computer Engineering curriculum. This laboratory also houses stations for embedded systems design.

The Electromagnetics Laboratory (EML) supports programs in the areas of wave propagation, microwaves, antennas, and metrology. Undergraduate and graduate laboratory courses have been developed in the areas of microwaves, millimeter waves, and infrared (IR) diagnostic techniques to support the existing courses in electromagnetic theory. These laboratory facilities provide students with measurement techniques and skills in the radio frequency (RF), microwave, millimeter wave, and IR wavelength regions. The EML contains a large broadband, shielded microwave anechoic chamber.

The Microelectronics Research Laboratories (MRL) are a group of related laboratories supporting all aspects of microelectronics, including fundamental microelectronic device modeling and processing, integrated circuit design and fabrication. MRL links the efforts of the following associated laboratories: (1)Advanced Development Laboratory (Class 100 clean room), (2) Device Characterization and Analysis Laboratory, (3) VLSI Circuit Design Laboratory, and (4) Advanced Materials Laboratory for undergraduate and graduate students.

The VLSI Circuit Design Laboratory (VLSI) is associated with MRL to provide support for all phases of integrated circuit design. The laboratory is equipped with computer-based engineering workstations with software for designing modern integrated circuits and digital computers. The Laboratory's design suite includes leading edge commercial and public-domain tools for schematic capture, analog and logic simulation, timing analysis and verification, behavior modeling and simulation, fault simulation, test generation, physical layout, design verification, logic synthesis, PLA design, and FPGA design.

The ECE Department has a multi-purpose engineering education classroom/ laboratory equipped with computers to assist students in a wide variety of projects in different applications.

Mathematics

The Mathematics Department maintains exceptionally well-equipped laboratories containing a wide variety of computing resources. The Mathematics Hewlett-Packard Laboratory contains networked microcomputer systems, running a variety of mathematical computer software such as Maple and Scientific Notebook.

Mechanical and Aerospace Engineering

The Mechanical and Aerospace Engineering Department maintains a variety of essential labs to enhance the undergraduate and graduate in the education and research for each student, the Flight Dynamics and Control Laboratory.

The Flight Dynamics and Control Laboratory (FDCL) is focused on support to aeronautics and the space program. Research projects and lab support involve both theoretical and applied investigations in flight dynamics, dynamic modeling, orbit mechanics, optimal flight guidance, space navigation and aerospace vehicle flight-control systems. Graduate and undergraduate students in all departments of the College may become involved in research programs funded by NASA, the U.S. Navy, and the Air Force. Topics of investigation range from spacecraft orbit and attitude determination to integrated flight and propulsion control for next-generation aircraft and launch vehicles. The facilities include Hewlett-Packard 700-Series workstations and a networked cluster of Macintosh, Windows, and Windows NT workstations. A full complement of MATLAB-based CAD tools are available for dynamic-system analysis and control design, along with several state-of-the-art software packages for spacecraft mission analysis and non-linear programming.

EAS Instructional Fee

Effective Fall 2003, the College of EAS will no longer collect course fees and will instead collect a college-wide EAS instructional fee (EAS IF). This new EAS IF will allow greater flexibility, be more equitable, increase student services, be more efficient, and reduce costs.

As of Fall 2004, the fee will be as follows: $10 per EAS credit hour with a maximum of $120 per student per semester. This applies to all courses offered in the College of EAS with the exception of graduate thesis courses. There are no additional fees levied within the College.

The fee is non-refundable. The overall use of the fee is to assist the College in providing exceptionally high-quality instruction, including but not limited to:

1. Support for all instructional labs and smart classrooms managed by the College of EAS.
2. Support for the College IT network and servers.
3. College or departmental help centers, or instructional supplements provided by students for students, and student-run mentoring programs.
4. Support for career placement services that are specific to EAS, such as mock interviews with technology companies.

Admission Requirements

The bulletin that governs a student's graduation requirements is the one in effect at the time of a student's most recent admission into the college of the student's degree program.

The college seeks to identify applicants having a high probability of successful completion of their academic programs. Admission is based on evaluation of

many criteria; among the most important are the general level of academic performance before admission to the college and other evidence of motivation, potential, scholarly ability, and accomplishment. These are indicated by trends in the student's record, by College Board scores, by letters of recommendation from teachers and others qualified to evaluate the student, by accomplishments outside academic work, and by other relevant evidence.

Freshmen Admission Requirements

In order to enroll, the student must meet the requirements of the College of Engineering and Applied Science and the University requirements described in the General Information section of this Bulletin. Students interested in Bachelor of Science and Bachelor of Arts Degrees with a GPA of 2.4 who rank in the upper 50th percentile of their high school graduating class and have test scores of ACT composite score of 20 or above or an SAT composite score of 1080 or above, may be admitted into the College. Students who rank in the upper 25th percentile of their high school graduating class and have an ACT composite score of 28 or above or an SAT composite score of 1230 or above are assured admission to the College.

Students should insure that they are taking the Minimum Academic Preparation Standards (MAPS) for Engineering and Applied Science, as outlined in the General Information Section. Beginning students in engineering, computer science, or mathematics must be prepared to start analytic geometry-calculus. No credit toward a degree will be given for algebra or trigonometry (however, courses will be offered to allow a student to make up deficiencies). In order to be prepared for the type of mathematics courses that will be taught, the student must be competent in the basic ideas and skills of ordinary algebra, geometry, and plane trigonometry. These include such topics as the fundamental operations with algebraic expressions, exponents and radicals, fractions, simple factoring, solution of linear and quadratic equations, graphical representation, simple systems of equations, complex numbers, the binomial theorem, arithmetic and geometric progressions, logarithms, the trigonometric functions and their use in triangle solving and simple applications, and the standard theorems of geometry. It is estimated that it will usually take seven semesters to cover this material adequately in high school. Freshman will be given a mathematics placement test during orientation to insure that they begin the correct mathematics course based on their abilities.

Engineering Prep Program

The Engineering Prep Program is a preparatory program designed for students who do not meet the academic admissions requirements for the major or need additional math or science prerequisites. Students admitted into this program are admitted into the College so that faculty and staff from the College may monitor their progress as they learn to master the math/science fundamentals, which are the basis for success in engineering. Engineering Prep students are not, however, admitted into their selected major.

After these students have successfully completed appropriate background courses of two calculus courses (Math 135 and Math 136) and one of the required basic science courses (PES 111 or CHEM 103), and have the appropriate GPA, they may initiate a request for acceptance into their major. If a student has completed the appropriate courses and has a cumulative CU GPA of 2.5 or above, the student will be transferred into their requested major. If a student has a cumulative CU GPA of 2.0 to 2.5, approval of the department chair of the major is required before a student will be allowed into the major. To transfer into the major, students need to contact the Engineering Advisor at (719) 262-3427 or stop in the Student Help Center, 2nd Floor Main Hall to fill out the Transfer Form.

Former Students

If students are returning after being gone for more than one year, they must contact Admissions and Records to reactivate their application to the University and the College. If students have been gone for more that five years, a full reapplication to the University is required. If a student, after being gone for any length of time, is transferring in 12 or more credits from another school, a full reapplication to the University is required.

Unclassified Students

Persons who have been admitted to the university in the category of unclassified students may be permitted to register for courses in the College of Engineering and Applied Science upon approval subject to the availability of space in classes. Unclassified students should be aware of the College of Engineering and Applied Science rule that at least the last 30 semester hours must be earned in degree status in the College of Engineering and Applied Science in order to apply toward an engineering degree. A maximum of 12 semester hours of credit earned while in unclassified student status may be carried toward an undergraduate degree at the University of Colorado. High school concurrent students may exceed this 12 hour rule for unclassified students.

Intra-University Transfer Students

Students from other colleges at UCCS may transfer into the College of Engineering and Applied Science. Students transferring into the College must have completed at least 2 full semesters at UCCS and have a cumulative CU GPA of at least 2.5 (with preference that at least Calculus I is completed). Students with cumulative GPA between 2.0 and 2.5 will require department chair approval before being admitted into their major.

Transfer Students

Students Planning to Transfer to UCCS

Students transferring from other accredited collegiate institutions will be considered for admission if they meet the requirements outlined in the General Information section of this bulletin or the freshman requirements for entering the College of Engineering and Applied Science. The student should understand that engineering degree requirements differ from one campus to another; from course selection to the number of credit hours required for the degree. To ensure the maximum acceptance of credit toward degree requirements and minimize the length of time required to complete the degree, the student planning to transfer to UCCS should contact the Engineer Advisor (719-262-3427) as soon as possible to minimize classes that would not apply to an engineering degree.

Students Planning to Transfer to Another School for Their Degree

Students planning to transfer to another university should contact the gaining

major department at the university as soon as possible to decide on what classes to take at UCCS to minimize classes that would not apply in the transfer. Generally, an intercampus transfer should be accomplished at the end of the first year, with some course selection coordination required between the student and the degree granting major department during that year. With increased course selection coordination, some students may be able to delay their transfer until the middle or end of the sophomore year. Beyond that point, the student is most likely to lose extensive course credit and time in completing degree requirements. To assist the prospective intercampus transfer student in contacting a faculty or staff advisor in the gaining major department, the following list is provided.

UCCS Campus
For undergraduate programs, SS Help Center, 2nd Floor Main Hall, (719) 262-3260

For graduate programs:
Mathematics, Engr Bldg Rm. 274, (719) 262-3311

Computer Science, Engr Bldg Rm. 199, (719) 262-3325

Electrical & Computer Engr, Engr Bldg Rm. 299, (719) 262-3351

Mechanical and Aerospace Engr, Bldg 1867 University Office Park, Rm. 200, (719) 262-3243

For the other University of Colorado Engineering related programs, contact:
University of Colorado Boulder Campus Dean's Office, EC AD 1-01 (303) 492-5071

Aerospace Engineering Sciences, EC OT 6-16, (303) 492-6417

Applied Mathematics, EC OT 2-06, (303) 492-4668

Civil, Eng. and Arch. Engineering, EC OT 4-21, (303) 492-4193

Chemical Engineering, EC CH 1-43, (303) 492-7471

Computer Science, EC OT 7-08, (303) 492-7514

Electrical Engineering and Electrical & Computer Engineering, EC EE 0-02, (303) 492-7327

Engineering Physics, DUANE E-032, (303) 492-6952

Mechanical Engineering, EC ME 1-19, (303) 492-7151

University of Colorado Denver Campus
Dean's Office, NC Bldg Rm. 3024, (303) 556-2870

Applied Mathematics, UCD Bldg Rm. 540, (303) 556-4276

Civil Engineering, NC Bldg Rm. 3027, (303) 556-2871

Computer Science, NC Bldg Rm. 2605, (303) 556-4314

Electrical Engineering, NC Bldg Rm. 2615, (303) 556-2872

Mechanical Engineering, NC Bldg Rm. 3502, (303) 556-8516

The College of Engineering and Applied Science has developed a series of courses at the freshman and sophomore level, which meet the requirements for some engineering disciplines at most accredited universities throughout the country. Our advising will follow these generally accepted guidelines. Since curricula will vary slightly from time to time and place to place, you should check with the college/university to which you plan to transfer to verify that the two-year program suggested here would transfer in its entirety.

Transfer Programs

Chemical Engineering (Sample Program)

Freshman Year
Fall Semester (18 semester hours)
Math 135 Calculus I 4
Chem 103 Gen. Chem I 5
CS 115 Principles of Computer Science 3
Soc/Hum 3
Engl 131 Engl. Comp. 3

Spring Semester (17 semester hours)
Math 136 Calculus II 4
Chem 106 Gen. Chem. II 5
PES 111 Gen. Physics I 4
PES 115 Physics I Lab. 1
Soc/Hum 3

Sophomore Year
Fall Semester (17 semester hours)
Math 235 Calculus III 4
Chem 331 Organic Chem I 3
Chem 333 Org. Chem. Lab. I 2
PES 112 Gen. Physics II 4
PES 115 Physics II Lab. 1
Soc/Hum 3

Spring Semester (17 semester hours)
Math 313 Lin. Algebra 3
Math 340 Diff. Equations 3
Chem 332 Organic Chem II 3
Chem 334 Org. Chem. Lab. II 2
Soc/Hum 3
Soc/Hum 3

Civil, Architectural, Environmental (Sample Program)

Freshman Year
Fall Semester (18 semester hours)
Math 135 Calculus I 4
Chem 103 Gen. Chem. I 5
MAE 2501 Comp. Aid. Drawing and Fab. 3
ENGL 131 English Comp. 3
Soc/Hum..... 3

Spring Semester (18 semester hours)
Math 136 Calculus II 4
PES 111 Gen. Physics I 4
PES 115 Physics I Lab. 1
CS 115 Principles of Computer Science 3
Soc/Hum 3
Soc/Hum 3

Sophomore Year
Fall Semester (17 semester hours)
Math 235 Calculus III 4
PES 112 Gen. Physics II 4
MAE 2101 Statistics 3
ENGR 342 Engineering Economy 3
ECE 2210 Circuit Analysis I 3

Spring Semester (18 semester hours)
Math 313 Lin. Algebra 3
Math 340 Diff. Equations 3
MAE 2102 Dynamics 3
MAE 3201 Strength of Materials 3
Soc/Hum 3
Soc/Hum 3

Project Lead the Way

UCCS is the Colorado Affiliate University for Project Lead the Way (PLTW), a national pre-engineering curriculum geared for middle and high school students. The College of Engineering and Applied Science supports Project Lead the Way by providing high school and middle school teacher training and support and by offering graduate continuing education credit for PLTW teachers.

The College of Engineering and Applied Science also grants college credit for high school students enrolled in PLTW courses from certified high schools. UCCS transcripted credits can be earned for three PLTW courses offered by the College of EAS: Principles of Engineering, Introduction to Engineering Design and Digital Electronics. High

school students must complete the PLTW course, score 80 (based on a scale of 100) or better on the end-of-course college credit exam and register for the UCCS credit the semester immediately following the high school course. Up to 5 credits (two courses) are direct course replacements toward a BS degree from UCCS in:

- Computer Engineering (Principles of Engineering & Digital Electronics)
- Electrical Engineering (Principles of Engineering & Digital Electronics)
- Mechanical Engineering (Principles of Engineering & Intro to Engineering Design)

Additional credits will count as general credits toward a degree from the college. For further information contact the PLTW office at 719-262-3252.

Graduate Programs

Every prospective graduate student should consult the graduate student advisor in the respective department at the College of Engineering and Applied Science at UCCS prior to submitting an application for admission to the Graduate School. Students wishing to take graduate courses without formally enrolling as graduate students may enroll in the unclassified student category described in the General Information section of this bulletin.

Guaranteed Early Admission

Students who are seniors in any of the undergraduate programs in the College of Engineering and Applied Science at UCCS may be eligible for guaranteed and simplified admission to the graduate programs. Contact the appropriate graduate degree program director for more details.

Fast Track Admission Process for Recent Graduates

Students who graduated within the past 4 years with a degree from the College of Engineering and Applied Science at UCCS are eligible for fast track admission process. Contact the appropriate graduate degree program director for more details

Normal Admission

Students having an overall undergraduate G.P.A. of 3.0 or better (on a scale of 4.0) in all college-level academic work attempted are normally admitted to regular degree status.

Provisional Admission — Committee Review

Students with a G.P.A. between 2.75 and 3.0 and with strong prospects for success at the graduate level may be admitted to provisional degree status upon the recommendation of the Graduate Committee and the concurrence of the UCCS Graduate School. In special cases, with a G.P.A. of less than 2.75, the student may be accepted provisionally by taking the G.R.E. and earning acceptable scores. Provisional acceptance requires the student to complete a minimum of 9 hours of graduate course work applied to the program with a G.P.A. of 3.0 or better. Students with an undergraduate G.P.A. below 2.5 should take remedial work to raise their G.P.A. to at least 2.5.

Doctor of Philosophy in Engineering

The College of Engineering and Applied Science offers a Ph.D. in Engineering degree. The degree has its root in the successful Ph.D. program in Electrical Engineering offered in the College, and allows a broad range of research areas including Engineering (Electrical, Mechanical, and Computer Engineering), Science (Computer Science), and Mathematics (Applied Mathematics and Computational Mathematics). The interdisciplinary nature of this program enables our students to devise programs of study that better suit their interests and needs.

For general information about this program students are encouraged to contact the College Dean's office at 719-262-3543 or by email at dean@eas.uccs.edu.

Students who are interested in research areas with an emphasis in computer science, and would like to pursue the Ph.D. in Engineering degree should contact the Department of Computer Science at 719-262-3544.

Students who are interested in research areas with an emphasis in electrical engineering, and would like to pursue the Ph.D. in Engineering should contact the Department of Electrical and Computer Engineering at 719-262-3351.

Students who are interested in research areas with an emphasis in applied mathematics, and would like to pursue the Ph.D. in Engineering degree should contact the Department of Mathematics at 719-262-3311.

Students who are interested in research areas with an emphasis in mechanical and aerospace engineering, and would like to pursue the Ph.D. in Engineering degree should contact the Department of Mechanical and Aerospace Engineering at 719-262-3243.

Academic Policies

Undergraduate Course Load Policies

Full-Time Students and Overload Approvals

Students should register for the regular course load as outlined by their advisor. Students may register for 18 hours or less without approval. Permission to take more than 18 semester hours may be granted only after approval, using an Overload Approval Form, submitted to the Engineering Advisor (for 19-21 hours) or, the chair of the appropriate department (for over 21 hours). The forms can be obtained from the Student Success Help Center, 2nd floor Main Hall.

Employed Students Course Load Guidelines

Course load guidelines for students employed 10 or more hours per week are as follows:

Employed 40 or more hrs/wk	2 courses (max. 9 sem. hrs.)
Employed 30 to 39 hrs/wk.	3 courses (max. 12 sem. hrs.)
Employed 20 to 29 hrs/wk	4 courses (max. 15 sem. hrs.)
Employed 10 to 19 hrs/wk	5 courses (max. 18 sem. hrs.)

The above guidelines result from the experience of those who are both employed and in school. Students who wish to discuss a deviation from these guidelines may call the appropriate department office in the College of Engineering and Applied Science.

Transfer Credit

After a prospective transfer student has made application and submitted transcripts to the UCCS, the Office of Admissions and Records issues a computer generated student transfer credit evaluation listing those courses that are acceptable by University standards for transfer. Once a student receives the transfer evaluations, an appointment should be made with the Engineering Advisor (262-3427) to

conduct an evaluation of the transfer credits as applicable to a degree in the College of Engineering and Applied Science. If at any time a student wishes to have a course not previously accepted considered again for transfer, the student should consult with the Engineering Advisor.

UCCS has established articulation agreements with all two-year colleges in Colorado. For students from such a college, the transfer process to UCCS will be easier. It is, therefore, beneficial for students from two-year colleges in Colorado to check with their administration to see what courses will transfer.

Special Sources of Credit

Advanced Placement

Advanced placement and college credit may be granted on the basis of the College Entrance Examination Board's Advanced Placement Tests or by special examinations administered by the department involved. For students who have taken an advanced placement course in high school and who make scores of 4 or 5 in the CEEB's Advanced Placement Test, advanced placement as well as college credit will be granted (outlined in General Information, Advanced Placement Program, in the beginning of this Bulletin). Advanced placement credit for the freshman mathematics courses in calculus and differential equations will be limited to not more than 4 hours each.

Credit by Examination

Prospective students of the College of Engineering and Applied Science may earn college level credit in the following College Level Examination Program (CLEP) subject examinations:

CLEP subject exam	Sem.hrs. credit	CLEP score at 67th percentile
Biology	6	54
General Chemistry	5	54
General Psychology	3	54
Macroeconomics	3	55
Microeconomics	3	55
Intro. Sociology	3	55
Intro. Calculus w/elem. function	5	54

Generally, College Level Examination Program credit is most appropriate for non-engineering electives, and the number of credits must be within the limits of the elective hours of the individual College of Engineering and Applied Science programs. Prospective University of Colorado students must request that scores be reported to the Office of Admissions and Records, UCCS, Colorado 80933-7150. Notification of approved credit will be sent to participating students.

Work Experience

It is the policy of the College of Engineering and Applied Science at UCCS, that any credits accrued in the official records of the student that were awarded for work experience will not apply as part of the 128 semester hours required for an engineering degree in the College.

ROTC Credit

Credit from courses completed in the ROTC program will not apply toward fulfillment of the requirements for degrees in Mechanical Engineering, Electrical Engineering and the BS in Mathematics. A maximum of 5 semester hours of work from the ROTC program may be applied toward the BS in Computer Science or Computer Engineering and all ROTC classes will count as free electives in the BA Mathematics Degree.

Nontransferable Credits

Students desiring to transfer credits from engineering technology programs should note that such credits are accepted only upon the submission of evidence that the work involved was fully equivalent to that offered in this college.

Some technology courses are given with titles and textbooks identical to those of some engineering courses. These may still not be equivalent to engineering courses because of emphasis that is nonmathematical or otherwise divergent.

In order to assist engineering technology students with transfer problems, the following guidelines have been established:

1. Courses on basic subjects such as mathematics, physics, literature, or history may be acceptable for direct transfer of credit if they were taught as part of an accredited program for all students and were not specifically designated for technology students.

2. Students who have taken technology courses (courses with technology designations) that may be valid equivalents for engineering courses have these options:

a. They may petition the department head concerned to waive the course. The requirement for a course can be waived if a student demonstrates that by previous course work, individual study, or work experience he has acquired the background and training normally provided by the course. No credit is given toward graduation for a waived course, but a strong student may benefit from the waiver by being able to include more advanced work later in his or her curriculum. Other students may profit by taking the course at this college instead and thus establishing a fully sound basis for what follows.

b. Credit for a course may be given if the course work was done at an accredited institution of higher education. The University of Colorado department involved may recommend that credit be transferred to count toward the requirements for a related course in its curriculum. Credit cannot be given for vocational technical or remedial courses under rules of the University. (See general section on transfer of college-level credit.)

c. They may seek credit for the course by examination. See Advanced Placement and College Level (CLEP) Credit.

Common EAS Core

The College of Engineering and Applied Science has implemented a common EAS Core for entering freshmen students. This is a set of courses in English, science, mathematics, the humanities, and social sciences that count towards all undergraduate degrees offered by the College. Though some students declare a major upon acceptance into the College, others may delay the selection of a major. The curriculum of the Common EAS Core provides the students with the necessary foundation for pursuing their education career in the College and at the same time allows a change of major within the College to occur during the freshman year with minimum loss of credit or delay in graduation. The Common EAS Core makes up for 25 of the 32 semester credit hours typically taken by a full time freshman. For the selection of the remainder 7 credit hours, students should consult their college advisors.

The Common EAS Core consists of the following courses:

Course/Title	Credit
Math 135 Calculus I	4
Math 136 Calculus II	4
PES 111 General Physics I	4
PES 112 General Physics II	4
English 131 Composition I	3
Humanities/Social Science electives	6

General Requirements for Graduation

Bachelor's Degree

To be eligible to graduate with one of the bachelor's degrees in the College of Engineering and Applied Science, a student must meet the following minimum requirements:

1. Be admitted into the degree major at least 30 credit hours prior to graduation
2. Have at least a 2.0 CU cumulative GPA for graduation
3. Complete the Writing Competency as outlined in the General Information Section of this Bulletin
4. Satisfactorily complete the MAPS deficiencies before graduation (the requirement is 2 high school years or 2 college semesters of a foreign language).
5. Satisfactorily complete the prescribed degree curriculum requirements as outlined by the department section later in this book.

It is the responsibility of students to be sure they have fulfilled all the requirements, by completing a graduation check in the Engineering Advising office the semester before they anticipate graduating. It is the responsibility of the student to keep the Engineering Advisor informed of any changes in the students' plans throughout the senior year. The department chair must approve deviations from departmental degree requirements, in advance by petition. Petition forms may be obtained at the Engineering Advising office.

Graduate Degrees

Refer to the appropriate College of Engineering and Applied Science degree programs.

Advising

Undergraduates

All undergraduate students are required to be advised EACH semester (except Summer semester) before enrolling in classes. Students will be advised by their respective departments or the Engineer Academic Advisor. Academic advising is available throughout the year in the Student Success Center, 2nd floor, Main Hall. If you do not know who your advisor is or would like advising, contact the Engineering Advising Office at (719) 262-3427, or to make appointments, 262-3260.

Graduate Students

Please refer to the appropriate degree program for information regarding academic advising.

Academic Progress

To remain in good academic standing, undergraduate students must maintain a cumulative CU grade point average of 2.0 or better in hours taken. Students whose full-time semester's or cumulative GPA falls below 2.0 will be placed on probation for the next semester in which they are enrolled in the College of Engineering and Applied Science and will be notified by mail. If, after that semester, the semester or cumulative GPA is still below 2.0, the student will be suspended from the college. Graduate students should contact their appropriate department for proper academic progress standards.

Scholastic Suspension

Students who have been suspended from the College of Engineering and Applied Science cannot register for courses at the University (except for summer sessions, correspondence courses or extended studies classes) unless the suspension has been lifted or they transfer to another college. Students who have been suspended by the College of Engineering and Applied Science may apply to transfer to another college within the University, and if approved take course in the new major. Students are responsible for knowing whether or not they are under a current suspension.

Students who have been suspended may apply for readmission during the second semester following the suspension (not including summer school) if they meet the following requirements:

1. They have brought their cumulative CU GPA up to 2.00 through summer session, and/or correspondence work.

and/or

2. Satisfactorily completing, at another college or university, a minimum of 15 semester hours of work appropriate to an engineering curriculum

Suspended students must apply to have their suspension to be removed (after meeting the above requirements) to the Dean, Engineering and Applied Science. In addition, students may be required to reapply to the University.

Students who are in doubt about their standing with regard to scholastic deficiency are strongly urged to consult with the Engineering Advisor.

Grading Policies

Consult the General Information section of this Bulletin for details and more information.

Incomplete Courses

An incomplete may be given by the instructor (subject to approval by the appropriate department chair/EAS Dean) for circumstances beyond the student's control, such as a documented medical or personal emergency. When it is given, the student is informed in writing by the instructor of what the student is to do in order to remove the incomplete and when the tasks are to be completed. The instructor may assign only the IF grade. The student is expected to complete the course requirements, e.g., the final examination, term paper, etc, within the established deadline and not to retake the entire course. The grade will be converted automatically to a grade of F after one year unless the specified work is completed. The grade I/W may not be given.

No-Credit Courses

Students who register NC (no credit) are expected to attend classes and take all examinations but receive no credit. In the College of Engineering and Applied Science, students may not register NC for a required course or change registration to NC in any course except by petition to the chair/dean. If the student does failing work, the chair/dean may request the Office of Admissions and Records to change the registration from NC to credit, whereupon the student will receive a grade of F. A course previously taken for NC may not be retaken for

credit to apply toward an undergraduate or graduate degree awarded by the College of Engineering and Applied Science. Engineering courses completed for NC by students not admitted to the College of Engineering and Applied Science may not be taken again for credit after transferring to the college.

Pass/Fail Option

The primary purpose for offering courses in which undergraduates may be graded pass or fail (P/F) rather than A, B, C, D, or F is to encourage undergraduate students to broaden their educational experience by electing challenging courses without serious risk that their academic records might be jeopardized. Not more than one course per semester or summer session may be taken P/F. Courses which a student may elect to be taken P/F shall be designated by the major department. A student who has not designated a major field will not be allowed the P/F option. In the College of Engineering and Applied Science only social sciences/humanities courses at the 300 level or above may be taken P/F. The maximum number of P/F hours counting toward graduation shall not exceed 16 credit hours, including courses taken in the Honors Program under the program's P/F grading system. A transfer student may count toward graduation 1 credit hour of P/F courses for each 9 credit hours completed in the college.

Intern Program

The College of Engineering and Applied Science offers an Intern/Co-op Program to assist students in finding positions related to their studies. The Intern Program assists in the placement of students in part-time positions while they are attending school, and the Co-op Program provides alternate semesters of work and study for students. The purpose of the program is to allow qualified students an opportunity to supplement their education with work experience in their major area of study.

To qualify as an intern/co-op applicant, a student must be enrolled in the College of Engineering and Applied Science and maintain a G.P.A. of at least 2.5 to qualify for the program.

Further information may be obtained by calling (719) 262-3347 or writing to: Intern/Co-op Program Coordinator, UCCS, College of Engineering and Applied Science, P.O. Box 7150, Colorado Springs, CO 80933-7150.

Student Organizations

The College of Engineering and Applied Science has encouraged the formation of a wide range of student organizations for those students interested in science, engineering and technology. There are organizations within the College that represent each discipline and advocate all forms of diversity. The student organizations are involved in arranging speakers/lectures, tours, community service projects, seminars, tutoring, mock interviews, competitions, forums, mentoring, field trips, recruitment, and demonstrations. The student organizations also provide support for the various College activities throughout the year.

For more information about any of these organizations, please contact the Office of Student Support at 262-3347.

Asian Society of Engineers (ASE).
ASE's mission is to promote the development of Asians/Pacific Islanders in engineering, science, and other professions to achieve educational excellence, economic opportunity and social equity.

Association for Computing Machinery (ACM)
Founded in 1947, ACM is the world's first educational and scientific computing society. It's membership includes over 80,000 computing professionals and students world-wide.

American Institute of Aeronautics and Astronautics (AIAA).
AIAA is the principal society and voice serving the aerospace profession. Its primary purpose is to advance the arts, sciences, and technology of aeronautics and astronautics and to foster and promote the professionalism of those engaged in these pursuits.

American Society of Mechanical Engineers (ASME).
ASME is the premier organization for promoting the art, science, and practice of mechanical engineering throughout the world.

American Indian Science and Engineering Society (AISES).
AISES is a national, nonprofit organization which nurtures building of community by bridging science and technology with traditional Native values.

Colorado Alliance for Minority Participation (CO-AMP).
This program is a collaborative effort by the universities in Colorado and is funded by the National Science Foundation (NSF). CO-AMP's primary goal is to increase the under-represented minority students in the sciences, mathematics, engineering and technology to successfully complete their baccalaureate degrees by offering free tutoring, summer bridge programs, and summer research opportunities.

Institute of Electrical and Electronics Engineers (IEEE).
IEEE helps advance global prosperity by promoting the engineering process of creating, developing, integrating, sharing, and applying knowledge about electrical and information technologies and sciences for the benefit of humanity and the profession.

Eta Kappa Nu (HKN), The Theta Chi Chapter.
HKN is the International Honor Society for electrical engineers. Outstanding students are elected to HKN primarily from the junior and senior class. Eligibility depends on marked ability, scholarship, personal character, useful voluntary services, and distinguished accomplishments.

National Society of Black Engineers (NSBE).
NSBE's mission is to increase the number of culturally responsible African-American engineers who excel academically, succeed professionally and positively impact the community. NSBE is the largest student-managed organization in the country.

Mathematics Association of America (MAA)/Math Club.
MAA is the world's largest organization devoted to the interests of collegiate mathematics. A major emphasis of the MAA is the teaching of mathematics at the collegiate level, but anyone interested in mathematics is welcome to join.

Students for the Exploration and Development of Space (SEDS).
SEDS was founded in 1980 at MIT and Princeton and consists of an international group of high school, undergraduate, and graduate students from a diverse range of educational backgrounds who are working to promote space as a whole.

Society of Automotive Engineers (SAE). The Society of Automotive Engineers is an international organization oriented towards designing, building, maintaining, and operating self-propelled vehicles for use on land or sea, in air or space. As a student club, they participate in various annual SAE Collegiate Design Competitions to design, build, and test the performance of a race-caliber vehicle. The competitions include all aspects of a design project and incorporate aspects of all majors: design, construction, engineering and business analysis, and product marketing.

Society of Hispanic Professional Engineers (SHPE). Founded in 1974, SHPE is a national not-for profit organization that promotes Hispanics in engineering, math and science. SHPE is committed to helping our nation to fill a growing need for engineers and scientists in this decade and beyond.

Society of Women Engineers (SWE). SWE's mission is to stimulate women to achieve full potential in careers as engineers and leaders, to expand the image of the engineering profession as a positive force in improving the quality of life, and to demonstrate the value of diversity.

University Amateur Radio Club (UARC). UARC is dedicated to fostering an interest in Amateur Radio among the students, staff, and faculty of UCCS. Club members often assist people interested in obtaining an Amateur Radio license for the first time or upgrading an existing license. UARC operates and maintains an Amateur Radio station for the enjoyment and education of club members. The club also provides a service to the community, especially in times of natural disaster.

Department of Computer Science

Engineering Building, Room 199
(719) 262-3325 Fax: (719) 262-3369
http://cs.eas.uccs.edu/
E-mail: csinfo@cs.uccs.edu

Faculty

Professors: Augusteijn, Boult (El Pomar Chair of Computer Communications and Networking), Semwal and Shub; Associate Professors: Chow, Kalita, Pinson, Sebesta, and Wiener; Assistant Professors: Chamillard and Zhou; Senior Instructor: Nystuen; Instructor: Carter

Programs coordinated by the department:

Minor in Computer Engineering

Minor in Computer Science

Bachelor of Science in Computer Engineering

Bachelor of Science in Computer Science

Software Engineering Certificate

Master of Engineering in Information Assurance

Master of Engineering in Software Engineering

Master of Science in Computer Science

Ph.D. Program in Engineering, Computer Science concentration

Computer science encompasses a relatively new body of knowledge that treats both theoretical foundations and practical applications of computers. Since the 1950s, significant human, financial, and physical resources have been directed toward the design and development of both less expensive and more powerful computers. These efforts have resulted in a wide variety of computers ranging microcomputers costing a few hundred dollars to multi-million dollar parallel processors.

Computer science has applications in virtually every major field including banking, business administration and management, engineering, applied and pure mathematics, physics, chemistry, biology, word-processing, database management, simulation, numerical analysis, statistics, games, robotics, medicine, animation, automobile and aviation industry, personal communication and security

The application of digital computers in all phases of our lives has created many career opportunities. The job market for graduates having a degree in computer science is strong and supported by clear trends for continued growth.

The UCCS curriculum in computer science presented in this bulletin is modern and rigorous. The Department of Computer Science takes great pride in emphasizing quality teaching supported by modern computer facilities. The UCCS curriculum in computer science also requires a concentration of related courses chosen by the student. This requirement is intended to insure that the graduates of the program will have a base of knowledge embracing a field where computers are applied.

UCCS offers a complete four-year program of study leading to a B.S. degree in computer science. The undergraduate curriculum provides students with theoretical foundations and practical experience in both hardware and software aspects of computers. The curriculum in computer science is integrated with courses in the sciences and the humanities to offer an education that is broad, yet of sufficient depth and relevance to enhance student employment opportunities upon graduation. As a degree program within a professional school of the University, the curriculum is based on the criterion that graduates are expected to function successfully in a professional employment environment immediately upon graduation.

The Departments of Computer Science and Electrical and Computer Engineering jointly offer a B.S. Degree in Computer Engineering. This program is described in detail in the Electrical and Computer Engineering section.

UCCS also offers a flexible minor in computer science. The minor provides students the ability to formally supplement their study in other fields with a rigorous computer science background that will enhance employment opportunities after graduation.

Students who do not intend to major or minor in computer science may take computer science courses to broaden their backgrounds and complement their degree curricula.

Introductory courses CS 100, 103, 104, 105, 106, and 107 are intended to make computer literacy and programming available to a broad class of students. CS115 and 145 are recommended for those who anticipate doing extensive computing in their student or professional careers.

Accreditation

The B.S.C.S. degree at UCCS is accredited by the Computing Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012 - telephone: 410-347-7700.

Bachelor of Science – Computer Science

Degree Requirements

The degree requirements for the bachelor of science degree in Computer Science requires completion of at least 128 hours, a minimum 2.0 average in all CS and CU courses taken and completion of the Computer Science Major Field Assessment Test. This test will be given on a Saturday morning about three weeks prior to the end of the fall and spring semesters. A student must have completed 110 credit hours before taking the exam. The courses for the degree are outlined as follows

Mathematics (21 semester hours)

MATH 135. Calculus I 4
MATH 136. Calculus II 4
MATH 215. Discrete Mathematics 3
MATH 235. Calculus III 4
MATH 313. Introduction to Linear Algebra....3
MATH 381. Probability and Statistics 3

Science (14 semester hours)

Physics: PES 111, 112, 115....9
Remaining hours selected from classes below 5
CHEM 103, 106; Biology: BIOL 110 and 111 or 115 and 116; GEOL 101 and 101L, 102 or additional physics courses that require PES 111 as a prerequisite.

Computer Science Core (37 semester hours)

CS 115. Principles of Computer Science 3
CS 145. Data Structures and Algorithms....3
CS 202. Programming in UNIX....2
CS 206. Prgramming with C 2
CS 216. Computer Organization and Assembly Language Programming....3
CS 306. Object-Oriented Programming in C++....3
CS 316. Concepts of Programming Languages....3
CS 330. Software Engineering....3
CS 410. Compiler Design I....3
CS 420. Computer Architecture I....3
CS 450. Operating Systems I....3
CS 470. Computability, Automata, & Formal Languages....3
CS 472. Design and Analysis of Algorithms 3

Computer Science Electives (9 semester hours)

CS 401-489 or 502-599 9

Technical Electives (9 semester hours)

Select from list below:

Computer Science (300 level or above)

Electrical and Computer Engineering (2000 level or above, except ECE 2400)

Mathematics (300 level or above, except MATH 465)

Science (additional courses from the list above or courses with prerequisites from above list)

College of Business (300 level or above, except 301, 302 or 303)

Humanities and Social Science (24 semester hours)

CS 305. 1 credit hour, Social and Ethical Implications of Computing, REQUIRED.

The remaining 23 credit hours involve study in humanities, social sciences, arts, and other disciplines that serve to broaden the background of the student.

Courses in the following departments and programs satisfy this requirement:

Anthropology (except courses on human biology and ecology), Art History, Communication, Economics, English (150 or above), Film, Foreign Culture Studies, Foreign Languages, History, Humanities, Music (except university choir and private instruction courses), Philosophy, Political Science, Psychology (except Interdepartmental Studies 101 (freshman seminar) PSY 210, 211, 310, 311 or 411), Religious studies, Sociology, and Women's Studies. Students may also petition to include selected other courses in Interdepartmental Studies, Theater, or other departments.

Communications Skills (6 semester hours)

ENGL 131. Rhetoric & Writing I or ENGL 141.Rhetoric & Writing II....3
ENGL 309. Technical Writing and Presentation 3

Free Electives (8 semester hours)

Any course that is a prerequisite course for a required course may not be counted as a free elective. A maximum of 3 credit hours of CS courses numbered less than CS 115 can be used as free electives provided they are taken prior to a CS course numbered 115 or greater. Six credit hours of 200-level CS courses may be taken as free electives. At most, 3 credit hours of free electives may be taken in a particular programming language. Students planning to later enter a graduate program in computer science or electrical engineering are advised to take at least 6 hours of CS or ECE electives at the 300 or 400 levels. Students who complete their ROTC programs and receive their commissions are allowed up to six semester hours of ROTC course work as free electives toward their computer science degree.

Sample Schedule

Freshman Year

Fall Semester (16 semester hours)
CS 115. Principles of Computer Science 3
Math 135. Calculus I....4
Free Elective 2
PES 111. General Physics I....4
Engl 131. Composition I 3

Spring Semester (16 semester hours)
CS 145. Data Structures & Algorithms 3
Math 136. Calculus II 4
CS 206 Programming with C 2
PES 112. General Physics II....4
Humanities/Social Science Elective....3

Sophomore Year

Fall Semester (16 semester hours)
CS 202. Programming in UNIX....2
CS 216. Computer Organization & Assembly Language Programming....3
Math 235. Calculus III 4
PES 115. General Physics Laboratory I 1
Technical Elective 3
ENGL 309. Technical Writing and Presentation 3

Spring Semester (16 semester hours)
CS 306. Object-Oriented Programming Using C++ 3
CS 316. Concepts of Programming Languages....3
Math 215. Discrete Mathematics 3
Science Elective 5
Humanities/Social Science Elective....2

Junior Year

Fall Semester (18 semester hours)
CS 330. Software Engineering....3
CS 472. Design and Analysis of Algorithms 3
CS Elective 3
Math 313. Introduction to Linear Algebra 3
Humanities/Social Science Electives 6

Spring Semester (16 semester hours)
CS 305. Social and Ethical Implication of Computing 1
CS 420. Computer Architecture I....3
CS 470. Computability, Automata and Formal Languages....3
Math 381. Probability and Statistics....3
Free Elective 3
Humanities/Social Science Elective....3

Senior Year

Fall Semester (15 semester hours)

CS 450. Operating Systems I 3
CS Elective 3
Technical Elective 3
Free Elective 3
Humanities/Social Science Elective..... 3

Spring Semester (15 semester hours)

CS 410. Compiler Design 3
CS Elective 3
Technical Elective 3
Humanities/Social Science Elective..... 6
Total Credit Hours 128

Minor in Computer Science

The minor in Computer Science requires at least 19 credit hours of course work and every course in the minor must be completed with a grade of C or better. The student will be responsible for any prerequisites to required courses. At most, 9 credit hours of transfer work may be applied to the minor. Minor courses are as follows:

CS 145. Data Structures and Algorithms

CS 216. Computer Organization and Assembly Language Programming

CS 202. Programming in UNIX

CS 206. Programming with C

Upper Division (9 hours minimum) selected from CS 300 or above courses

Master of Science – Computer Science

The Department of Computer Science offers a program leading to the Master of Science in Computer Science. Courses at the graduate level and the undergraduate courses required for admission to the graduate program are regularly offered in the late afternoon or evening to enable students from local industry to continue their studies.

Admission Requirements

1. An overall undergraduate grade-point average of 3.0 on a scale of 4.0. In special cases a student may be admitted with a lower grade-point average as a provisional degree student. Students with an average below 3.0 who completed their undergraduate degree a significant number of years ago will also be considered on an individual basis. Students with grade-point average deficiencies who take several undergraduate courses to meet entrance background requirements will have their performance in those courses considered in making the admission decision. Students who recently earned an undergraduate degree in computer science with a grade-point average below 3.0 may be asked to take the general G.R.E. before they can be considered for admission. The Graduate Studies Committee will make the admissions decision on an individual basis.
2. Four semesters of mathematics courses: two semesters of university calculus, a course in discrete mathematics and one additional course of a mathematical nature.
3. Courses in computer science equivalent to the following courses: Principles of Computer Science (Java or C++), Data Structures and Algorithms, Programming in UNIX, Programming in C, Computer Organization and Assembly Language Programming, Concepts of Programming Languages, and Software Engineering. A student who has completed the requirements for Principles in Computer Science and Data Structures and Algorithms but not the other computer science pre-requisites could be admitted, but would still be required to take the unfulfilled pre-requisites after admission. Students lacking four or more courses should register as an unclassified student until the courses are completed.
4. Additional requirements may be specified by the Graduate School.
5. Application forms may be obtained in the Engineering Advising Office and in the Computer Science Office.

Degree Requirements

1. A total of 30 semester hours of graduate course work is required. These must include CS 550 (Operating Systems I), CS 570 (Computability, Automata, and Formal Languages) and CS 572 (Design and Analysis of Algorithms), if they have not been taken previously
2. Up to 6 semester hours of graduate courses can be taken from other departments if first approved by the student's M.S. Advisory Committee.
3. Student must select either a Thesis (plan I) or Non-Thesis (plan II) option. Plan I requires a thesis worth from 4 to 6 semester hours of credit. Plan II requires a 3-semester hour project. In both cases, an oral presentation and defense is required, which is open to the public and which can include questions over all work presented for the degree.
4. At most four computer science courses may be taken that are cross-listed. The three required courses are cross-listed. If taken, they are counted among the four.
5. All work applied to the degree must be accomplished within a six-year time limit.
6. Students are advised by the chair of the graduate studies committee during their first semester. A student must choose an advisor by the time 12 credit hours have been completed.

Master of Engineering –Software Engineering

Complex software-intensive systems permeate every aspect of our lives. These systems are among the most complex products humankind has ever tackled. Software engineering is the disciplined application of proven principles, techniques, and tools to the creation and maintenance of cost-effective, user friendly software systems that solve real problems. To accommodate the demand for well educated software engineers in almost all industries today, UCCS has established the Master of Engineering degree in Software Engineering. UCCS offers a unique environment to study, learn, and share experiences surrounding this special engineering discipline. Our faculty comes from a broad spectrum of backgrounds. Many have had years of experience in industry prior to joining the faculty. The result is a diverse melting pot of ideas, technologies, and experiences. Courses at the graduate level (and the undergraduate courses required for admission to the graduate program) are regularly offered in the late afternoon and evening to enable students from local industry to continue their studies.

Admission Requirements

1. A Bachelor of Science or a Bachelor of Arts degree in mathematics, computer science, engineering, information systems.
2. An overall undergraduate grade point average of 3.0 (on a scale of 4.0;

awarded within the past five years) or minimum 1800 G.R.E. (verbal + quantitative + analytic). Applicants with a grade point average of less than 3.0 awarded more than five years ago will be admitted on a case-by-case basis. Applicants with a grade point average between 2.75 and 3.0 awarded within the past five years may be admitted provisionally.

3. It is recommended that the applicant have two years experience with commercial, industrial or Government software development or maintenance.
4. A concise statement of experience and career goals.
5. Completed Admission Forms include two copies of official transcripts and references from four people sent to the Computer Science Department.

Program Prerequisites

Knowledge of modern programming language, e.g. Java, C++

Data Structures and Algorithms (CS 145)

Discrete Mathematics (MATH 215)

Software Engineering Basics (CS 330)

Note: Some of these courses may have prerequisites.

Note: Any comparable course from another approved university will suffice.

Degree Requirements

A total of 30 semester hours of graduate course work is required.

CS-531. Software Requirements

CS-532. Software Design

CS-534. Software Maintenance

CS-535. Software Project Management

CS-536. Software Product Assurance

Plus one of the following options:

A. CS 539. Capstone or CS 701 Project
Plus four elective graduate computer science courses.

B. CS 700. Thesis (6 credits)
Plus three elective graduate computer science courses

In either case, a maximum of two cross-listed courses can be applied to the requirements of the degree program.

Additional Graduate Degree Requirements

1. Students must select either the thesis or non-thesis option. A thesis is for 6 credit hours, the non-thesis option is either CS 539(capstone Project) or CS 701 (Project). In all cases, an oral presentation and defense is required, which is open to the public and which can include questions over all work presented for the degree.
2. Students are advised by the chair of the Graduate Studies Committee during their first semester. A student must choose an advisor by the time 12 credit hours have been completed.
3. All work applied to the degree must be accomplished within a six-year time limit.
4. All courses included to count for this degree must be part of an approved plan of study. This plan must be developed by the student and approved by his/her advisor within the first semester after being admitted to the program.

Master of Engineering – Information Assurance

Network and system security has become very critical and increasingly urgent in today's network and information systems. Information Assurance deals with operations that protect and defend information and information systems by ensuring their availability, integrity, authentication, confidentiality, and non-repudiation. The Information Assurance curriculum includes courses designed to prepare individuals, who engineer computer/network systems or develop policy for these systems, with knowledge of methods, techniques, and tools used in information assurance. These courses are regularly offered in the late afternoon and evening to provide a more ideal time slot for the working professional.

Admission Requirements

1. A Bachelor of Science or a Bachelor of Arts degree in mathematics, computer science, engineering information systems, or equivalent.
2. An overall undergraduate grade point average of 3.0 (on a scale of 4.0; awarded within the past five years) or minimum 1800 GRE (verbal + quantitative + analytic). Applicants with a grade point average of less than 3.0 or with degrees awarded greater than five years ago will be admitted on a case by case basis. Applicants with a grade point average between 2.75 and 3.0 awarded within the past five years may be admitted provisionally.
3. It is recommended the applicant have two years experience with commercial, industrial or government software development or system/network administration.
4. Completed Application Forms which include two copies of official transcripts references from four people, and a concise statement of experience and career goals to be sent the Department of Computer Science.

Program Prerequisites

Knowledge of a modern programming language, e.g., Java or C++

CS - 145 Data Structures and Algorithms

CS - 202 Programming with Unix

CS - 216 Computer Organization and Assembly Language Programming

Degree Requirements

A total of 30 semester hours of graduate course work is required.

Required Core Courses
(15 credit hours, common to both the Thesis option and Non-thesis option):

CS - 520 Computer Architecture
CS - 522 Computer Communications
CS - 550 Operating Systems I
CS - 591 Fundamentals of Computer/ Network Security
CS - 592 Applied Cryptography for Secure Communications

Degree Completion Courses:
(15 credit hours) Two alternate options are available: Thesis or Non-Thesis.

1. Thesis option:

a. Complete CS - 700 Master Thesis (6 credit hours)

b. Complete 3 courses from the approved list of courses. The Graduate Studies Committee must approve the courses selected.

2. Non-Thesis option:

a. Complete CS - 701 Master Project (3 credit hours)

b. Complete 4 courses from the approved list of courses. The Graduate Studies Committee must approve the courses selected.

Additional Graduate Degree Requirements

a. An overall 3.0 grade point average in all graduate work.

b. All work applied to the degree must be accomplished within a six year time limit.

c. Up to 9 hours of graduate work may be transferred from an accredited graduate program, provided:

i. The course work has not been used for any other degree,

ii. Grade earned for the course(s) is B or better,

iii. The course work has been taken within the past six years,

iv. The course coverage is equal in level, content, and depth to the course for which it is being substituted.

d. All courses counted towards this degree must be part of an approved plan of study. This plan must be developed by the student and approved by his/her advisor (appointed by the department) within the first semester after being admitted to the program.

Certificate in Software Engineering

The College of Engineering and Applied Science offers a Certificate in Software Engineering to qualified students. The program has two purposes: (1) provide employees of local companies with an opportunity to enhance their software engineering skills and their chances for career advancement, and (2) provide students currently enrolled in the Masters of Science in Computer Science (MSCS) with more in-depth knowledge in software engineering to enhance employability and career advancement. Please call or write the Department of Computer Science for more information.

Ph.D. in Engineering – Concentration in Computer Science

The Department of Computer Science supports the Ph.D. in engineering program with a concentration in computer science. Students who are interested in research areas with an emphasis in computer science, and would like to pursue the Ph.D. in Engineering degree should contact the Department at 719-262-3544.

Department of Electrical and Computer Engineering

Engineering Building, Room 299
(719) 262-3351/3548
Fax: (719) 262-3589
http://eceweb.uccs.edu/
E-mail:ecedept@eas.uccs.edu

Faculty

Professors: Alspector, Araujo, Ciletti, Dandapani (Chair), Kalkur, Kwor, Norgard, Sega, Wickert, and Ziemer; Associate Professors: Oleszek and Wang; Assistant Professor: Plett;

Programs coordinated by the department:

Minor in Computer Engineering

Minor in Electrical Engineering

Bachelor of Science in Computer Engineering

Bachelor of Science in Electrical Engineering

Master of Science in Electrical Engineering

Ph.D. program in Electrical Engineering

Electrical and computer engineering harnesses the properties of electricity and materials to make possible a variety of devices and systems used for communication, computation, robotic control, navigation, remote sensing, medical imaging, and power generation and transmission. In today's world, engineers are involved in a host of design activities. They design complex integrated circuits used in computers and communications equipment, as well as the processes that fabricate arrays of transistors in materials such as silicon and gallium arsenide. They develop the control logic that determines how industrial robots operate and create sophisticated computer programs that allow computers and robots to behave as though they have vision. Electrical engineers play a key role in the design of radar equipment used for navigation in virtually all spacecraft, aircraft and ships, as well as the brains found in microwave ovens and automobile engines. Some specialize in the engineering of modern, high-speed, digital computers. Many also function effectively in management, marketing and sales efforts of corporations that create technical products. Others pursue advanced studies and participate in the education of other engineers.

The Department of Electrical and Computer Engineering (ECE) offers course work leading to undergraduate (B.S.E.E.) and graduate (M.S.E.E. and Ph.D.) degrees in electrical engineering and undergraduate degree in computer engineering. The B. S. degree in computer engineering (B.S.Cp.E.) is offered jointly with the Computer Science Department.

Bachelor of Science Degree Programs

The educational objectives of the Department of Electrical and Computer Engineering are that it's B.S.E.E. and B.S.Cp.E. degree graduates are able to:

- Read, interpret, and critically assess literature in electrical and computer engineering and evaluate its impact on current issues in engineering and society.
- Write technical reports and other documentation and to present oral reports of a technical nature.
- Use basic knowledge in science and mathematics as well as knowledge and tools in engineering disciplines to analyze and synthesize real-world engineering problems.
- Design processes, devices, circuits or systems using engineering knowledge and tools while considering economics, safety, ethics, ergonomics, and aesthetics.
- Function in an effective manner, alone or as part of a team, in an engineering capacity.
- Appreciate the importance of keeping up with the engineering field.

The first year of the B.S.E.E. and B.S.Cp.E curricula at UCCS includes courses in mathematics, basic sciences, composition, social sciences/humanities, computer programming, and engineering problem solving methods.

In the B.S.E.E. curriculum, the second year continues with additional courses in these areas and presents courses in electrical engineering science. The last two years of B.S.E.E. curriculum build on the first two with additional required

courses and electives aimed at providing technical breadth and depth and a background in design.

In the B.S.Cp.E. curriculum, the second year continues with additional courses in mathematics and presents courses in electrical engineering and computer science, which form the computer engineering degree lower division core. The last two years of B.S.Cp.E. curriculum presents additional required courses in electrical engineering and computer science, and allows students to adjust their curriculum by selecting from a large offering of hardware and software courses primarily in more advanced aspects of computer engineering.

In the senior year, participation in a design project and a design seminar is required of all E.E. and Cp.E. majors.

The ECE department has state-of-the-art laboratories for digital logic and microcomputer systems, circuits, electromagnetics, electronics, VLSI circuit design, microelectronics, analog and digital control systems, integrated circuit design, communications, and signal processing systems. During the course of studies for the B.S.E.E. degree, students will take at least 8 semester hours of E.E. laboratories, and for B.S.Cp.E degree, students will take at least 3 semester hours of E.E. laboratories, in addition to being able to select laboratories from several other areas such as computer-aided design, communications, controls, electromagnetics, microelectronics, and signal processing. Laboratories are used extensively in the curriculum to reinforce the student's understanding of theoretical concepts, but more importantly, to provide an opportunity for the student to participate in the design and synthesis of new circuits and systems. For the B.S.Cp.E. degree, courses in computer science require extensive use of computing facilities available in the Computer Science Department. Please see the section on Laboratory Facilities for laboratories and facilities available to computer engineering students.

In addition, each senior student must complete three semester hours of a senior design project and present oral reports on their work in a senior design seminar. The purpose of this design experience is to give the student an opportunity to apply knowledge gained in basic sciences, mathematics, and engineering and computer science in producing a feasible solution to an open-ended problem, accounting for such factors as state of technology, economics, safety, reliability, ethics, social impact, and aesthetics. Also required as part of the design experience is teamwork in establishing objectives and criteria, synthesis, analysis, construction, testing, and evaluation for a proposed solution.

Although the programs are integrated, it is possible for a transfer student with the proper background to obtain a degree after four semesters. Such a student would need to have completed the mathematics and basic sciences of the freshman and sophomore years and to have a total of approximately 64 credit hours acceptable to the department.

Accreditation

The B.S.E.E. degree at UCCS is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET). The B.S.Cp.E. degree program was reviewed in fall 2003 semester and expects to be accredited by ABET.

Bachelor of Science – Electrical Engineering

Degree Requirements

The degree requirements for the Bachelor of Science degree in Electrical Engineering require completion of at least 128 hours, participation in the Exit Interview, a minimum 2.0 average in all ECE and CU courses taken, and a minimum 2.0 in ECE 1411, ECE 2210 and ECE 2411. Course requirements are as follows:

Mathematics (18 semester hours)
MATH 135, 136, 235.
Calculus I, II, III.....12

MATH 340. Intro to
Differential Equations.....3

Mathematics Elective (310 or above).....3

Basic Science (16 semester hours)

PES 111. General Physics I.....4

PES 112. General Physics II.....4

PES 213. General Physics III.....3

Science (see below).....5

Select 5 hours from the following list; a lab must be included: CHEM103-5, CHEM106-5, BIOL110-3, BIOL111-1, BIOL115-3, BIOL116-1, GEOL101-4, GEOL102-4 or any other PES course that has a prerequisite of PES111.

Computer Background (6 semester hours)
ECE 1001. Introduction to Robotics 3

ECE 1021. Computer-Based Modeling & Methods of Engineering.....3

Social Sciences and Humanities (15 semester hours)
(See Social Sciences/Humanities Requirements below).....15

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. E.E. students at UCCS are required to take at least 15 credits of social sciences and humanities so they are more aware of their social responsibilities and better able to consider related factors in the decision making process. To ensure this, a minimum of nine hours in social sciences and six hours in humanities, or vice versa, must be taken; at least six of these hours must be beyond the introductory level (200 level or higher courses). Breakouts by area are as follows:

Social Science Departments: Anthropology, Communications, Economics, Geography and Environmental Studies, Gerontology, Political Science, Psychology Sociology, and Women's Studies

Humanities Departments: Art History, Ethnic Studies, English (150 or higher classes), History, Humanities, Music (except choir or lessons), and Philosophy

Communication Skills (6 semester hours)
ENGL 131. Rhetoric & Writing I or

ENGL 141. Rhetoric & Writing II.....3

ENGL 309. Technical Writing & Presentation
.....

Core ECE Courses (43 semester hours)
ECE 1411, 2411. Logic Circuits I, II 4

ECE 2050. Introduction to Physical Electronics.....3

ECE 2210, 2220. Circuit Analysis I, II.....6

ECE 2230. Circuits Laboratory 1

ECE 3020. Semiconductor Devices I.....3

ECE 3110. Electromagnetic Fields I 3

ECE 3210, 3220. Electronics I, II 6

ECE 3230, 3240. Electronics Laboratory I, II 2

ECE 3420. Microprocessor Systems Laboratory.....1

ECE 3430. Intro to Microcomputer Systems3

ECE 3510. Linear System Theory 3

ECE 3520. MATLAB Systems Analysis Laboratory.....1

ECE 3610. Engineering
Probability & Statistics 3

ECE 4890. Senior Seminar 1

ECE 4899. Design Project.....3

Electrical Engineering Technical Elective Requirements (15 semester hours)

Select any four from the following eight three-credit hour courses:

(Students must meet course prerequisites)

ECE 3120. Electromagnetic Fields II

ECE 4020. Semiconductor Devices II

ECE 4242 Advanced Digital Design Methodology

ECE 4340. VLSI Circuit Design I

ECE 4480. Computer Architecture and Design

ECE 4510. Feedback Control Systems

ECE 4625. Communication Systems I

ECE 4650 Modern Digital Signal Processing

Total Specified Technical Electives.....12

And, select any three of the following one-credit hour specialty labs:

(Students must meet course prerequisites)

ECE 3440. Microcomputer Systems Laboratory

ECE 4040. Introductory VLSI Fabrication Laboratory

ECE 4150. Microwave Measurements Laboratory

ECE 4200. Advanced Digital Design Laboratory

ECE 4530. Control Systems Laboratory

ECE 4560. Digital Control Laboratory

ECE 4670. Communications Laboratory

ECE 4680. Signal Processing Laboratory

Total Specialty Labs 3

Technical Electives (9 hours)

Technical electives may be chosen from this list: ECE courses at 4xxx level, BIOL300-3, BIOL302-3, BIOL310-3, BIOL314-3, BIOL321-3, BIOL322-3, BIOL330-3, BIOL333-3, BIOL360-3, BIOL361-3, BIOL370-3, BIOL383-3, BIOL391-3, CHEM301-3, CHEM330-3, CHEM331-3, CHEM332-3, CHEM333-3, CHEM334-3, CHEM337-2, CHEM338-2, CHEM340-2, CHEM341-3, PES306-3, PES313-3, PES321-3, PES341-3, PES365-3, PES367-3, CS301-3, CS306-3, CS316-3, CS330-3, MAE3130-3, MAE3135-3, MAE3201-3, MAE3310-3, MAE3401-3, MAE3560-3, MATH311-3, MATH313-3, MATH341-3, MATH350-3, MATH351-3. Other courses in BIOL, CHEM, CS, MAE, MATH and PES numbered 400/4000+ may be accepted with a petition completed prior to taking the course.

Sample Schedule

Freshman Year

Fall Semester (16 semester hours)
MATH 135. Calculus I.....4

ENGL 131. Rhetoric and Writing I 3

PES 111. General Physics I.....4

ECE 1001. Introduction to Robotics.....3

ECE 1411. Logic Circuits I 2

Spring Semester (16 semester hours)
MATH 136. Calculus II 4

PES 112. General Physics II.....4

ECE 1021. Computer-Based

Modeling & Methods of Engineering.....3

ECE 2411 Logic Circuits II 2

Social Sciences/Humanities Elective.....3

Sophomore Year

Fall Semester (15 semester hours)
MATH 235. Calculus III 4

Science Elective with Laboratory 5

ECE 2210. Circuit Analysis I.....3

Social Sciences/Humanities Elective.....3

Spring Semester (16 semester hours)
MATH 340. Introduction to Differential Equations 3

PES 213. General Physics III.....3

ECE 2050. Introduction to Physical Electronics.....3

ECE 2220. Circuit Analysis II.....3

ECE 2230. Circuits Laboratory 1

ENGL 309. Technical Writing & Presentation 3

Junior Year

Fall Semester (15 semester hours)
ECE 3110. Electromagnetic fields I.....3

ECE 3210. Electronics I.....3

ECE 3230. Electronics Laboratory I 1

ECE 3420. Microprocessor Systems Laboratory.....1

ECE 3430. Intro to Microcomputer Systems3

ECE 3510. Linear Systems Theory 3

ECE 3520 MATLAB Systems Analysis Laboratory.....1

Spring Semester (17 semester hours)
ECE 3020. Semiconductor Devices I.....3

ECE 3220. Electronics II.....3

ECE 3240. Electronics Laboratory II 1

ECE 3610. Engineering Probability & Statistics 3

Social Sciences/Humanities Elective.....3

Technical Electives 4

Senior Year

Fall Semester (17 semester hours)
Mathematics Elective 3

Technical Electives 10

ECE 4890. Senior Seminar 1

Social Sciences/Humanities Elective.....3

Spring Semester (16 semester hours)
ECE 4899. Design Project.....3

Social Sciences/Humanities Elective.....3

Technical Electives 10

Total Hours 128

Minor in Electrical Engineering

The minor in Electrical Engineering requires at least 22 credit hours of course work and every course in the minor must be completed with a grade of C or better. The student will be responsible for any prerequisites to required courses. At most, 9 credit hours of transfer work may be applied to the minor. Minor courses with associated areas are as follows:

Required Core Courses (10 hours)

ECE 1001. Introduction to Robotics

ECE 1021. Computer Based Modeling & Methods in Engineering

ECE 2210. Circuit Analysis I

ECE 2230. Circuits Laboratory

Choose one of the following areas:

Computers (12 hours)
ECE 1411. Logic Circuits I

ECE 2411. Logic Circuits II

ECE 3420. Microprocessor Systems Laboratory

ECE 3430. Introduction to Microcomputer Systems

ECE 3440. Microcomputer Systems Laboratory

ECE 4480. Computer Architecture and Design

Elecronics (14 hours)
ECE 2050. Introduction to Physical Electronics

ECE 2220. Circuit Analysis II

ECE 3210. Electronics I

ECE 3220. Electronics II

ECE 3230. Electronics Laboratory I

ECE 3240. Electronics Laboratory II

Electromagnetics (12 hours)
ECE 2220. Circuit Analysis II

ECE 3110. Electromagnetic Fields I

ECE 3120. Electromagnetic Fields II

ECE 4110. Electromagnetic Theory and Applications

Systems (13 hours)
ECE 2220. Circuit Analysis II

ECE 3510. Linear Systems Theory

ECE 3520. MATLAB Systems Analysis

ECE 3610. Engineering Probability & Statistics

And one of the following:

ECE 4510. Feedback Control Systems

ECE 4610. Analysis of Random Signals

ECE 4625. Communication Systems I

Bachelor of Science – Computer Engineering

Degree Requirements

The requirements for the Bachelor of Science Degree in Computer Engineering require completion of at least 128 hours, participation in the Exit Interview, a minimum 2.0 average in all ECE, CS and CU courses taken and a minimum 2.0 in CS 115, CS 145, ECE 1411, ECE 2210 and ECE 2411. The courses for the degree are as follows:

Mathematics (18 semester hours)

MATH 135, 136, 235.

Calculus I, II, III 12

MATH 340. Intro to Differential Equations 3

MATH 215. Discrete Mathematics 3

Basic Science (14 semester hours)

PES 111. General Physics I.....4

PES 112. General Physics II.....4

Science 6

Select 6 hours from the following list; a lab must be included: CHEM103-5, CHEM106-5, BIOL110-3, BIOL111-1, BIOL115-3, BIOL116-1, GEOL101-4, GEOL102-4 or any other PES course that has a prerequisite of PES111.

Computer Background (6 semester hours)

ECE 1001. Introduction to Robotics.....3

ECE 1021. Computer-Based Modeling & Methods of Engineering 3

Social Sciences and Humanities (15 semester hours)

(See Social Sciences/Humanities Requirements below) 15

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. E.E. students at UCCS are required to take at least 15 credits of social sciences and humanities so they are more aware of their social responsibilities and better able to consider related factors in the decision making process. To ensure this, a minimum of nine hours in social sciences and six hours in humanities, or vice versa, must be taken; at least six of these hours must be beyond the introductory level (200 level or higher courses). Breakouts by area are as follows:

Social Science Departments:
Anthropology, Communications, Economics, Geography and Environmental Studies, Gerontology, Political Science, Psychology Sociology, and Women's Studies

Humanities Departments:
Art History, Ethnic Studies, English (150 or higher classes), History, Humanities, Music (except choir or lessons), and Philosophy

Communication Skills (6 semester hours)

ENGL 131. Rhetoric and Writing I or

ENGL 141.Rhetoric and Writing II.....3

ENGL 309. Technical Writing 3

Computer Engineering Core (Lower Division) (15 semester hours)

ECE 1411. Logic Circuits I 2

ECE 2210. Circuit Analysis I.....3

ECE 2411. Logic Circuits II 2

CS 115. Principles of

Computer Science 3

CS 145. Data Structures &

Algorithms 3

CS 202. Programming in UNIX.....2

Computer Engineering Core (Upper Division) (36 semester hours)

ECE 3210. Electronics I.....3

ECE 3420. Microcomputer Systems Laboratory.....1

ECE 3430. Intro to Microcomputer Systems 3

ECE 3440. Microcomputer Systems Laboratory.....1

ECE 3610. Engineering Probability & Statistics 3

ECE 4242. Advanced Digital Design Methodology 3

ECE 4330. Embedded Systems

Design 3

ECE 4480. Computer Architecture and Design or

CS 420. Computer Architecture I.....3

CS 306. Object-Oriented Programming Using C++ 3

CS 330. Software Engineering.....3

CS 450. Operating Systems I 3

CS 472. Design and Analysis of Algorithms 3

ECE 4890. Senior Seminar 1

ECE 4899. Design Project.....3

Technical Electives (15 semester hours)

Select at least 15 hours from the following:

(Students must meet course prerequisites)

ECE 2050. Introduction to Physical Electronics

ECE 2220. Circuit Analysis II

ECE 2230. Circuits Laboratory

ECE 3020. Semiconductor Devices I

ECE 3110. Electromagnetic Fields I

ECE 3120. Electromagnetic Fields II

ECE 3220. Electronics II

ECE 3230. Electronics Laboratory I

ECE 3240. Electronics Laboratory II

ECE 3510. Linear System Theory

ECE 3520. MATLAB Systems Analysis Laboratory

ECE 4200. Advanced Digital Design Laboratory

ECE 4211. Rapid Prototyping with FPGAs

ECE 4220. Analog IC Design

ECE 4320. Fault Detection & Design for Testability

ECE 4362. Synthesis with Verilog HDL

CS 301. Web Programming

CS 316. Concepts of Programming Languages

CS 410. Compiler Design I

CS 442. Data Base Systems I

CS 460. Numerical Computing

CS 470. Computability, Automata and Formal Languages

CS 480. Computer Graphics

CS 482. Artificial Intelligence I

MATH 313. Introduction to Linear Algebra

Other courses in CS, ECE, MAE, MATH and PES numbered 300+ (except MATH301 and 302) may be accepted with a petition completed prior to taking the course.

Free Electives 3

Sample Schedule

Freshman Year

Fall Semester (16 semester hours)
MATH 135. Calculus I 4

ENGL 131. Rhetoric and Writing I 3

ECE 1001. Introduction to Robotics.....3

CS 115. Principles of Computer Science 3

Social Sciences/Humanities Elective.....3

Spring Semester (17 semester hours)
MATH 136. Calculus II 4

PES 111 General Physics I.....4

ECE 1021. Computer-Based Modeling & Methods of Engineering.....3

CS 145. Data Structures & Algorithms.....3

Science Elective.....3

Sophomore Year

Fall Semester (15 semester hours)
MATH 235. Calculus III 4

PES 112 General Physics II.....4

ECE 2210. Circuit Analysis I.....3

ECE 1411. Logic Circuits I 2

CS 202. Programming in UNIX..... 2

Spring Semester (17 semester hours)
MATH 215. Discrete Mathematics 3

ECE 2411. Logic Circuits II 2

CS 330. Software Engineering.....3

ENGL 309. Technical Writing 3

Science Elective.....3

Social Sciences/Humanities Elective 3

Junior Year

Fall Semester (16 semester hours)
ECE 3210. Electronics I.....3

ECE 3420. Microprocessor Systems Laboratory.....1

ECE 3430. Intro to Microcomputer Systems 3

ECE 4242 Advanced Digital Design Methodology 3

CS 306. Object-Oriented Programming Using C++ 3

Social Sciences/Humanities Elective 3

Spring Semester (16 semester hours)
MATH 340. Intro to Differential Equations .3

ECE 3440. Microcomputer Systems Laboratory.....1

ECE 3610. Engineering Probability & Statistics 3

ECE 4480. Computer Architecture and Design
or

CS 420. Computer Architecture I.....3

CS 472. Design & Analysis of Algorithms ..3

Technical Elective.....3

Senior Year

Fall Semester (16 semester hours)

ECE 4330. Embedded Systems Design.....3

ECE 4890. Senior Seminar 1

CS 450. Operating Systems I.....3

Technical Electives 6

Social Sciences/Humanities Elective 3

Spring Semester (15 semester hours)
ECE 4899. Design Project.....3

Technical Electives 6

Social Sciences/Humanities Electives 3

Free Elective 3

Total Hours 128

Minor in Computer Engineering

The minor in Computer Engineering requires at least 25 credit hours of course work. A 2.0 minimum is required on all coursework. The student will be responsible for any prerequisites to required courses. Minor courses are as follows:

ECE 1001. Introduction to Robotics

ECE 1021. Computer Based Modeling and Methods in Engineering

ECE 1411. Logic Circuits I

ECE 2411. Logic Circuits II

ECE 3420. Microprocessor Systems Laboratory

ECE 3430. Introduction to Microcomputer Systems

CS 115. Principles of Computer Science

CS 145. Data Structures & Algorithms

CS 202. Programming in UNIX

CS 330. Software Engineering

Master of Science – Electrical Engineering

The Department of Electrical and Computer Engineering offers coursework and thesis supervision leading to the degree Master of Science in Electrical Engineering (M.S.E.E.). Courses at the graduate level are ordinarily taught at 8:00 a.m. or after 4:30 p.m. to enable students from local industry to continue their studies.

Admission Requirements

Guaranteed early admission

A student who is in his or her final semester studying toward either a B.S.E.E. or B.S.Cp.E. at the UCCS is guaranteed admission to the M.S.E.E. program if he or she satisfies the following criteria:

1. The student must have completed a minimum of 45 semester hours at UCCS at the time of graduation with the B.S. degree.
2. The student must be registered in his or her final undergraduate semester (in either the B.S.E.E. or B.S.Cp.E. programs) at the time of application to the M.S.E.E. program.
3. The student must have a minimum undergraduate GPA of 3.25.
4. The student must submit a letter of recommendation from the current department chairperson.

Early admission is not available to students who are not residents of the United States of America.

Fast-track admission

The fast-track admission process is designed to offer a more efficient admission process to former undergraduate students who have graduated from UCCS no more than four years prior to the time of application to a graduate program. A student applying under the fast-track admission rules must submit the following to the Department:

1. The Fast-Track Admission application form, accurately and completely filled out.
2. A completed residency form (back of application form), if the student claims instate-tuition eligibility.
3. A check or money order (for the appropriate amount) non-refundable application fee.
4. Official transcripts for any university level studies attempted after graduation from UCCS.
5. A statement giving permission to the ECE graduate program office to obtain an internal transcript from SIS for the applicant. These forms are available from the ECE office, and must be signed by the student.
6. A letter of recommendation (which may consist of a signed letter from the chairperson of the student's former undergraduate department). Any student with a record that will only allow provisional admission must provide a minimum of two letters of recommendation, using the forms available from the ECE office.
7. Fast-track admission only available to graduates of the College of EAS.

Regular Admission

Regular admission to the M.S.E.E. program requires a 3.0 undergraduate grade-point-average (G.P.A.). The Graduate Record Examinations (G.R.E.) may be required of any student whose G.P.A. falls below this average or is not a graduate of an ABET accredited undergraduate program in electrical engineering. The verbal reasoning and quantitative reasoning portions of the G.R.E. are required of all foreign applicants. Graduates of foreign universities are required to take the TOEFL exam: A score of 550 - 600 on the paper-based exam or 213 - 250 on the computer-based exam is required.

If the student has an unacceptable undergraduate G.P.A., but has achieved a graduate G.P.A. of 3.25 or better on a minimum of 15 semester hours of relevant graduate work (e.g., taken as an unclassified student, or at another university), then the student may be accepted into the program. Note that units completed before admission may not all be transferable into a graduate degree program.

Students not admitted on a regular basis may be admitted on a provisional basis depending on their overall application file, including G.P.A., G.R.E., letters of recommendation, etc. Students admitted on a provisional basis are often required to take remedial courses (these are specified in the letter of acceptance). Registration for such remedial courses must commence with the first semester of a student's program with at least three credits completed per semester until all remedial requirements are satisfied.

Applications are reviewed on a continual basis, but need to be received by April 1 (fall admission) or October 1 (spring admission) for students who are applying for assistantships. It is recommended that international students apply at least 3 months prior to the start of the semester to allow time to request a visa.

For more information about these programs, contact the Department of Electrical and Computer Engineering, Graduate Program, Engineering Bldg. Room 299, or call (719) 262-3351. Send email to ecedept@eas.uccs.edu or see our webpage at eceweb.uccs.edu.

Duration of Program

The completion of the M.S.E.E. degree is normally accomplished in one to three years, and should be accomplished in six years, commencing with the beginning of course work.

A student who is not continuously enrolled (missing three consecutive semesters) becomes inactive and is subject to the rules governing Readmission of Former Students in the graduate school procedures.

Degree Requirements

Thesis option: 30 semester hours total.

24 semester hours of course work.

At least 18 semester hours must be ECE courses. The remaining 6 semester hours may be replaced by allied department courses (e.g., computer science, mathematics, physics, mechanical and aerospace engineering, etc.).

At most 6 semester hours may be independent study courses.

6 hours of thesis credit.

All course work must be numbered 5000 and above if ECE, or 400(0) and above if non-ECE. Up to nine semester hours of accepted course work may be transferred from another university or from course work taken as an unclassified student.

Non-Thesis option: 30 semester hours total

All 30 semester hours are course work.

At least 24 semester hours must be ECE courses. The remaining 6 semester hours may be replaced by allied department courses (e.g., computer science, mathematics, physics, mechanical and aerospace engineering, etc.).

At most 6 semester hours may be independent study courses.

All course work must be numbered 5000 and above if ECE, or 400(0) and above if non-ECE. Up to nine semester hours of accepted course work may be transferred from another university or from course work taken as an unclassified student.

The student must :

1. Choose an Advisory Committee with the same composition as a Thesis Committee.
2. Choose a subject for his/her Masters Report. This subject must be approved by his/her academic advisor.
3. Make an oral presentation and submit a written report to the advisory committee. Both must be approved by the advisory committee.

There are no additional requirements as to which specific courses a student must take. The student's selection of courses need only meet the above requirements and be approved by the student's academic advisor and the departmental graduate studies committee.

Grades

The student must have an overall graduate G.P.A. of 3.0 in order to graduate. The student must have a grade of C or better in all courses applied toward the M.S.E.E. degree.

Program Options

Defined Master's

The defined M.S.E.E. provides options leading toward a M.S.E.E. in two years by taking two courses per semester. This program has been designed for graduate students who work full-time. Most courses listed in the defined master's are offered in the evening and will generally be scheduled after 4:30 p.m. There are three different emphasis areas available: Circuit Design, Communications and Signal Processing, and Controls and Signal Processing. The courses shown in the following list will be offered at least once every two years. The actual schedules for each option are available on our web site at http://eceweb.uccs.edu

Circuit Design

ECE 5242. Advanced Digital Design Methodology

ECE 5340. VLSI Circuit Design I

ECE 5270. CMOS RF Integrated Circuit Design

ECE 5220. Analog IC Design

ECE 5450. Advanced Computer Architecture

ECE 5362. Synthesis with Verilog HDL

ECE 5160. Electromagnetic Effects in IC Design Graduate Elective

ECE 7000. Master's Thesis Research

Communications and Signal Processing

ECE 5610. Analysis of Random Signals

ECE 5625. Communication Systems I

ECE 6650. Estimation Theory and Adaptive Filtering

ECE 5630. Communications Systems II

- or

ECE 5655. Real-Time Digital Signal Processing

ECE 5650. Modern Digital Signal Processing

ECE 5655. Real-Time Digital Signal Processing

- or

ECE 5635. Wireless Communication Systems

ECE 5620. Detection and Extraction of Signals from Noise

Graduate Elective

ECE 7000. Master's Thesis Research

Controls and Signal Processing

ECE 5520. Multivariable Control Systems I

ECE 5530. Multivariable Control Systems II

ECE 5540. Digital Control Systems

ECE 5610. Analysis of Random Signals

ECE 6650. Estimation Theory and Adaptive Filtering

ECE 5650. Modern Digital Signal Processing

ECE 5620. Detection and Extraction of Signals from Noise

ECE 5655. Real-Time Digital Signal Processing

ECE 7000. Master's Thesis Research

The M.S.E.E. rules allow a student in the above programs to substitute any given course with other courses and/or choose the non-thesis option.

Ph.D. Program in Electrical Engineering

The Department of Electrical and Computer Engineering supports a Ph.D. program in Electrical Engineering as part of the Ph.D. in Engineering degree. Students who are interested in research areas in electrical engineering, and would like to pursue the Ph.D. in Engineering degree should contact the ECE Department at 719-262-3351.

Regular admission to the Ph.D. program requires a 3.3 grade-point-average (G.P.A.) on all previous college work, including both graduate and undergraduate. The Graduate Record Examinations (G.R.E.) may be required if the applicant falls below this G.P.A. or is not a graduate of an ABET accredited undergraduate program in electrical engineering. The verbal reasoning and quantitative reasoning portions of the G.R.E. are required of all foreign applicants.

Graduates of foreign universities are required to take the TOEFL exam: A score of 550-600 on the paper-based exam, or of 213-250 on the computer-based exam is required. Students not admitted on a regular basis may be admitted on a provisional basis depending on their over-all application file, including G.P.A., G.R.E., letters of recommendation, etc. Students admitted on a provisional basis are often required to take remedial courses (these are specified in the letter of acceptance). Registration for such remedial courses must commence with the first semester of a student's program with at least three credits completed per semester until all remedial requirements are satisfied.

Degree Requirements

The Ph.D. degree is awarded to students who have satisfied the requirements of duration of program, who have submitted an acceptable dissertation, and who have passed all prescribed examinations.

For a student entering with a master's degree:

Complete 24 semester hours of course work.

At least 15 semester hours must be ECE courses.

At most 9 semester hours may be independent study courses.

All 24 semester hours must be numbered 5000 and above if ECE, or 500 and above if non-ECE.

For a student entering without a master's degree:

Must complete 60 semester hours of course work.

At least 30 semester hours must be ECE courses.

At most 15 semester hours may be independent study courses

All 60 semester hours must be numbered 5000 and above if ECE, or 500 and above if non-ECE.

In either case:

Cross-listed courses which are offered at the 500(0)/600(0) levels must be taken at the 600(0) level.

Complete 30 semester hours of dissertation research in addition to course work.

Have an overall graduate G.P.A. of 3.0 in order to graduate.

Have a grade of B- or better in all courses applied toward the Ph.D. degree.

Pass the Preliminary Examination, the Comprehensive Examination, and the final Defense of Dissertation.

No foreign language is required.

ECE Department Faculty and their Research Areas

Dr. Joshua Alspector - Electronics, Neural Networks

Dr. Carlos A. Paz de Araujo - Microelectronics

Dr. Michael D. Ciletti - Computer-Aided Design, Computer Engineering

Dr. Ramaswami Dandapani - Computer-Aided Design, Computer Engineering

Dr. T.S. Kalkur - Microelectronics, VLSI Circuit Design

Dr. Richard Y.C. Kwor - Microelectronics

Dr. Gerald M. Oleszek - Microelectronics

Dr. John D. Norgard - Electromagnetics

Dr. Gregory L. Plett - Adaptive Signal Processing and Control

Dr. Ronald M. Sega - Electromagnetics (on leave)

Dr. Chia-Jiu (Charlie) Wang - Computer Engineering

Dr. Mark A. Wickert - Communications, Signal Processing

Dr. Rodger E. Ziemer - Communications, Signal Processing

To apply, prospective students should contact the ECE Department.

Applications are reviewed on a continual basis, but need to be received by April 1 (fall admission) or October 1 (spring admission) for students who are applying for assistantships. It is recommended that international students apply at least 3 months prior to the start of the semester to allow time to request a visa. Limited fellowships and assistantships are available.

Department of Mechanical and Aerospace Engineering

University Hall, Suite 309

(719) 262-3243 Fax: (719) 262-3042

http://mae.uccs.edu/_
E-mail: mae@uccs.edu

Faculty

Associate Professors: Gorder (Chair), Saunders and Stevens; Assistant Professors: Roney and Tragesser; Senior Instructor: Rappold.

Programs coordinated by the department:

Minor in Aerospace Engineering

Bachelor of Science in Mechanical Engineering

Master of Science in Mechanical Engineering

Master of Engineering in Engineering Management

Master of Engineering in Space Operations (distance only)

Doctor of Philosophy in Engineering

Mechanical Engineering is a core discipline, encompassing mechanics, materials science, thermal science, dynamics and controls, design, and manufacturing. Career opportunities are open to mechanical engineers in industry, government, and universities, as well as in other professions including business, law, and medicine. Mechanical engineers are employed in a wide range of industries including aerospace, automotive, chemical, computing,

electronics, industrial machinery, manufacturing, mining, oceanography, petroleum, pharmaceuticals, power, printing, publishing, and textiles. Mechanical engineers usually engage in research, development, design, testing, manufacturing, operations and maintenance, marketing and sales, and administration.

The undergraduate curriculum incorporates mathematics, physics and chemistry, humanities/social sciences, business, engineering science, electrical theory, measurement science, mechanical engineering core courses (computer-aided drafting, dynamics and controls, solid and fluid mechanics, thermodynamics, materials science, and heat and mass transfer) and selected technical elective courses. Many of the technical elective courses are interdisciplinary in nature and are taught in other departments and colleges to provide a balanced education on the fundamentals of the profession. These electives are designed to meet the needs of the industrial, commercial, governmental, and military communities and to serve students' professional objectives.

Undergraduate students can participate in internship and cooperative educational programs with a variety of high-tech companies along the front-range, which may include Agilent Technologies, B.F. Goodrich, Boeing, Lockheed-Martin, Hewlett-Packard, Quantum, Sturman Industries, SuperFlow Corporation, Transportation Technology Center/ AAR, and TRANE. Further, currently enrolled undergraduate students with exceptional academic records may obtain guaranteed early enrollment in mechanical and aerospace engineering graduate programs. Undergraduate students also have many opportunities to become involved in discipline-related activities outside the classroom. The MAE Department has active chapters in the American Society of Mechanical Engineers (ASME) and the American Institute of Aeronautics and Astronautics (AIAA), and the Society of Automotive Engineers (SAE).

Bachelor of Science — Mechanical Engineering

Degree Requirements

The Department of Mechanical and Aerospace Engineering has established the following set of program educational objectives for the Bachelor of Science in Mechanical Engineering.

a. To prepare students for successful careers and lifelong learning.

b. To provide students with a strong foundation in engineering science (including the appropriate background in pure sciences and mathematics), along with the ability to apply this knowledge to solve engineering problems.

c. To ensure that students are proficient in modern computational methods and in the use of current computational tools for engineering applications.

d. To educate students in the methods, standards, and conventions that are followed in the practice of engineering.

e. To equip students with the skills and knowledge required to formulate and solve large scale design problems; in addition to giving them a thorough understanding of the design process, this includes developing their creativity, general knowledge, engineering intuition, problem formulation skills, project management skills, leadership skills, communication/presentation skills, and teamwork skills.

f. To train students in the theory and practice of experimental methods in engineering.

g. To inculcate in the students a broad understanding of their social and cultural environment, particularly in the context of their professional responsibilities and ethics.

These objectives are regularly reviewed by the constituents of the department's programs, including industrial representatives, students in the program, and the faculty of the department. These objectives are used to focus the undergraduate degree program and assure the best possible education to our students.

The requirements for the Bachelor of Science degree in Mechanical Engineering requires completion of at least 129 hours, complete an Exit Survey and Interview, a minimum 2.0 average in all CU courses taken and the courses outlined as follows:

Communication Skills (6 semester hours)

ENGL 131 Rhetoric & Writing I 3

ENGL 309 Technical Writing and Presentation 3

Humanities and Social Sciences (9 semester hours)

(Choose three courses, one must be 200-level or greater)

Courses must be socially and culturally broadening. Acceptable subject matter:

Literature, Language, History, Economics, Music, Psychology, Sociology, Political Science, Visual or Performing Arts, Ethnic Studies, Communications, Film Studies, Fine Art History, Music Appreciation, Philosophy, Women's Studies, Professional Writing, or Anthropology

Basic Science (13 semester hours)

CHEM 103 General Chemistry.....5

PES 111 General Physics I.....4

PES 112 General Physics II.....4

Business (9 semester hours)

(Complete three courses from the following list)

ACCT 201 Intro to Financial Accounting.....3

BUAD 100 Survey of Contemp Bus Issues and Concerns 3

ORMG 330 Intro to Management and Organization 3

MKTG 300 Principles of Marketing.....3

ENGR 342 Engineering Economy 3

Mathematics (21 semester hours)

MATH 135, 136, 235 Calculus I, II, III.....12

MATH 313 Linear Algebra 3

MATH 340 Intro to Differential Equations ..3

MATH 381 or ECE 3610 Statistics.....3

Basic Engineering and Computer Background (9 semester hours)

CS 107 Introduction to Programming in Visual Basic

or

CS 115 Principles of Computer Science....3

ECE 2210 Circuit Analysis I.....3

ECE 3210 Electronics I.....3

Mechanical Engineering Core Courses (50 semester hours)

MAE 1501Introduction to Engineering Design.....2

MAE 1502 Principals of Engineering 3

MAE 2101 Statics 3

MAE 2102 Dynamics 3

MAE 2301 Engineering Thermodynamics...3

CHEM 301 Materials Science (CHEM 106 prereq. waived) 3

MAE 3005 Engineering Measurement Lab.3

MAE 3010 Mechanical Engineering Lab 2

MAE 3130 Fluid Mechanics.....3

MAE 3201 Strength of Materials 3

MAE 3302 Thermodynamics II.....3

MAE 3310 Heat and Mass Transfer.....3

MAE 3401 Modeling and Simulation of Dynamic Systems.....3

MAE 3501 Machine Design.....3

MAE 4120 Kinematics.....3

MAE 4402 Intermediate Dynamics 3

MAE 4420 Feedback Control.....3

MAE 4510 Engineering Design I 1

(Choose one of the two below)

MAE 4511 Engineering Device Design

or

MAE 4512 Engineering Systems Design....3

Technical Electives (12 semester hours)

At least 12 hours of technical courses, all 4 must be 300/3000 or above classes, with at least 2 being 400/4000 and above classes. Select from the following Departments: Computer Science, Electrical Engineering, Mathematics, Mechanical and Aerospace Engineering or Physics. Additional basic science classes may be allowed with a petition and if it is a prerequisite for an upper level Technical Elective classes, i.e. PES 213 to take upper level Physics classes.

Sample Schedule

Freshman Year

Fall Semester (16 semester hours)

MATH 135 Calculus I.....4

ENGL 131 English Composition I.....3

PES 111 General Physics I.....4

MAE 1501 Introduction to Engineering Design.....2

CS 107 Introduction to Programming in Visual Basic.....3

Spring Semester (17 semester hours)

MATH 136. Calculus II. 4

PES 112. General Physics II.....4

MAE 1502 Prinicipals of Engineering 3

Social Sciences/Humanities Electives 6

Sophomore Year

Fall Semester (18 semester hours)

MAE 2101 Statics 3

MATH 313 Introduction to Linear Algebra ..3

MATH 235 Calculus III 4

ENGL 309 Tech Writing & Presentation 3

CHEM 103 General Chemistry I 5

Spring Semester (15 semester hours)

MAE 2102 Dynamics 3

MATH 340 Intro to Diff. Eqns. 3

CHEM 301 Materials Science.....3

ECE 2210 Circuit Analysis I 3

MAE 2301 Engineering Thermodynamics...3

Junior Year

Fall Semester (15 semester hours)

MAE 3302 Thermodynamics II.....3

ECE 3210 Electronics I.....3

ECE 3610 or MATH 381. Engineering Probability and Statistics 3

MAE 3401 Modeling and Simulation.....3

MAE 3201 Strength of Materials 3

Spring Semester (15 semester hours)

MAE 3130 Fluid Mechanics.....3

MAE 3310 Heat and Mass Transfer.....3

MAE 3005 Engineering Measurement Lab 3

MAE 3501 Machine Design.....3

Technical Elective.....3

Senior Year

Fall Semester (18 semester hours)

MAE 3010 Mechanical Engineering Lab 2

MAE 4402 Intermediate Dynamics 3

MAE 4510 Engineering Design I 1

MAE 4120 Kinematics.....3

MAE 4420 Feedback Control.....3

SS/Humanities Elective.....3

Business Elective.....3

Technical Area Elective 3

Spring Semester (15 semester hours)

SS/Humanities Elective.....3

Business Elective.....3

2 Technical Area Electives.....6

MAE 4511 Engineering Device Design II or

MAE 4512 Engineering System Design II...3

Total Hours 129

Minor in Aerospace Engineering

The minor in Aerospace Engineering requires at least 22 credit hours of course work and a grade of C or better is required on each course. The student will be responsible for any prerequisites to required courses. Only 6 hours of transfer work may be applied to the minor. Minor courses are as follows:

MAE 3110 Fundamentals of Flight

MAE 3135 Aerodynamics or MAE 4410 Astrodynamics

MAE 3401 Modeling and Simulation of Dynamic Systems

MAE 4420 Feedback Control of Aerospace & Mechanical Systems

MAE 4415 Flight Dynamics

One class from the following list:

MAE 3120 Aerospace Structures

MAE 4316 Rocket Propulsion

MAE 4318 Airbreathing Propulsion

MAE 4455 Flight Mechanics

MAE 4510 Engineering Design I with focus on Aerospace Vehicle

MAE 4512 Engineering Design II with focus on Aerospace Vehicle

Master of Science – Mechanical Engineering

The Department of Mechanical and Aerospace Engineering offers a program leading to the Master of Science in Mechanical Engineering (M.S.M.E.). This research-oriented academic degree is appropriate either as a terminal degree or in preparation for doctoral studies in mechanical and aerospace engineering. Courses at the graduate level are offered in the late afternoon or evening to enable students from local industry to complete their studies. The graduate curriculum includes:

- Aerospace Engineering
- Automation, Controls and Robotics
- Dynamic Systems and Control
- Manufacturing
- Remote Sensing
- Space Systems
- Thermal Systems
- Fluid Mechanics

Interdisciplinary research programs are available to graduate students. Graduate students can participate in ongoing research programs through independent study projects or as research assistants on sponsored research projects.

The M.S.M.E. program consists of coursework and research in advanced mechanical engineering, allowing emphasis in one more of the following areas listed above.

Master of Engineering

The Master of Engineering degree is a practice-based graduate degree. The Master of Engineering program currently offers specialty options in Engineering Management and Space Operations (distance only). In each option, a series of required courses are specified leading to a capstone course. The program provides an opportunity to combine electives from a variety of fields including business, electrical engineering, computer science, mathematics, and aerospace engineering.

Graduate Admission Requirements

The minimum requirements for regular admission into the M.S.M.E. or Master of Engineering programs are:

1. Baccalaureate degree (B.S.) in engineering, applied mathematics, or physics from an accredited institution. Currently enrolled undergraduate engineering students with exceptional academic records may qualify for guaranteed early admission to the M.S.M.E. graduate program - please contact the MAE department for more information. Students wishing to pursue a Master or Engineering in Engineering Management should have a baccalaureate degree consistent with the desired specialization area.
2. An undergraduate grade point average of 3.0 or higher on a scale of 4.0 in all college level academic work attempted.
3. Evidence of mathematical maturity equivalent to the completion of the following university-level coursework:

   Three semesters of calculus

   - At least one semester beyond calculus (advanced calculus or ordinary differential equations)
   - Linear algebra
   - Probability and statistics
   - Knowledge beyond the introductory level in mechanical engineering, either through prior undergraduate coursework and/or professional experience.
4. Official transcripts from all academic institutions attended, including UCCS itself if applicable.
5. Three letters of recommendation, mailed to the MAE Department Office.

Applicants who do not meet these requirements for regular admission may be admitted on a provisional basis subject to the recommendations of the MAE graduate committee.

For more information about these programs, contact the Department of Mechanical and Aerospace Engineering, Graduate Programs, University Hall, Room 309, or call (719) 262-3243. Send email to mae@uccs.edu or see our webpage at mae.uccs.edu.

Application Forms

Application materials can be obtained from the Department of Mechanical and Aerospace Engineering (MAE) at the address below or by accessing the website http://mae.uccs.edu. Students are encouraged to submit program application materials promptly.

Also required are:

a. Two copies of official transcripts, and

b. Three references (with at least one from a former instructor)

Transfer Credits

Course credit between the CU-Boulder, CU-Denver, and UCCS courses in mechanical or aerospace engineering will be fully transferable. A table of University of Colorado System course equivalencies is contained in the CU-Boulder Bulletin.

Up to nine hours of graduate work may be approved for transfer from other established graduate programs, subject to the following conditions:

- The course has not been used for any other degree.
- The grade earned for each course is B (3.0) or better.
- The course is equivalent in level and content to the course for which it is being substituted.

Master of Science — Mechanical Engineering

Degree Requirements

The curriculum for the degree will total thirty semester hours of graduate study, with a minimum of six hours of coursework in graduate-level pure or applied mathematics. Each M.S.M.E. student will select either the thesis option (Plan I) or the non-thesis option (Plan II), subject to their advisor's approval. Both options require a minimum of thirty hours of study to complete the master's program.

During the first semester of enrollment, each student will prepare a Plan of Study and choose either Plan I (thesis option) or Plan II (non-thesis option). The choice of Plan I or Plan II will determine the nature of each student's program requirements. The Plan of Study, which must be approved by the student's graduate advisor and the MAE Graduate Affairs Committee, will specify the student's selected area of interest and list courses related to that area. Any subsequent changes to the Plan of Study must also be approved by the student's advisor and the MAE Graduate Affairs Committee.

The student and advisor will select an advisory committee, which will provide assistance in formulating and executing the student's graduate program. The committee shall consist of at least three full-time faculty members selected from the College of Engineering and Applied Science at UCCS; the advisor must be a tenured or tenure-track faculty member of the Department of Mechanical and Aerospace Engineering. Eligibility to serve on the graduate committee shall be determined by the policies and procedures of the Graduate School.

Plan I (Thesis Option)

At least twenty-four hours of graduate coursework and up to six hours of thesis/research credit is necessary to satisfy the thirty credit hour requirement. The thesis/research credit will be provided for research and preparation of the student's thesis, and defense of the thesis is required for completion of the program. The thesis committee will review drafts of the M.S.M.E. thesis and conduct the comprehensive examination upon completion of the thesis. The thesis defense will be based on the thesis and related materials and will be open to the public. Any student who does not pass the thesis defense may attempt the examination a second time. The second failure of the defense will result in dismissal from the M.S.M.E. program.

Plan II (Non-Thesis Option)

A student choosing the non-thesis option (Plan II) will be required to complete at least thirty hours of graduate coursework and pass a comprehensive examination to complete the program. The comprehensive examination, to be conducted by the advisory committee, must be taken after all other requirements have been satisfied or in the last semester of study. Any student who does not pass the comprehensive examination may attempt the examination a second time. The second failure of the examination will result in dismissal from the M.S.M.E. program.

Please see the course descriptions for a complete list of graduate courses in mechanical and aerospace engineering.

Master of Engineering Degree

Requirements

The curriculum for the degree will total thirty semester hours of graduate course work and a creative investigation. A graduate advisor should be selected in the first semester of the program. The course work options are predefined, consisting both of required "core" courses and additional electives to be selected from the list approved for that specialization. Any deviations from the predefined curricula (including transfer credit) must be approved by a graduate faculty advisor in the MAE Department. Course work must be completed with a 3.0 G.P.A. or better, and all course work applied to the program (including any transfer credit) must have been completed no earlier than 6 years prior to degree completion.

Engineering Management

The primary objective of this degree program is to integrate knowledge and skills from engineering and business disciplines to allow students to develop effective responses to rapidly changing technological and business environments. The program recognizes that many engineers evolve into management/supervisory roles and require a blend of technical advanced engineering and business/management education to succeed in today's technical marketplace.

The program prepares engineers for effective participation in management of technology, management of technology-based organizations, and management of technological change. This focus is achieved through a careful balance of graduate course work in business, management, and a technical area of the student's work/academic interests.

The degree program consists of 30 semester hours divided between core courses (15 hours) and a specialization area (15 hours). The required core courses provide the basics of effective business/management education necessary for engineers migrating into management or supervisory roles and the conceptual underpinning of the systems engineering process. The specialization areas offer a student the opportunities for graduate course work in a technical area of his/her choosing. Degree requirements also include a written, creative research report that reflects course material from both required courses and a specialization area.

Program Prerequisites

1. An accredited BS degree in an engineering or science discipline or:
2. Experience in a commercial, civil, or government engineering/science career field.

Program Requirements

Core Courses (15 required hours)

Student must take the following three courses:

BCOM 550. Professional Business Communication

LHRM 600. Leading & Managing in Changing Times

MAE 5093. Systems Engineering

Student must select any two courses from the following:

ACCT 600. Contemporary Issues in Accounting

BUAD 556. Business, Government & Society

FNCE 600. Financial Management

INFS 620. Information Systems

MKTG 620. Marketing Management

OPMG 600. Contemporary Issues in Operations Management

Specialization Areas (15 elective hours)

Select five courses from any one-specialization area. The courses should be consistent with the student's academic background and work environment. An academic advisor must approve the course selections.

1. Computer Science/Software Systems
2. Electrical and Computer Engineering
3. Manufacturing Engineering
4. Mathematics
5. Mechanical Engineering
6. Space Systems

Space Operations (Distance Only)

The Master of Engineering degree with an option in Space Operations is ideally suited for working professionals involved in civil, military, or commercial space operations, payload and mission support, space systems analysis, space systems requirements and design specifications. The Master of Engineering in Space Operations is administered and taught as a distance program. The degree program consists of 10 courses including a written, creative, investigative report with an oral defense.

Program Prerequisites

Two semesters of calculus-based physics; a programming course in a higher order language; linear systems theory; engineering probability; linear algebra; and differential equations are required for admission to the program.

Ph.D. in Engineering

The Department of Mechanical and Aerospace Engineering supports a Ph.D. program in Mechanical and Aerospace Engineering as part of the Ph.D. in Engineering degree. Students who are interested in research areas in mechanical and aerospace engineering, and would like to pursue the Ph.D. in Engineering degree should contact the Department at 719-262-3243.

Regular admission to the Ph.D. program requires a 3.3 grade-point-average (G.P.A.) on all previous college work, including both graduate and undergraduate. The Graduate Record Examinations (G.R.E.) may be required. The verbal reasoning and quantitative reasoning portions of the G.R.E. are required of all foreign applicants.

Graduates of foreign universities are required to take the TOEFL exam: A score of 550-600 on the paper-based exam, or of 213-250 on the computer-based exam is required. Students not admitted on a regular basis may be admitted on a provisional basis depending on their over-all application file, including G.P.A., G.R.E., letters of recommendation, etc. Students admitted on a provisional basis are often required to take remedial courses (these are specified in the letter of acceptance). Registration for such remedial courses must commence with the first semester of a student's program with at least three credits completed per semester until all remedial requirements are satisfied.

Degree Requirements

The Ph.D. degree is awarded to students who have satisfied the requirements of duration of program, who have submitted an acceptable dissertation, and who have passed all prescribed examinations.

For a student entering with a master's degree:

- Complete 30 semester hours of course work.
- At least 15 semester hours must be MAE courses.

- At most 9 semester hours may be independent study courses.
- All 30 semester hours must be numbered 500(0) and above.
- Cross-listed courses which are offered at the 500(0)/600(0) levels must be taken at the 600(0) level.
- Complete 30 semester hours of dissertation research in addition to course work.
- Have an overall graduate G.P.A. of 3.0 in order to graduate.
- Have a grade of B- or better in all courses applied toward the Ph.D. degree.
- Pass Preliminary Examination, Comprehensive Examination
- No foreign language is required

Department of Mathematics

Engineering Building, Room 274
(719) 262-3311 Fax: (719) 262-3605
http://mathweb.uccs.edu/
E-mail: mathinfo@math.uccs.edu

Faculty

Professors: Abrams, Carlson, Daly, Haefner, Henderson, Phillips, Rangaswamy, Schinazi and Zhang; Associate Professors: Chakravarty, Morrow; Assistant Professors: Cascaval, Son; Instructor: Michaux; Director of MLC: Schumann.

Programs coordinated by the department:

Minor in Mathematics

Minor in Statistics

Bachelor of Arts in Mathematics

Bachelor of Science in Mathematics

Industrial Mathematics Certificate

Applications in Technology in Mathematics Education Certificate

Master of Science in Applied Mathematics

Master of Basic Science with Mathematics Emphasis

Ph.D. in Engineering - Applied Mathematics Track

The Department of Mathematics at UCCS offers a wide range of courses, degrees, and programs to meet the needs of a diverse constituency in the Pikes Peak Region. The degree programs include a Bachelor of Arts in Mathematics, Bachelor of Science in Mathematics, and Master of Science in Applied Mathematics. A Mathematics option is also available through the Master of Basic Science degree offered through the College of Letters, Arts and Sciences. An Applied Mathematics track is available in the Engineering Ph.D. program.

The department offers minors in both Mathematics and Statistics. In addition, the department supports the Certificate Program in Industrial Mathematics, and the Certificate Program in CATME (Center for Applications and Technology in Mathematics Education).

Mathematics Learning Center

The Mathematics Learning Center (MLC) is located in the EAS Building, Room 129. The MLC began operation in the fall of 1990 as part of a federally funded Title III initiative known as Project Excel. The Math Learning Center provides drop-in mathematics tutoring for students, supports the individualized mathematics courses offered through the Extended Studies program, and provides student support for the Hewlett-Packard Computer Laboratory which is used for mathematical endeavors. As the role of computer technology in the classroom continues to grow, so too does the importance of the MLC as a vital student resource.

Academic Policies

Prerequisite Policy

For the courses, Math 104, 105, 111, 112, and 135, students must meet the entrance requirements for the course. For all other courses, listed prerequisites are advisory only. If a student has not achieved a passing grade in a listed prerequisite course, the student must demonstrate that he/she possesses an appropriate level of competence in the prerequisite topics before enrolling in the subsequent course. Such students must satisfactorily complete either the Algebra Diagnostic Exam or Calculus Readiness Exam as is warranted. Students enrolled in any one of the courses Math 104, 105, 111, 112, 135 who have not either met the course prerequisite or the exam prerequisite by the second week of the semester must disenroll from the course.

Students who are interested in enrolling in any of Math 104, 105, 111, 112, or 135 are strongly encouraged to take the appropriate placement exam well before the start of the semester, for pedagogical, advising and administrative purposes. To make an appointment to take a placement exam, or for more information, contact the Testing Center at 262-3260.

Calculator Policy

The Department of Mathematics Department Policy on Calculators: Calculator usage on exams is limited to a basic scientific calculator with a minimal number of storage registers and no graphing capability.

Bachelor of Arts – Mathematics

The Bachelor of Arts Degree in Mathematics is a traditional degree in mathematics. Most students choose this degree in order to prepare for a career as a mathematics teacher or to prepare for a graduate program in pure mathematics. The Bachelor of Arts students follow the general education requirements of the College of Letters, Arts, and Sciences.

A Bachelor of Arts degree in Mathematics requires completion of at least 120 hours, a minimum 2.0 on each required mathematics course and a minimum CU cumulative GPA of 2.0. In addition, an Exit Interview with the Mathematics department is required prior to graduation. The degree requires the followingcourses:

Mathematics (43 semester hours)

MATH 135, 136, 235.Calculus I, II, III.....12

MATH 215. Discrete Mathematics 3

MATH 310 or Math 381. Statistics for the Sciences or Intro to Probability and Statistics 3

MATH 313. Introduction to Linear Algebra.....3

MATH 340. Intro to Differential Equations 3

MATH 414. Modern Algebra 1 3

MATH 431. Modern Analysis I 3

MATH 448. Mathematical Modeling 3

MATH 495. Senior Seminar.....1

Math 303 or above electives.....9

Mathematics Secondary Teaching Option (43 semester hours)

There is an option for Mathematics Secondary Teaching. Students should contact an advisor in the College of Education as soon as possible to construct a schedule of their required education courses for this option.

MATH 135, 136, 235.Calculus I, II, III.....12

MATH 215 Discrete Math.....3

MATH 310 or Math 381.
Statistics for the Sciences or Intro to Probability and Statistics 3

MATH 311 Number Theory.....3

MATH 313 Intro to Linear Algebra.....3

MATH 340 Intro to Differential Equations ..3

MATH 421 Higher Geometry.....3

MATH 431 Modern Analysis I 3

MATH 448 Mathematical Modeling 3

Mathematics elective 6

MATH 495 Senior Seminar.....1

Humanities Area Requirement (12 semester hours)

Core Humanities (HUM prefix, numbered 300 and above) 3

PHIL 344 Symbolic Logic or PHIL 443 Logical Theory.....3

Remaining hours from approved LAS General Humanities list 6

(Teachers need to take PHIL 100 Intro to Philosophy or PHIL 102 Ethics as part of the 6 hours)

Natural Science Area Requirement (12 semester hours)

From approved LAS Natural Science list 12

Teachers need to take one of the following:
PES 111, 115, 112, 215 General Physics I and II and Labs, plus 2 hours from the approved LAS Natural Science list,

or

12 hours from the approved LAS Natural Science list to include one lab

Social Science Area Requirement (12 semester hours)

From approved LAS Social Science list ...12

Teachers need to take PSY 100. General Psychology as part of the 12 hours.

Composition Requirement (6 semester hours)

ENGL 131 Rhetoric & Writing I.....3

ENGL 141 Rhetoric & Writing II.....3

Free Electives (minimum 35 semester hours to complete 120 hour requirement)

Students should take a number of courses in computer science to prepare them for the various career options in mathematics. Foreign languages are encouraged for students interested in research. Teachers will fill up all free electives with education courses (students should contact the College of Education for required education courses)

Bachelor of Science – Mathematics

The Department of Mathematics offers a curriculum leading to the degree of Bachelor of Science in Mathematics. The Bachelor of Science Degree in Mathematics is well-suited for those students aiming toward a career in applied mathematics or planning for graduate school in applied mathematics. This program is also appropriate for those mathematics students who have not yet decided between a teaching career or a career in industry. The B.S. students follow the general education requirements of the College of Engineering and Applied Science

Modern industrial and scientific enterprises are so dependent on advanced mathematical concepts that applied mathematicians are needed today by almost all concerns that are engaged in such work. The undergraduate curriculum is designed to give training in mathematics and in engineering and science. The use of numerical methods and computers is included.

The student must have a secondary emphasis area in a specific engineering, computer science, or applied science department. The choice of a secondary area must be approved by the student's faculty advisor. Foreign languages are encouraged for students interested in research. A maximum of 8 hours of foreign languages may be taken and applied to the approved electives requirements. German, French and Russian are the approved languages.

Degree Requirements

A Bachelor of Science degree in Mathematics requires completion of at least 120 hours, a minimum 2.0 on each required mathematics course and a CU minimum GPA of 2.0. In addition, an Exit Interview with the Mathematics department is required prior to graduation. The degree requires the following courses:

Mathematics (43 semester hours)

MATH 135, 136, 235. Calculus I, II, III....12

MATH 215. Discrete Mathematics 3

MATH 310 or Math 381. Statistics for the Sciences or Intro to Probability and Statistics.....3

MATH 313. Introduction to Linear Algebra.....3

MATH 340. Introduction to Differential Equations 3

MATH 431. Modern Analysis I 3

MATH 448. Mathematical Modeling 3

MATH 495 Senior Seminar.....1

One of the following restricted mathematics elective sequences 6

(i) Analysis: (a) MATH 445. Complex Variables and (b) MATH 443. Ordinary Differential Equations, or MATH 447. Partial Differential Equations,

(ii) Optimization and Numerical Analysis: (a) MATH 442. Optimization and (b) MATH 465. Numerical Analysis,
(iii) Statistics: two of from MATH 482. Introduction to Mathematical Statistics, MATH 483. Linear Statistical Models, MATH 485. Stochastic Modeling

Mathematics electives (numbered 310 or higher) 6

Basic Science and Technology (22 semester hours)

CS 115. Prin. of Computer Science* 3

CS 145. Data Structures & Algorithm 3

CS 460 or MATH 465 Numerical Computing or Numerical Analysis 3

ECE 1010. Problem Solving in Engineering*.....2

ECE 1011. Computer Based Modeling* 2

PES 111. General Physics I 4

PES 112. General Physics II 4

PES 115. General Physics Lab I 1

Humanities and Social Sciences (24 semester hours)

Engl. 131 or 141 Rhetoric & Writing I or II 3

Comm 210 Platform Speech 3

Engl 307Business & Administrative Writing.....3

Engl 309 Technical Writing & Presentation 3

Additional social science-humanities electives 15

Secondary Area Requirement (18 semester hours)

Normally, a graduate of mathematics who accepts a position in the private or public sector will be working as part of a team to solve applied problems outside of mathematics. Seldom is this problem purely one in mathematics. Because of this, an applied mathematician needs a working knowledge of another discipline, and so each graduate of the B.S. in Mathematics program must complete a secondary area requirement. A secondary area requires 18 hours of which 9 hours must be 300 level or higher. This may be done in any one of the following ways:

1. **Departmental Coursework**
   Select classes from one of the following departments: Biology, Chemistry, Computer Science, Economics, Electrical and Computer Engineering, Mechanical and Aerospace Engineering, Physics, or Psychology. Courses used for general education requirements may be counted towards this requirement.
2. **Interdisciplinary Secondary Areas**
   Complete one of the interdisciplinary secondary area programs that have been approved by the department. At present, there are two such programs: System Science and Engineering and Actuarial Science (see Below).
3. **Personalized Secondary Program**
   Design a personalized secondary area program that may include courses from departments other than those listed in (1) above, and/or may be interdisciplinary in nature. Such a program MUST have the approval of the faculty advisor from the Mathematics Department.

Technical Electives (13 semester hours)

Complete 13 hours of courses to broaden exposure to fields of science or engineering. Courses must be approved by the mathematic faculty advisor, of which 6 hours must be 300 level or higher courses.

Semester hours exceeding the required 18 in the secondary area may be applied to the technical elective requirement. Courses counted toward the basic science requirement do not apply, and at most 4 semester hours of computer languages may be used. A maximum of 8 semester hours of foreign languages may be applied to this requirement.

Concentrations and Minors

Concentration in System Science and Engineering

Systems science is an approach that views an entire system of components as an entity rather than simply an assembly of individual parts; each component is designed to fit properly with the other components rather than to function by itself. The engineering and mathematics of systems is a rapidly developing field. It is one of the most modern segments of applied mathematics, as well as an engineering discipline. It is concerned with the identification, modeling, analysis, design, and control of systems that are potentially as large and complex as the U.S. economy or as precise and vital as a space voyage. Its interests run from fundamental theoretical questions to the implementation of operational systems. In its mathematical aspects it draws on the most modern and advanced areas of mathematics. At the application end of the spectrum, the systems scientist is a scientist/engineer with a unique and indispensable viewpoint. For example, in the aerospace industry, the systems engineer devises the control and guidance laws, navigational systems, trajectory tracking, and estimating algorithms - indeed the total coordinated structure of complex aerospace undertakings.

Mathematics Requirement, complete 2 of the following 3 courses:

MATH 442. Optimization

MATH 448. Math Modeling

MATH 485. Stochastic Modeling

Secondary Area Requirements
ECE 2210. Circuits 1

CE 213. Applied Mechanics

ECE 3510. Linear Systems Theory

ECE 4510. Feedback Controls

ECE 4530. Control System Lab

MAE 4506. Engineering Simulation or ECE. 4540 Digital Control

MAE 3401. Modeling & Simulation of Dynamic Systems

Concentration in Actuarial Science

Actuarial Science is a professionally oriented program combining business, economics, and mathematics, and is designed to prepare students to begin careers as actuaries. Actuaries are experts in risk management. Graduates of this program are prepared for the first three professional actuary exams and have a solid base of preparation for further exams. These first three exams are: Exam 100-Calculus and Linear Algebra, Exam 110-Probability and Statistics, and Exam 135-Numerical Analysis. See the Society of Actuaries web page, http://www.soa.org, for additional information concerning these exams and a career in Actuarial Science.

To provide a solid foundation for this career and prepare for these three exams, the student should complete the following program:

Mathematics Requirement
MATH 381. Introduction to Probability and Statistics

MATH 465. Numerical Analysis 1

MATH 482. Introduction to Mathematical Statistics

One of MATH 483. Linear Statistical Models, or
MATH 485. Stochastic Modeling

Secondary Area Requirements
Economics
ECON 101. Introduction to Microeconomics

ECON 102. Introduction to Macroeconomics

ECON 301. Intermediate Microeconomic Theory

ECON 481. Introduction to Econometrics

Business

ACCT 201. Introduction to Financial Accounting

BUS 200. Business Law

FIN 340. Risk and Insurance Principles

Minor in Mathematics

A student wishing to complete a minor in mathematics must complete at least 24 hours of courses and every course in the minor must be completed with a grade of C or better. The student will be responsible for any prerequisites to required courses. The required courses for the minor are as follows:

MATH 135, 136, 235 ..... 12 hours

One from MATH 215, 311, 341, 350, 351, 414, 421, or 431..... 3 hours

At least 9 additional hours of math courses numbered above 303..... 9 hours

Minor in Statistics

A minor in statistics requires at least 21 hours of courses and every course must be completed with a grade of C or better. It is imperative that a student intending to minor in statistics plan her/his program and obtain the approval of a departmental advisor before the end of her/his sophomore year. Of these 21 hours, the following requirements must be met:

MATH 310 or its equivalent..... 3 hours

MATH 381 or its equivalent..... 3 hours

One of: MATH 482, 483,485, 487.. 3 hours

It is imperative that a student intending to minor in statistics plans her/his program and obtains the approval of a departmental advisor before the end of her/his sophomore year.

Certificate Programs

Industrial Mathematics Certificate Program

The College of Engineering and Applied Science offers a Certificate in Industrial

Mathematics to qualified students. The program endeavors to prepare students for careers in the applications of Mathematics in Industry by emphasizing mathematical modeling, courses in traditional applied mathematics, and work on actual industrial problems with the cooperation of representatives from industry. The certificate is awarded at three levels. It is available for undergraduate students in both the colleges EAS and LAS and for graduate students in EAS. Please call or write the Department of Mathematics for more information.

Applications and Technology in Mathematics Education Certificate Program (CATME)

The College of Engineering and Applied Science offers a Certificate in Applications and Technology in Mathematics Education to qualified students. The purpose of the program is to train teachers (and potential teachers) in the use and methodology of applications and technology in the mathematics classroom. The program emphasizes courses that train the instructor on the use of graphing calculators, computer algebra and geometry systems, as well as the applications of mathematics that use those technologies. It is available to all registered students at UCCS. Please visit the Department of Mathematics website http://mathweb.uccs.edu/catme for more information.

Master of Science – Applied Mathematics

The Department of Mathematics offers a strong graduate program leading to the Master of Science in Applied Mathematics. Specific areas of study currently available include astrodynamics, statistics, probability, differential equations, applied analysis, computer vision, algebra, and coding theory.

Tracks

To respond to the needs of both students and employers, the Department has organized this degree program into a system of four tracks, which are intended to help students develop their programs of study. The tracks are 1) K-14 education, 2) Ph.D. preparation, 3) applied and computational mathematics, and 4) business and management. Detailed information about the tracks may be found at the department web site, http://mathweb.uccs.edu. Customized programs of study are also available.

Admission Requirements

Bachelor degree in mathematics (or a Bachelor degree in some other field, with extensive coursework in mathematics), including a course in real analysis comparable to the UCCS course Math 431. A minimum grade point average of 3.0. Under special circumstances students may be admitted with a lower grade point average (or without a course in real analysis) as provisional degree students. (Please refer to the Graduate School admissions requirements.)

Degree Requirements

1. A 3.0 grade point average in all course work applied towards the degree.
2. An advisor is appointed during the first semester of graduate work; usually this initial advisor is the chairman of the mathematics department graduate committee. The advisor must approve the student's course of study.
3. At least 30 semester hours of approved graduate work. This must include Linear Algebra (Math 513) and Modern Analysis II (Math 532). All students must pass comprehensive examinations in these two subjects. Approved mathematics graduate courses must be at the 500-level or higher. Students completing one of the four tracks of study will automatically fulfill the requirements for the M.S. Applied Math degree. Students may select a thesis or non-thesis option. Students in the thesis option will replace up to 6 hours of courses with Master's thesis.
4. All students are required to make an oral presentation regarding some aspect of advanced mathematics. For students pursuing the thesis option, the thesis defense will qualify as such a presentation.
5. Courses will have graduate rank only if members of the graduate school faculty teach them and are at the 500 level or above. All courses intended to count for the degree must be part of an approved plan of study. This plan must be developed by the student and approved by the advisor within the first semester after being admitted to the program. This plan may be revised at any time with the approval of the advisor. The plan will require students to demonstrate some cohesiveness in the courses chosen, or to demonstrate a clear subject area of concentration.
6. A student may complete up to 12 hours of appropriate graduate coursework in departments other than the department of mathematics, as part of the "tracks" program. Such courses MUST be PRE-approved by the advisor.
7. Students must demonstrate basic competency in computing.
8. The department graduate committee must approve exceptions to these requirements.

Master of Basic Science

The Department of Mathematics offers mathematics and mathematics teaching options under this interdisciplinary program administered by the College of Letters, Arts, and Sciences.

Ph.D. in Engineering

The Department of Mathematics supports a Ph.D. in Engineering with a concentration in applied mathematics. Students who are interested in research areas with an emphasis in applied mathematics, and would like to pursue the Ph.D. in Engineering degree should contact the Department at 719-262-3311.

Graduate Teaching Fellowships

A limited number of teaching assistantships are available. For information contact the graduate advisor of the Department of Mathematics. Typically, students requesting assistantships should indicate this three months prior to the application deadline for the intended semester.

David Schmidt, Dean

Main Hall, room 304
Telephone: (719) 262-3044
Fax: (719) 262-3045

web.uccs.edu/gradschl

Information about the School

Graduate work at the University of Colorado began on a small scale in 1892. Following some years of development, in 1909 the Graduate School was organized as a University-wide body with a separate faculty. The Graduate School consisted of faculty resident on the several campuses who organized programs within the constituent colleges and schools. This body operated under the leadership of the Vice President for Academic Affairs and System Dean of the Graduate School in conjunction with a University-wide Executive Committee charged with developing and effecting University-wide academic policy.

Effective in 1999, each campus organized its graduate programs within an autonomous Graduate School. UCCS now has its own Graduate School with a Dean and a Graduate Executive Committee, who hold responsibility for the enforcement of Graduate School requirements and policies on this campus and for the development and approval of academic issues. The Graduate School provides oversight and coordination for all graduate programs on the campus.

Anyone wishing further information should contact the specific department, or the Graduate School, UCCS, Main Hall 304B, P.O. Box 7150, Colorado Springs, Colorado 80933-7150, (719) 262-3417, gradschl@uccs.edu

Programs of Study

The following programs at the graduate level are available for completion through the Graduate School:

Applied Geography (M.A.) ..... LAS
Applied Mathematics (M.S.) ..... EAS
Basic Science (M.B.S.) ..... LAS
Business Administration (M.B.A.) ..... BUS
Communication (M.A.) ..... LAS
Computer Science (M.S.) ..... EAS
Counseling and Human Services (M.A.) ..ED
Criminal Justice (M.C.J.) ..... GSPA
Curriculum and Instruction (M.A.) .....ED
Electrical Engineering (M.S.) ..... EAS
Engineering (Master of Engineering) (PhD)..... EAS
Geropsychology (PhD)..... LAS
History (M.A.)..... LAS
Mechanical Engineering (M.S.) ..... EAS
Nursing (M.S.N.) .....BETH-EL
Psychology (M.A.) ..... LAS
Public Administration (M.P.A.)..... GSPA
Sociology (M.A.) ..... LAS
Special Education (M.A.) .....ED

The Department of English offers coursework applicable to a Master of Arts degree in English.

The Master of Engineering degree offers options in engineering management, manufacturing, information assurance, and software engineering

The newly restructured Ph.D. program in Engineering includes the previously offered specialization in Electrical Engineering, plus allows for new focus areas not previously available. These new areas are currently under development, but it is envisioned that they will include traditional specializations such as Mechanical Engineering and Computer Science, as well as new interdisciplinary areas in response to student interests and market demands.

The Master of Basic Science is a multi-disciplinary advanced degree. Options within the Master of Basic Science degree include anthropology, biology, biotechnology/biochemistry, chemistry, exercise science, geography, mathematics, science and mathematics teaching, and physics.

Descriptions of each of the graduate programs are found in the appropriate college, school, and departmental sections of this bulletin.

Rules of the Graduate School

The official policy of the Graduate School is contained in the Rules of the Graduate School. These rules are available in the office of the Graduate School, Vice Chancellor for Academic Affairs, on the UCCS web site, and in each graduate program office.

Admission of Graduate Students

General Requirements

Students may be admitted to the Graduate School in either of the two categories, described below. A student who is granted admission must reflect, in a moral and ethical sense, a personal background acceptable to the University. The University reserves the right to deny admission to applicants, or to cancel the enrolled status of current students, whose total credentials reflect an inability to assume those obligations of performance and behavior deemed essential by the University and relevant to any of its lawful missions, processes, and functions as an educational institution.

Regular Admission Status

An applicant for admission as a regular degree student must meet the following minimum requirements. Some programs may have additional requirements for regular admission, and requirements for Guaranteed Early Admission (described below) are also higher. Qualified students are recommended for admission to regular degree status by the appropriate department.

1. Hold a baccalaureate degree or a master's degree from an accredited college or university, or demonstrate completion of work equivalent to the baccalaureate or master's degree given at this University.
2. Have an undergraduate grade point average of 2.75 or better ("A" is equal to 4.0); or

Have a combined undergraduate grade point average and score on a national standardized admissions test that meet criteria determined by the program; or

Have completed 15 semester hours of relevant graduate course work at an accredited university with a grade point average of 3.25 or better. Note that units completed before admission may not all be transferable into a graduate degree program.

3. Have adequate preparation to enter graduate study in the chosen program, and meet the requirements for admission, as determined by the program faculty.

For students who do not meet the above criteria, program faculty may assign course work and/or examinations that must be taken in order to make up deficiencies.

Regular degree students must maintain at least a 3.0 cumulative grade point average on all work taken as a graduate student that is applied toward the advanced degree. Students who fail to maintain this standard of performance will be subject to probation or dismissal from the Graduate School.

Guaranteed Early Admission, a special guaranteed-admission option, is available to UCCS students currently enrolled in their final semester of undergraduate study. This option may also be exercised by UCCS undergraduate alumni within one year after their graduation. If the applicant meets all the admission requirements for this option, admission to the graduate program of interest is guaranteed. The special admission requirements for this option vary by graduate program, and applicants under this option must contact their graduate program of interest to determine that program's requirements.

Provisional Admission Status

An applicant not meeting the criteria for admission as a regular degree student may be recommended by the faculty for admission as a provisional student. The recommendation must include a statement of the conditions which the student must meet in order to become a regular degree student. When the conditions for regular status are met, the program director has the responsibility to reclassify the student to regular status.

Provisional students are subject to the same standards of performance required of regular degree students, in addition to other requirements a program faculty may impose as conditions of admission.

Graduate Admission Examinations

Graduate programs may require either the Graduate Record Examination (G.R.E.), Graduate Management Admission Test (GMAT), or the Miller Analogies Test (MAT). Applicants must check specific departmental testing requirements. Information regarding the tests, dates scheduled, and procedures for enrolling is available from the University Testing Services Office in the Student Success Help Center, 2nd floor Main Hall.

Admission to the Graduate School is not admission to candidacy for an advanced degree. A student who wishes to become a candidate for a degree must make special application at the time and in the manner prescribed by the requirements for the degree sought.

Application Procedures

Regular Application Process - Applications for admission to an advanced degree program should be sent to the appropriate UCCS department or program office. The complete application must include:

1. Part I and Part II of the graduate application (including the Residency form).
2. Two official transcripts of all academic work completed to date, sent directly from the academic institutions attended.
3. A nonrefundable application processing fee.
4. Test scores, letters of reference, and other materials as required by specific programs.
5. For international applicants, a score on the Test of English as a Foreign Language (TOEFL).

All credentials presented for admission become the property of the University of Colorado.

Although students may apply at any time, for maximum consideration for financial support starting in the fall semester, all application material must be received by March 1. Complete applications (including all supporting documentation) submitted to the program office at least 60 days prior to the term for which admission is sought are normally assured full consideration for admission; some programs have established earlier deadlines.

Completed applications for foreign students must be on file in the Office of Admissions and Records prior to April 1 for the fall semester and October 1 for the spring. All foreign students interested in graduate admission must begin the process with the Foreign Student Adviser in the Office of Admissions and Records.

Guaranteed Early Admission – Under this option, the applicant completes only a special one-page application form available from their graduate program of interest, and submits it along with the application fee to the program director. Also, in most cases other application requirements, such as letters of support and transcripts, are significantly less than for the regular admission process. The specific requirements are available from the respective graduate program. If the applicant meets all the admission requirements for this option, admission to the graduate program of interest is guaranteed.

Fast-Track Admission – This special admission-process option is available to any UCCS undergraduate alumnus, within the first four years after their graduation. This is not a guaranteed admission option, however, but rather an expedited admission process. Under this option, the applicant completes only a special one-page application form available from their graduate program of interest. This form, along with the application fee, is submitted to the program director. Also, in most cases other application requirements, such as letters of support and transcripts, are significantly less than for the regular admission process. The specific requirements for this option are also available from the respective graduate program.

Notification of Acceptance

After the Office of Admissions and Records has received the Graduate School approved departmental recommendation and all required credentials, the applicant will be notified regarding eligibility for admission. If eligible, the applicant will receive a letter of acceptance from the Office of Admissions and Records.

Unclassified Students

A student holding a baccalaureate degree who wishes to take graduate courses but does not wish to earn an advanced degree from the University of Colorado should apply to the Office of Admissions and Records for admission as an unclassified student. (See the Unclassified Student section.)

Readmission of Former Students

A student who was previously admitted to a graduate program, who did not complete the degree, and has not been continuously registered at the University, but now wishes to return, must do the following:

1. Clarify status with the program to determine eligibility to return and pursue the same degree.

2. After receiving program approval to continue work on the degree, submit a new Part I of the application to the program office before deadlines have passed for the term of expected return.

A former student will not be charged an application fee unless any coursework to be applied to the degree was taken more than six years prior to the student's return.

A student admitted to the Graduate School for a master's program must reapply for admission for a doctoral program. A student applying to a doctoral program from a master's program in the same department, with no break in attendance, will not be charged an application fee.

A dismissed student is eligible to reapply for readmission after one year. Approval or rejection of this application rests with the student's major department.

Former students who wish to change from one major to another should consult with their department chairperson and complete the appropriate forms.

Registration

New degree or unclassified students are notified of eligibility to register for course work through the Statement of Eligibility for Admission mailed from the Admissions and Records Office. If this notice has not been received in time for registration, an inquiry should be made to Admissions and Records. Degree and unclassified students who do not stay continuously enrolled (having missed a fall and/or spring semester registration) must check with Admissions and Records 60 days before the next intended registration period to make sure of eligibility to register during regular registration. Former students should follow the same procedure. Degree students changing departments or graduate degree programs should begin the change process with the new department.

Limitation of Registration

Full Load — Graduate students will be considered to be carrying a full load during a regular semester for purposes of determining residence credit if they are registered for not fewer than 5 semester hours in courses numbered 500 (or 5000) or above, or at least 8 semester hours of other graduate work, or any number of thesis hours. A full load for purposes of determining residence credit during the summer session is 3 semester hours of work in courses numbered 500 or above, or 6 semester hours of other graduate work, or any number of thesis hours.

Maximum Load - No graduate student may receive graduate credit toward a degree for more than 15 hours in a regular semester. The maximum number of graduate credits that may be applied toward a degree during a summer session is 6 hours per 4-week term and 9 hours per 8-week summer session.

Courses applicable to a degree

Transfer Courses

Work already applied toward a master's degree received at another institution cannot be accepted for transfer toward the master's degree at the University of Colorado; extension work completed at another institution cannot be transferred; and correspondence work, except to make up deficiencies, is not recognized.

Transfer credits may be applied to a graduate degree only with the approval of the program director. Each program will establish, with the concurrence of the Graduate School Executive Committee, the maximum number of semester hours that may be transferred from another accredited institution and applied toward its graduate degree, without special approval of the Graduate Dean. The following provisions will apply:

1. All transfer courses must have a grade of B minus or above.
2. Some programs may require that credit will not be accepted for transfer until the student has established a satisfactory academic record at this university.
3. For master's degree students, all work accepted for transfer must have been completed within the six-year time limit or be validated and approved by program faculty.
4. Courses applied towards one master's degree may not be used towards another master's degree.
5. Requests for transfer of credit must be made on the form specified for this purpose. Official transcripts of credit must accompany requests or be on record.
6. Master's degree students must submit transfer requests to the program director by the beginning of the semester prior to the semester in which they will graduate.
7. Doctoral degree students must submit transfer requests to the Graduate School before making application for admission to candidacy.

Courses taken during senior year

Seniors at UCCS may transfer up to nine semester hours of coursework, provided such work meets the following requirements:

- is completed with a grade of B minus or above in the senior year at this University.
- comes within the time limit for the completion of the graduate degree.
- has not been applied toward another degree.
- is approved by the program director.

Undergraduate credits from another institution may not be transferred to the Graduate School.

Courses taken while in unclassified status

Credits earned as an unclassified student at UCCS may be applied to a graduate degree only with the approval of the program director. Each program will establish, with the concurrence of the Graduate School Executive Committee, the maximum number of semester hours taken in unclassified status that may be applied toward its graduate degree, without special approval of the Graduate Dean. Coursework in progress during the semester in which formal admission is granted does not apply to this unclassified total.

Extended Studies Courses

Students may use the resources of the Division of Extended Studies in the pursuit of graduate study only if they obtain proper academic approval from the program director.

Graduate Courses

A graduate level course is any course that bears the graduate number appropriate to the discipline (i.e., 500-900 or 5000-9000) and is taught by a member of the graduate faculty.

Undergraduate Courses

No lower division course nor undergraduate courses designed to

improve basic skills may be used as credit towards a graduate degree.

A program may require a student to take undergraduate courses as a means of making up deficiencies, but the credits generated in these courses may not be counted in the minimum number required for the degree.

Independent Study

Independent study credit hours may not exceed 25% of the minimum number required for the degree.

Requirements on quality of graduate work

Although the work for advanced degrees is specified partly in terms of credit hours, an advanced degree will not be conferred merely for the completion of a specified period of residence and the passing of a given number of courses. A student should not expect to get from formal courses all the training, knowledge, and grasp of ideas necessary to meet the requirements for an advanced degree.

A student is expected to maintain at least a B average in all work attempted in Graduate School. Work receiving a grade of less than C may not be counted toward any graduate degree. An in-progress (IP) grade given for thesis will be valid and must remain unchanged until the thesis has been completed.

A student who receives a grade below B minus in a course may repeat that course once, upon approval of the program director, provided the course has not been previously applied toward a degree. The grade received in a repeated course will substitute for the original grade and only the latter grade will be used in calculating the Graduate Program grade point average required for graduation. However, all grades received will appear on the student's transcript and will be used in calculating the student's University grade point average.

A student who fails to do satisfactory work will be subject to probation or dismissal from the Graduate School by the Dean with the approval of the major department. Appeals may be made to the campus Graduate Executive Committee, whose decision is final.

A student regularly admitted to the Graduate School and later accepted as a candidate for a master's degree will be recommended for the degree only after the following requirements have been met.

In general, only graduates of an approved institution who have a thorough preparation for their proposed field of study and who do graduate work of high quality are able to attain the degree with the minimum amount of work specified below. Necessary additional work required to make up deficiencies or prerequisites may be partly or entirely undergraduate courses.

The requirements stated below are minimum requirements. Additional conditions set by the department will be found in the announcements of separate departments. Any department may make further regulations that are not inconsistent with the general rules.

Minimum Degree Requirements – Master's Degree

The minimum requirements of graduate work for a master's degree may be fulfilled by following either Plan I or Plan II below.

Plan I (thesis)

30 semester hours, including 4-6 hours of thesis credit. At least 24 semester hours must be at the graduate level.

Plan II (no thesis)

30 semester hours. At least 24 semester hours must be at the graduate level. (Some interdisciplinary programs may require fewer graduate level units.)

A candidate for the master's degree may be allowed to select Plan I or Plan II only upon the recommendation of the department concerned.

Master's Thesis

Every candidate pursuing a master's degree under Plan I (thesis option) is required to write a thesis, which may be of a research, expository, critical or creative type. Each thesis presented in partial fulfillment of the requirements for a master's degree must satisfy the specifications of the UCCS Thesis and Dissertation Manual, and shall represent 4 - 6 semester credit hours of work. The student may register for any specific number of hours in any semester of residence. The final grade will be withheld until the thesis is completed. If the thesis is not completed at the end of the term in which the student is so registered, an in progress (IP) will be reported.

A thesis advisory committee must be established for each student pursuing a master's degree under Plan I (thesis option). This committee will consist of the thesis advisor, and at least two other members of the graduate faculty, possibly including a member from an allied program. Upon the recommendation of the thesis advisor, the committee is appointed by the program director with the approval of the Graduate Dean.

The thesis must be signed by the student's thesis advisory committee. Two formally approved copies of the thesis must be filed in the Library by the published deadline date.

Master's Degree Examinations

Most master's degree programs require a comprehensive examination or a thesis defense after the other requirements for the degree have been substantially completed. A student must be registered at the time in which the comprehensive examination or thesis defense is held.

Comprehensive Examination

This examination is administered by a committee of at least three graduate faculty appointed by the program director. A majority of the examination committee must vote affirmatively for the student to pass. A student who fails the examination may not attempt it again until at least two months have elapsed. The student may retake the examination only once.

Thesis Defense

After the thesis has been accepted by the student's thesis advisor, a thesis defense will be administered by the thesis advisory committee. A majority of the committee must vote affirmatively for the student to pass. A student who fails the thesis defense may not attempt it again until at least two months have elapsed. A student may have only one additional defense.

Minimum Degree Requirements – Doctoral Degree

75 semester hours of graduate level credit, including dissertation credit. Each doctoral program shall determine how many credits from an earned Master's degree may be included in this total. Ph.D. programs will require 30 units of dissertation credit.

Doctoral Dissertation

Every candidate pursuing a doctoral degree is required to write a dissertation based upon original investigation and showing mature scholarship and critical judgment, as well as familiarity with tools and methods of research. The subject must be approved by the student's program director. Each dissertation presented in partial fulfillment of the requirements for a doctoral degree must satisfy the specifications of the UCCS Thesis and Dissertation Manual. The dissertation shall represent 30 semester credit hours of work for Ph.D. candidates.

A dissertation advisory committee shall consist of five members of the graduate faculty, including one member of an allied department. One of the five members may be from another institution, provided the faculty member has been granted associate membership on the graduate faculty. Upon the recommendation of the dissertation advisor, the committee is appointed by the program director with the approval of the Graduate Dean.

The dissertation must be signed by the student's dissertation advisory committee. Two formally approved copies of the dissertation must be filed in the Library by the published deadline date.

Doctoral Degree Examinations

Each doctoral program will require one or more of the following types of examinations. A student must be registered at the time any of these examinations are taken. Successful completion of either a comprehensive examination or a specialty examination must precede advancement to candidacy.

Preliminary Examination

An examination to ensure that a student is qualified for doctoral study.

Comprehensive Examination

An examination in the field of concentration and related fields. This examination may be written or oral or both, and will test the student's mastery of a broad field of knowledge, not merely the formal coursework which has been completed. The comprehensive examination shall be conducted by an examining board of at least three members appointed by the program director.

Specialty Examination

An examination in a specific area of the general field of concentration. This examination may be written or oral or both, and will test the student's mastery of a single subject that may well go beyond formal coursework that has been completed. The specialty examination shall be conducted by an examining board of at least three members appointed by the program director.

Dissertation Proposal

An examination to determine the preparedness of the student and the appropriateness of the topic, prior to commencing work on the dissertation.

Dissertation Defense

After the dissertation has been accepted by the student's dissertation advisor, a final examination of the dissertation and related topics will be conducted by the Dissertation Advisory Committee. The examination is open to anyone who wishes to attend. A successful candidate must receive the affirmative vote of a majority of the members of the dissertation committee. In case of failure, the examination may be attempted once more after a period of time determined by the committee.

A student must be registered for at least 5 dissertation credit hours during the semester in which the dissertation defense is held. The Graduate School must be notified of the dissertation defense at least two weeks in advance of the scheduled date of the defense, which must be no later than 18 days before the final day of the semester of graduation.

Doctoral Dissertation Credit Hour Requirements

1. A doctoral student may take no more than one half of the total number of dissertation credit hours required for the degree prior to or during the semester in which the comprehensive examination is passed.
2. Following successful completion of the doctoral comprehensive examination, a student must register each fall and spring semester for five to ten semester units of dissertation credit, until the requirements for the degree are completed. A student may register for no more than ten dissertation credit hours in any semester, and for no more than seven credit hours during a summer semester.
3. If, following the completion of the doctoral comprehensive examination, there is a semester during which a student will be using no university resources, the student may petition to register for a minimum of one unit of dissertation credit. Such a request must be approved by the program director.
4. A student must be registered for at least 5 dissertation hours during the semester (or summer session) in which the dissertation defense is held.

Admission to Candidacy

Master's Degree

For each student pursuing a master's degree, an Application for Admission to Candidacy should be filed in the office of the Graduate Dean during the first five weeks of the semester of intended graduation. This application will certify that all requirements for the degree have been met, or are in progress.

Doctoral Degree

A doctoral student who wishes to become a candidate for a degree must file an Application for Admission to Candidacy in the Office of the Graduate Dean. Admission to candidacy will be granted only to students who have completed a significant fraction of the required course work, and have passed the comprehensive examination and language requirement (if any).

Time Limits

Master's Degree

Although students are normally expected to complete a master's degree in one to three years, master's degree students have six years, from the date of the start of course work, to complete all degree requirements (which includes filing the thesis with the Kraemer Family Library if Plan I is followed). A student who fails to complete the degree in this six-year period must file a petition for extension with the Graduate Dean. The petition, giving reasons why the student should be allowed to continue in the program, must be endorsed by the program director.

The program director must approve applying any course to the degree that was taken more than six years prior to the semester of graduation, and all such courses must be validated by special examination.

Doctoral Degree

Doctoral students are normally expected to complete all degree requirements

within seven years from the date of the start of coursework in the doctoral program. A student who fails to complete the degree in this seven-year period must file a petition for extension with the Graduate Dean. The petition, giving reasons why the student should be allowed to continue in the program, must be endorsed by the program director or by three members of student's dissertation advisory committee. If the Graduate Dean approves, the student may continue studies for one additional year. If the Graduate Dean does not approve, with the concurrence of the program director, the student may be dismissed from the program. If the Graduate Dean and the program director do not agree on whether a student should continue, the Graduate School Executive Committee shall make the final decision.

Student Ethics

Students are expected to adhere to the highest codes of personal and professional ethics, as set forth by the Honor Code of UCCS, which appears each semester in the Schedule of Courses. Students who do not meet these standards may be dismissed from the Graduate School by the Graduate Dean upon recommendation of the director of the student's graduate program. A student may appeal such action under the provisions described below.

Graduate Student Appeals

Student Appeal Procedures

The procedures for a student appeal to the Graduate Dean and the Graduate School Executive Committee are:

1. An appeal will be officially accepted from a student only after it has been determined that the student has exhausted the appeals process in effect in the department.
2. If a resolution to the problem identified in the student's appeal cannot be reached on the department or unit level, the student may submit a written appeal to the Dean of the Graduate School. The written appeal must describe in detail the basis in fact for the opinion that the student has been treated unfairly and must describe actions taken to resolve the problem at the departmental level.
3. Upon receipt of a written appeal from a student, the Dean of the Graduate School will contact the appropriate departmental officer to get a response to the questions or objections raised by the student. In some cases, a written response from the department may be requested. The response and appeal is then sent to the Student Affairs Subcommittee of the Graduate School Executive Committee. This committee acts in an advisory capacity to the Graduate Dean and will forward their findings and recommendations to the Dean.
4. The Graduate Dean will make a decision in the case. This decision may be appealed by either party to the dispute to the full Graduate School Executive Committee, but only if the decision of the Dean is in disagreement with the recommendation of the Student Affairs Subcommittee.

Final Responsibility

All appeals regarding course grades shall follow the procedures established by the school or college in which the course was taken. Final authority on appeals submitted by graduate students concerning actions (other than grading) taken by faculty members, program directors, the Graduate Dean, or other administrative officials rests with the Graduate School Executive Committee.

Kathleen M. Beatty, Dean

Columbine Hall, room 1025

Telephone: (719) 262-4182
Fax: (719) 262-4183

carbon.cudenver.edu/gspa

Established in 1972, the Graduate School of Public Affairs (GSPA) provides graduate level, professional training for managers and policy-makers in public, nonprofit, and criminal justice organizations. Accredited by the National Association of Schools of Public Affairs and Administration, the School offers the Master of Public Administration (MPA) and the Master of Criminal Justice (MCJ) degrees. While all course work for the MCJ degree may be completed on the Colorado Springs campus, the degree is awarded through the University of Colorado at Denver. For the benefit of many public affairs professionals, GSPA is regionalizing the program. This revolutionary model calls for professors — instead of students — to commute between campuses, making a far wider range of course work accessible to students and practitioners. GSPA also offers students the opportunity to pursue a more limited course of study, earning Certificates in Public Management, Nonprofit Management, or Criminal Justice.

Inquiries about application procedures and degree requirements should be directed as follows:

Graduate School of Public Affairs
UCCS
P. O. Box 7150
Colorado Springs, CO 80933-7150
(719) 262-4182
OR
(800) 990-8227 ext. 4182

Mission

The mission of the Graduate School of Public Affairs is to improve the quality of public service in Colorado and the Rocky Mountain West. GSPA offers an excellent program of professional education and training that prepares public and nonprofit managers for leadership in a rapidly changing environment. Resident GSPA faculty have earned doctorates in their fields of specialization and are nationally recognized scholars. They conduct research of interest to scholars and practitioners in the field, as well as research on issues of concern in Southern Colorado. GSPA also invites practitioners who are recognized leaders in their area of expertise to teach selected courses in GSPA's degree programs.

GSPA offers a select group of students the opportunity to enhance their potential for executive leadership and success in public service careers. The curriculum reflects the philosophy that management in public and nonprofit organizations presents unique challenges and opportunities because of our obligation to serve the public interest. All students take a common core of courses, then take electives focusing on public, nonprofit, or criminal justice management. Students graduate with a sophisticated understanding of the public and nonprofit sectors and their interdependence, and of contemporary principles of organizational development and management.

During their course of study, students learn to perform research, to utilize new technological resources, to manage organizational finances, and to fully utilize and manage human resources. Emphasis is placed on the theoretical foundations of public service and the special ethical considerations of work in the public and nonprofit sectors. Elective courses address specific student interests.

The Graduate School of Public Affairs is a place where the University meets and exchanges ideas and information with the local, state, and national communities. GSPA also sponsors conferences, training programs, and other opportunities for lifelong learning. These activities help to create a community of public servants, and they ensure that the University and the community share their rich resources.

Faculty

Dean and Professor: Kathleen Beatty; Associate Dean: Fred Rainguet; Professors: Donald Klingner and Mark McConkie.

Master of Public Administration Degree

The Master of Public Administration (MPA) program serves the needs of pre-service students who wish to begin a career in the management of public or nonprofit organizations, mid-career public or nonprofit sector professionals who wish to enhance their potential for career advancement, and people from the private sector who intend to move into the public or nonprofit sectors. The MPA is a broadly recognized credential for public service management at all levels of government and in many nonprofit organizations. It also serves as a foundation for doctoral work in the field of public administration.

The curriculum of the MPA program provides students with a range of theoretical and practice-based concepts in topical areas such as the field of public administration, leadership, ethics, public policy, methods of conducting research, and human resources and financial management. The curriculum also includes a variety of elective courses that allow students to tailor their programs to their particular career interests.

Minimum Requirements for the MPA Degree

1. Completion of a minimum of 36 semester hours of graduate course work. A grade point average of B (3.0 on a 4-point scale) or better is required for degree candidacy, and students must earn grades of B- or better in all required courses. Credit will not be counted for any course in which a student earns a grade of C- or lower.

2. Completion of six core courses or approved equivalents: PAD 5001 Governance and Institutions; PAD 5002 Organizational Management and Change; PAD 5003 Information and Analytic Methods; PAD 5004 Economics and Public Finance; PAD 5005 The Policy Process and Democracy; PAD 5006 Ethics and Leadership. **Students are expected to complete PAD 5001 within their first two semesters of enrollment.**

3. Completion of fifteen semester hours of electives. Elective courses include a mixture of specialized courses,

workshops, and other formats. Students may choose to use these elective hours to build an area of concentration designed to meet individual needs. Where appropriate, students may include specialized courses offered by other departments and schools of the University, with prior written approval of the faculty advisor or dean.

4. Completion of the Advanced Seminar/ Professional Practicum. This course presents students with the opportunity to apply knowledge gained in course work to a question of interest drawn from their current or future careers in public or nonprofit organizations. The Advanced Seminar/Professional Practicum is taken in the final semester of the student's program. It allows the student to apply the knowledge and skills gained in his or her course work through in-class discussions and individual or group projects. **All core courses must be completed before a student enrolls in the advanced seminar.**
5. Field study in public administration. Students who have limited experience (generally defined as less than one year of experience) in public or nonprofit organizations must complete an internship. Students register for PAD 6910 for three credit hours while completing the internship, which includes a minimum of 300 hours of supervised work and study. **This requirement raises the total semester hours needed to earn the MPA degree to 39.** Applicants to the program will be reviewed, and those who must complete internships will be notified. Students ordinarily begin an internship following completion of the core and related elective courses.
6. Additional internship opportunities. Students who are not required to complete an internship as part of their degree program may nevertheless opt to participate in a field experience as an independent study and may earn credit for doing so. Those who wish to pursue this opportunity should contact the GSPA Internship Coordinator.

Master of Criminal Justice Degree

The Master of Criminal Justice (MCJ) program is designed for students interested in comprehensive professional graduate education in the field of criminal justice. It is intended to develop in the student a fundamental understanding of the basic fields within criminal justice and of background material from supporting disciplines which would enable the student to adapt to many operational specializations. As an academic and professional field of study, this program is dedicated to preparing men and women not only to administer the system as it presently exists but also to evaluate, to analyze and to change — to become pioneers in accelerating the shaping of a rational and responsive criminal justice system.

To deal with this system effectively, research design capability must be developed along with the skills required for the ordering and analysis of empirical data. This course of study will also prepare the student to be an innovator in crime control and prevention through course work dealing with strategies and skills for promoting individual, organizational, and social change.

Minimum Requirements for the MCJ Degree

1. The program leading to the MCJ degree requires a minimum of 36 semester credit hours of appropriate graduate study. A grade point average of B (3.0 on a 4-point scale) or better is required for degree candidacy, and students must earn grades of B- or better in all required courses. Credit will not be counted for any course in which a student earns a grade of C- or lower. No more than six credit hours of independent study can be applied toward the degree.
2. Completion of the following core courses is required: CJ 5000 Law and Social Control; CJ 5100 Administration of Criminal Justice; CJ 5120 Nature and Causes of Crime; CJ 5321 Research Methods in Criminal Justice.
3. Completion of 21 semester hours of electives. Elective courses include a mixture of specialized courses, workshops, and other formats. Students may choose to use these elective hours to build an area of concentration designed to meet individual needs. Where appropriate, students may include specialized courses offered by other departments and schools of the University, with prior written approval of the faculty advisor.
4. Students must complete a minimum of 27 semester credit hours of course work in criminal justice. The remaining courses for the degree may be under the criminal justice heading or under another discipline, with prior written approval of the faculty advisor.
5. Field study in criminal justice. Students who have not had experience in a criminal justice organization are required to complete CJ 6910 Field Study in Criminal Justice. A minimum of 240 hours of supervised work is required to earn three hours of credit. All required core courses must be completed before enrolling in CJ 6910.
6. Completion of the Advanced Seminar/ Professional Practicum. This course presents students with the opportunity to apply knowledge gained in course work to a question of interest drawn from their current or future careers in criminal justice. The Advanced Seminar/Professional Practicum is taken in the final semester of the student's program. It allows the student to apply the knowledge and skills gained in his or her course work through in-class discussions and individual or group projects. **All core courses must be completed before a student enrolls in the advanced seminar.**

Admission Requirements

1. Applicants must have completed a bachelor's degree from a college or university of accredited standing, with grades sufficiently high to indicate ability to pursue graduate work. The applicant may have majored in any field for the undergraduate degree. Two sets of official transcripts are required from all higher education institutions.
2. Applicants for admission must submit three recommendations by qualified references that establish the applicants' personal qualifications for graduate work. Recommendations may be from professors, employers, and/or others who are acquainted with the prospective student's professional and/or academic work.
3. Applicants are required to take the Graduate Record Examination (GRE), Graduate Management Aptitude Test (GMAT), or the Law School Admissions Test (LSAT) unless they meet the requirements for waiver as stated below. Standard graduate admission

test scores are normally waived when the candidate already has a master's degree in another field. MPA applicants may have test scores waived if: 1) they have an undergraduate grade point average of 3.0 or better **and** 2) can demonstrate significant professional accomplishment.

4. Applicants should submit all admissions materials by July 1 for the fall semester, December 1 for the spring semester, and May 1 for the summer term.
5. Students who have missed the deadline for the upcoming semester may register as nondegree students. Up to twelve credit hours of public administration or criminal justice course work taken as a nondegree student may be applied to the MPA or MCJ degree program. Nondegree student application forms are available in the Office of Admissions.

Academic Policies

Transfer of Credit

Up to nine semester hours of appropriate graduate work from an accredited college or university may be credited toward the Master of Public Administration or Master of Criminal Justice degree. Courses to be transferred should have been taken within five years of the request for transfer of credit. All transfer work must be approved in writing by the dean.

Standards of Performance

To be in good standing, students must have an overall grade point average of not less than a 3.0 in all course work. The academic performance of each student will be reviewed at the end of each semester. A student who has a grade point average less than 3.0 will, at the dean's discretion, be placed on probation or suspended from the program. Nondegree students who do not maintain a 3.0 grade point average may not be allowed to enroll in any additional GSPA courses. Any student receiving a grade of F in any course is automatically placed on probation.

After a student has been placed on probation, he or she has a maximum of two semesters (fall and spring) to raise his or her grade point average to 3.0. Courses taken to raise the cumulative grade point average must be applicable to the degree and must be taken in the two semesters (fall and spring) immediately following the semester in which the cumulative grade point average fell below 3.0. Failure to raise the cumulative grade point average to 3.0 in the time period outlined will result in immediate suspension from the program.

Time Limit

Master's degree students must complete all course work and degree requirements within six years of registration in their first course. Exceptions must be approved in writing by the dean.

Certificate Programs

Students who wish to sharpen their knowledge and skills without committing to the full MPA or MCJ degree programs may earn a certificate in one of three areas by completing four designated courses. Students who complete a certificate and later enter the MPA or MCJ program may count all credits toward the respective degree.

The Certificate in Public Management

This certificate, awarded to students interested in public sector management, focuses on the key areas of expertise required of public administrators. Required courses include the following:

PAD 5001 Governance and Institutions

PAD 5002 Organizational Management and Change

PAD 5220 Human Resources Management

PAD 5502 Public Sector Financial Management

The Certificate in Nonprofit Management

This certificate program provides present and potential nonprofit managers with the opportunity to improve their managerial skills as well as their knowledge of nonprofit administration. The following courses are required:

PAD 5001 Governance and Institutions

PAD 5110 Seminar in Nonprofit Management

PAD 5140 Nonprofit Financial Management

PAD 5220 Human Resources Management OR
PAD 5350 Program Evaluation

The Certificate in Criminal Justice

This certificate focuses on the development of managerial skills for law enforcement, corrections, and other professionals in the field of criminal justice. Required courses include:

CJ 5100 Administration of Criminal Justice

CJ 5120 Nature and Causes of Crime

Plus 2 of the following courses:

CJ 5000 Law and Social Control

CJ 5320 Seminar in Police Administration

CJ 5520 Seminar in Corrections

CJ 5551 Judicial Administration

Certificate Eligibility Requirements

Any person with a bachelor's degree from an accredited institution may apply to the certificate program by submitting to the Graduate School of Public Affairs official college transcripts from each institution attended and one letter of recommendation written by a supervisor or co-worker. Before enrolling for courses, students must submit an application for unclassified student status and pay the required $20 unclassified student application fee. Nondegree student application forms are available in the Office of Admissions. Students who have been admitted to the MPA or MCJ program may also earn a certificate by completing the course requirements listed above.

Rocky Mountain MPA (The Online MPA)

The Rocky Mountain MPA provides a unique opportunity for students with complicated and busy schedules, or those who live at a distance from the University, to obtain a Master of Public Administration (MPA) degree. Online courses are web-based versions of the same classes offered on campus, and they usually follow the regular semester schedule. Consult the Schedule of Courses each semester for more information.

GSPA

Doctor of Philosophy in Public Affairs

The Graduate School of Public Affairs offers a program of advanced graduate study leading to the Doctor of Philosophy (Ph.D.) in Public Affairs. The program, based on the Denver campus, permits work to be taken on any campus of the University if it is part of the approved program of study or degree plan. Application deadline is February 1. For further information or application materials, write or call:

Graduate School of Public Affairs
University of Colorado at Denver
1380 Lawrence Street, Suite 500
Denver, Colorado 80204
(303) 556-5970

For further information, contact Perrin Cunningham, The Heller Center Director, at The Heller Center for Arts and Humanities, UCCS, PO Box 7150, Colorado Springs, CO 80933-7150; 262-3964 or pcunning@uccs.edu.

Theatreworks

THEATREWORKS is the regional producing theatre sponsored by UCCS. Founded in 1975, it has produced more than 175 different plays over the last 25 years, winning a Governor's Award for Excellence in the Arts in 1994. THEATREWORKS normally produces 6-8 professional productions each year, including the nationally-recognized summer Shakespeare festival.

THEATREWORKS productions are often directly linked to the university curriculum, and students may attend productions at the new Bon Vivant Theatre free of charge. In addition, university students regularly participate in THEATREWORKS productions either backstage or in the cast and have the opportunity to work with national guest artists. THEATREWORKS works directly with the academic theatre program by providing artistic and technical support and frequently mounts co-productions either in the Bon Vivant or the new Osborne Studio. For further information, call Amanda Mountain, sales & marketing director, at 262-3114.

Trauma Center

The UCCS Trauma Studies and Resource Center is a comprehensive center focusing on research, intervention, and education around trauma. The center will achieve its mission through multidisciplinary efforts that support the three primary responsibilities of the university: research, teaching, and community service.

To contact the CU Trauma Center, please e-mail us at benight@mail.uccs.edu.

Academic Programs

The College of Letters, Arts, and Sciences offers the bachelor of arts degree in the following fields: anthropology, art history, biology, chemistry, communication, economics, English, geography and environmental studies, history, philosophy, political science, psychology, sociology, Spanish and visual arts. The college offers bachelor of science degrees in chemistry and physics.

The college also offers course work, but not degrees, in the following areas: ethnic studies, energy science, film studies, French, gallery management, German, professional writing, leadership studies, theatre, and women's studies. Courses in some of these areas can be used for formal academic minors, and in some cases they can provide the core for a distributed studies major (see distributed studies section in this bulletin).

A student who holds a bachelor of science (BS) degree may earn, in addition, a bachelor of arts (BA) degree. All college degree requirements must be met. Transferable courses from the BS degree may count toward satisfaction of all such requirements except the 30-hour residency requirement. A student who is taking a second major must take all 30 hours in residence as a degree student in the College of Letters, Arts, and Sciences. The student will be required to take at least 30 resident hours in the major of the second degree.

A student who holds a bachelor of arts degree may earn a second BA or a BS degree. In addition to satisfying all college and departmental degree requirements with either transferable courses or coursework taken in the college, the student will be required to take 30 resident hours in the major of the second degree. Required major courses that were taken for the first BA need not be repeated but may not count toward these 30 required hours.

Students working toward a second degree must be registered with the Office of Admissions and Records as degree students. Questions regarding the requirements for a second bachelor's degree should be addressed to the academic advisors in the Student Success Center.

Students may also enroll in the College of Letters, Arts, and Sciences for varying periods of time to prepare themselves for admission to one of the professional schools of the university.

Requirements for Admission

The bulletin that governs a student's graduation requirements is the one in effect at the time of a student's most recent admission into the college of the student's degree program.

Candidates for regular admission to the College of Letters, Arts, and Sciences are expected to meet the general requirements for admission to the university.

Freshmen

Freshmen must rank in the upper 40 percent of their high school graduating class, must have 15 units of acceptable high school work (referred to as the Minimum Academic Preparation Standards, or MAPS), and have the following minimum test scores: American College Test (ACT) 24 or Scholastic Aptitude Test (SAT) 1,080

Acceptable high school courses in each academic field are as follows:

English: courses in the history and appreciation of literature, composition (including all composition given as part of a basic English course), grammar, speech, and journalism are acceptable as English units.

Mathematics: courses in algebra, plane and solid geometry, trigonometry, analytic geometry, calculus, and other courses designed for college preparation and emphasizing basic concepts and principles of deductive reasoning are acceptable as mathematical units. Courses designed for other purposes (e.g., consumer mathematics, business mathematics, many courses entitled general mathematics) are not acceptable as mathematics units.

Natural Science: courses in physics, chemistry, biology, zoology, anatomy, physiology, general science, astronomy, and geology are acceptable as natural science units.

Social Science: courses in American government, civics, economics, general sociology, geography, history, problems of democracy, psychology, social science, and social problems are acceptable units.

Freshman applicants for admission will normally be required to present the following high school units:

English (2 units of the 4 must be composition)	4
Foreign language (in one language)	2
Natural science	3
Mathematics	3
Social science	2
Academic electives	1

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toward graduation from the University of Colorado. Inquiries may be addressed to the university's Language Technology Center in Dwire Hall 311.

Department Programs, Requirements, and Course Descriptions

Course numbers are an approximate reflection of academic level. Freshman courses are indicated as 100-199, sophomore courses as 200-299, etc. Students are strongly urged to consult with the department prior to registration before signing up for any upper-division course (300 or 400 level) in a field in which they have not had lower-division (100 or 200 level) preparation.

Anthropology

Professor: Tom Wynn; Associate Professors: Gerald Broce, Forrest Tierson and Linda Watts (Chair); Assistant Professor: Minette Church; Senior Instructor: Craig Palmer; Research Instructor: William Arbogast.

Anthropology – Bachelor of Arts

Major Requirements

The bachelor of arts in anthropology requires 36-54 credit hours of course work in anthropology. In order to expose majors to the variety of perspectives incorporated in the discipline, the following department courses are required for graduation: Survey of Prehistory (ANTH 220), Survey of Biological Anthropology (ANTH 230), Survey of Cultural Anthropology (ANTH 240), and Nature of Language (ANTH 280). Majors must also take History of Anthropology (ANTH 397) and Senior Seminar (ANTH 498). Students must take ANTH 397 before they take ANTH 498.

Students interested in specializing in archaeology should consider taking the following courses offered by other departments: Beginning Drawing (V A 104), Environmental Systems: Landforms (GES 101), Introduction to Cartography (GES 305), Introduction to Geographic Information Systems (GES 405), Introduction to Remote Sensing (GES 406), Principles of Geomorphology (GES 431), and Soils (GES 434). Indeed, students interested in pursuing a career in archaeology are urged to consider completing a minor in geography and environmental studies.

Minor Requirements

Students interested in a minor in anthropology are required to complete three of the following four 200 level courses: ANTH 220, ANTH 230, ANTH 240, and ANTH 280. They must also meet the college's minimum requirements for minor programs (18 hours, with 9 hours in the upper division).

Honors Program

In addition to the regular undergraduate curriculum in anthropology, the department offers students an honors program. Before or during the first semester of the junior year, interested students should contact any anthropology faculty member about this program.

Bibliography

Senior Instructors: Christina Martinez and Judith Rice-Jones.

Biology

Professors Emeritus: James Mattoon and Douglas Swartzendruber; Associate Professors: Jackie Berning, Sandy Berry-Lowe, Robert Melamede (Chair) and Karen Newell; Assistant Professors: Jeff Broker, Dan Guerra and Tom Wolkow; Senior Instructor: Jon Pigage; Instructor: Kathleen Malueg.

Biology – Bachelor of Arts

Major Requirements

1. The student must complete at least 30 hours of coursework in biology including a minimum of 16 hours in upper-division (300- or 400-level) courses. A grade of C or above must be attained in all required courses. NOTE: 54 hours in the major is the maximum towards fulfilling the 120-hour graduation requirement.
2. The three-semester sequence required in chemistry is General Chemistry (CHEM 103 and 106) and Organic Chemistry (CHEM 330/340). It is strongly advised that general chemistry be taken in the first year and organic chemistry in the second year. The two semester sequence of organic chemistry (CHEM 331/333 and 332/334) is required for students planning to enter medical or graduate school.
3. A two-semester sequence is required in physics - Physics for Life Sciences (PES 101-115/102-215) or General Physics (111-115/112-215) is acceptable.
4. Competency in Calculus I (MATH 135) is required. It can be met by scoring 4 or 5 in the AP Math-Calculus test or a 3, 4, or 5 in the AP Math-Calculus BC test. The one-semester course Biometry (BIOL 300) is also required.
5. The major in biology recognizes that required departmental courses (Biology I and II, Cell Biology, Genetics, Biochemistry and Biology Seminar) and certain biology area requirements are needed for the development of competence in the biological sciences. The major must take all required courses and at least one course from each of the three biology area requirements (listed below).
6. A maximum of 8 hours of credit taken in BIOL 940-949 (Independent Studies) and Externship in BIOL 471-474 count toward the major.

GENERAL REQUIREMENTS
(NOTE: Failure to take courses in the recommended sequence will result in future course conflicts.)

Biology I

(Introduction to Cell Biology) ..... BIOL 110-3
Introduction to Cell Biology Lab .... BIOL 111-1
Biology II (Organismic Biology)..... BIOL 115-3
Organismic Biology Lab ..... BIOL 116-1
Research Methods in Biology ..... BIOL 300-3
Cell Biology ..... BIOL 302-3
Genetics ..... BIOL 383-3
Biology Seminar ..... BIOL 401-1
Biochemistry BIOL 481-3 and 482-4, or 483-3
One year of General Chemistry ..... CHEM 103/106
One semester of Organic Chemistry..... CHEM 330/340
One year of Physics .PES 101/102, 115/215
One semester of Calculus.....MATH 135

AREA REQUIREMENTS (at least one course from each area is required)

Human Biology

Human Anatomy and Physiology 201-4, 202-4
Biomedical Aspects of Aging 204-3
Nutrition for Health Sciences 205-3
Human Physiology 321-3
Exercise Physiology 330-3

Beth-El College of Nursing and Health Sciences

Carole Schoffstall, Dean

University Hall

3955 Cragwood

(Corner of Austin Bluffs Pkwy & Union Blvd.)

Telephone (719) 262-4422
Fax: (719) 262-4416

Beth-El School of Nursing was established in 1904 by an agency of the Methodist Church. The school was purchased by the City of Colorado Springs in 1943. In 1983 the school sought regional accreditation from NCA to acquire college status as a professional school. Beth-El operated as a city school/college until 1997. In July 1997, Beth-El merged with CU-Colorado Springs. The College moved to the CU-Colorado Springs campus in December 1997.

Mission

Beth-El College of Nursing and Health Sciences prepares graduates for service and leadership roles in health care. The college addresses the nursing and allied health science educational needs of the city of Colorado Springs and Southern Colorado by offering undergraduate and graduate degrees as well as certificate, and life-long learning programs. The multidisciplinary approach to academic and clinical excellence fosters a community of scholarship and caring that extends beyond the walls of the college influencing the present and future direction of health care. The college facilitates collaboration for the promotion of a healthy community.

Program Accreditations

Colorado State Board of Nursing

National League for Nursing

CCNE Graduate Nursing Program

Memberships

Colorado Association of Colleges of Nursing

Colorado Council of Nurse Educators

American Association of Colleges of Nursing

Sigma Theta Tau (Xi Phi Chapter)

National League for Nursing

Clinical Learning Experiences

The College utilizes diverse clinical facilities to provide learning opportunities for students in Colorado Springs, Pueblo, Denver, and throughout the country. Memorial Hospital, Penrose/St. Francis Health Services, Evans Army Hospital, Pikes Peak Hospice, Cedar Springs Behavioral Health Systems Inc. and Colorado Mental Health Institute at Pueblo provide clinical learning environments for students. In addition over 130 community agencies, care provider offices, other health agencies and hospitals are utilized for clinical experiences.

Faculty

Professor: Carole Schoffstall; Associate Professors: Mary Hagedorn, Barbara Joyce-Nagata, Kathy LaSala, Jenenne Nelson, Cindy Roach, Zug Standing Bear. Assistant Professors: Lynne Bryant, Jewell Chambers, Lea Gaydos, Jennifer Hensley, Mary Ann Kluge, Richard Petersen, Travis Peterson, Glenda Reimer, Elizabeth Teichler; Senior Clinical Instructors: Marcia London; Clinical Instructors: Ellen Biebesheimer, Trellis Moore, Kit Pedersen, Jefferson Spicher.

Programs of Study

Bachelor of Science in Nursing (BSN)

Bachelor of Science in Nursing - Accelerated

RN to Bachelor of Science in Nursing (BSN) Distance Option Available

RN to Master of Science in Nursing (MSN)

Bachelor of Science in Health Care Science (BS)

Options:
- Nutrition
- Forensic Health Science
- Sports Health and Wellness Promotion
- Health Care Management
- Completion degree in Radiation Technology & Paramedicine
- Allied Health (self defined)

Minors: Forensic Science, Health Care Management, Sports, Health & Wellness Promotion

Masters of Science in Nursing (MSN)

Options:

Nurse Practitioner
- Adult Nursing
- Adult Gerontology
- Neonatal Nursing
- Family Nursing
- Nursing Administration
- Women's Health (completion)
- Psychiatric*
- Pediatric*

*In collaboration with UCHSC

Clinical Specialist
- Neonatal Nursing
- Community Health Nursing
- Forensic Nursing
- Self Defined Option

Minors: Holistic, Forensic, Community Health, Gerontology, Business Administration, Public Administration, Nursing Administration & Nursing Education Minor.

Certificates:
Undergraduate and graduate

Options:
- Forensic Nursing or Health Science
- Gerontology Nursing
- Holistic Nursing
- Neonatal Nursing (post Masters only)

Academic Policies

All students are responsible for knowing and following the provisions set forth in this Bulletin, in the Schedule of Courses and in the Beth-El Student Handbook. It is also the responsibility of the student to know and observe program requirements and deadlines.

The bulletin that governs a student's graduation requirements is the one in effect at the time of a student's most recent admission into the college of the student's degree program. The academic policies and regulations stated herein are in effect at the time this bulletin is printed but may be subject to change. In an effort to regularly enhance the programs offered as well as meet the needs of our students, changes are made periodically to the curricula. These changes may not be reflected in this catalog. You are encouraged to visit the website at web.uccs.edu/bethel, the undergraduate student handbook at web.uccs.edu/bethelstudenthandbook or the graduate student website at web.uccs.edu/bethel.msn.handbook for current information.

Undergraduate Academic Progress

To be eligible to graduate with one of the bachelor's degrees in the College of Nursing & Health Sciences, a student must meet the following minimum requirements:

- Be admitted into the degree major at least 30 credits prior to graduation
- Have at least a 2.0 cumulative GPA, including CU GPA plus transfer GPA
- Complete all general education courses with a C- or better
- For nursing students, complete all Nursing and Health Science courses with a C or better
- For health care science students, complete all core and option requirements with a C- or better
- Complete the Writing Competency Exam as outlined in the General Information section of this Bulletin
- Satisfactorily complete any previously identified MAPS deficiencies

Undergraduate Standards of Performance

To remain in good academic standing, undergraduate students must maintain a cumulative CU grade point average of 2.0 or better for all courses attempted. In addition, no course grade below a C- is applicable to the degree program. For nursing students no course grade below a C is allowed if the course is a required health science or nursing course.

Probation and Suspension Policy

Academic Probation for Nursing Students: Students may be placed on academic probation if their CU GPA falls below 2.0 or if they receive a grade below a C in required health science or nursing courses for the first time. They may continue with required courses unless the failed course/courses are pre-requisites for upcoming courses. In that case the failed course/courses must be repeated prior to progressing. If the failed course/courses are general education courses, the student must meet with the Nursing Advisor in the Student Success Center to create a plan for future success. Students may remain on academic probation for a maximum of three semesters. If, by the end of their third semester of probation, their CU GPA has not been raised to 2.0 or better, they will be subject to suspension from the College. If the failed course is a clinical course, the student must meet with the Chair of the Undergraduate Nursing Department to discuss clinical progression.

Academic Probation for Health Care Science Students: Students may be placed on academic probation if their CU GPA falls below 2.0 or if they receive a grade below a C- in required core or option courses for the first time. They may continue with required courses unless the failed course/courses are pre-requisite for upcoming courses. In that case the failed course/courses must be repeated prior to progressing. Students must meet with the Nursing Advisor in the Student Success Center to create a plan for future success. Students may remain on academic probation for a maximum of three semesters. If, by the end of their third semester of probation, their CU GPA has not been raised to 2.0 or better, they will be subject to suspension from the College.

Clinical Probation for Nursing Students: Each undergraduate clinical student will receive a progress evaluation at the end of each rotation within the semester. If the student receives an unsatisfactory rating, the student will be placed on clinical probation and must consistently improve all ratings to satisfactory by the end of the semester in order to pass the course. It is possible to receive a failing grade on clinical without having previously been placed on probation. Clinical failure constitutes failure of the entire course, regardless of academic scores on theory content.

Academic Suspension for Nursing and Health Care Science Students: Two failures of any required nursing and/or health science core and specialty courses of two credits or greater will result in dismissal from the College. Students may petition in writing to the Department Chair for readmission to the College within 30 calendar days. Dismissal from the Nursing or Health Care Science Program does not imply dismissal from the University of Colorado.

Course Pass/Fail Registration

With the exception of NURS299 or 300, students in the College of Nursing & Health Sciences may not use courses taken on a pass/fail basis to satisfy degree requirements.

Incomplete Grades

Please refer to the General Information section of this Bulletin for an explanation of IW or IF grades.

Student Organizations

Nursing Prep students are encouraged to join the Beth-El Student Nurses' Association upon admission. Information can be obtained at http://web.uccs.edu/bsna.

Nursing – Bachelor of Science

The graduate is prepared to practice professional nursing while providing care for individuals, families, groups and communities. Students who are not RNs will choose the traditional curriculum plan.

Admission Requirements for Bachelor of Science in Nursing Program

Freshmen

Students who have a previous conviction for a felony as well as some misdemeanors may not be eligible to be placed in clinical assignments and may not be allowed to sit for the State Board of Nursing exam (NCLEX), even if they complete a degree in nursing. Contact the Colorado State Board of Nursing for additional information prior to application to Beth-El College of Nursing & Health Sciences.

Students applying as freshmen must meet all three of the following criteria:

- Rank in the top 30th percent of their high school graduating class
- Complete suggested high school course units with an un-weighted GPA of 3.0 or better
- Achieve a composite score of 24 on the ACT or a total score of 1080 on the SAT

Suggested High School Course Units

English	4 years
Math-College Prep	3 years
Chemistry	1 year
Biological Science	1 year
Non-lab Science	1 year
Social Sciences	2 years
Foreign Language	2 years
Academic Electives	1 year

Students who meet admission criteria are admitted into the Nursing program

under Nursing Prep. Nursing Prep students complete general education requirements while awaiting an invitation into the clinical portion of the program. In order to progress into the clinical portion of the program, students must have completed the first year curriculum courses successfully (C- or better with the exception of HSCI207 which must be completed with a C), attain a cumulative GPA of 3.0 or better, and have availability of a clinical spot. Due to the limited number of clinical spots available, ranking will occur based on date of admission and more than 4 years may be required to complete the program. Nursing Prep students must meet with their academic advisor prior to registration for any semester and will be notified by mail for appointment opportunities.

Students not admitted directly into the college of Nursing & Health Sciences may still be admitted to UCCS under the College of Letters, Arts and Sciences Pre-Nursing program. Freshmen admitted to the Pre-Nursing program may apply to transfer to the College of Nursing & Health Sciences once 30 credit hours of designated nursing curriculum courses have been completed with a cumulative GPA of 3.0 or better. Contact the Nursing Advisor in the Student Success Center for details. Admission eligibility to the University of Colorado does not constitute a guarantee of enrollment in any specific nursing program.

Transfer Students

Students who have attended a collegiate institution other than CU or who have been admitted to a different college within the university may apply as transfer students if they have completed 30 credit hours of transferable college level work. Applicants for the nursing program must have a cumulative GPA of 3.0 or better. Transfer students must be in good standing and eligible to return to all institutions previously attended. While transferability of credits is determined by the Office of Admissions, final application to the degree program is determined by the College of Nursing and Health Sciences. Students who meet admission criteria are admitted into the Nursing program under Nursing Prep. Nursing Prep students complete general education requirements while awaiting an invitation into the clinical portion of the program. In order to progress into the clinical portion of the program, students must have completed the first year curriculum courses successfully (C- or better with the exception of HSCI 207 which must be completed with a C), maintain a cumulative GPA of 3.0 or better, and have availability of a clinical spot. Due to the limited number of clinical spots available, ranking will occur based on date of admission. Nursing Prep students must meet with their academic advisor prior to registration for any semester and will be notified by mail for appointment opportunities.

Students who have attended a different BSN program and who wish to transfer must meet the above stated admission criteria. In addition, students who wish to transfer from a different BSN program must be in good standing and eligible to return to all institutions previously attended. Clinical placement is subject to review of completed clinical courses and availability of appropriate clinical spot.

Returning Students

Students who were previously admitted into the College of Nursing & Health Sciences and who must reapply, must meet the admission criterion of a cumulative GPA of 3.0 or better. If no clinical courses have been completed, students will be readmitted into Nursing Prep to complete general education requirements and await availability of clinical spot. If clinical courses have been completed, assessment of clinical skills may be required with determination of clinical placement based upon the assessment and availability of clinical spot.

Advanced Placement for LPN's

All students seeking advanced standing will be required to meet the same prerequisites and terminal objectives of the college as traditional students. Advanced placement credit may be obtained by transfer or credit examination. Advanced placement students must have an active unrestricted LPN license in Colorado and have completed at least 30 credit hours of transferable college level work with a cumulative GPA of 3.0 or better prior to application.

If eligible, student will receive notification of admission. Admission eligibility to the University of Colorado does not constitute a guarantee of enrollment in any specific nursing program.

Curriculum Plan for Traditional Baccalaureate Nursing Students

First Year

ANTH 104 Cultural Anthropology 3
BIOL 201 Anatomy and Physiology I 4
BIOL 202 Anatomy and Physiology II 4
CHEM 101 Chemistry I 4
CHEM 102 Chemistry II 4
ENGL 131 Rhetoric and Writing I 3
ENGL 141 Rhetoric and Writing II.....3
HSCI 207 Nutrition for Health Professional3
PSY 100 General Psychology 3-4
General Education Elective 3

34-35 credits

All first year courses must be completed prior to progressing to second year courses.

Second Year

BIOL 203 Microbiology 4
HSCI 101 Pharmacological Math .....
(16 clock hours)
HSCI 205 Pharmacology 3
HSCI 301 Pathophysiology 3
NURS 123 Foundations of Nursing Practice 3
NURS 208 Health Promotion 3
NURS 210 Basic Health Assessment 3
NURS 220 Fundamentals of Nursing 6
PSY 362 Developmental Psych 3
SOC 111 Intro to Sociology.....3-4

31-32 credits

All second year courses must be completed prior to progressing to third year courses.

Third Year

HSCI 206 Health Science Statistics 3
NURS 310 Mental Health Nursing 6
NURS 320 Nursing Care of Adults I 5
NURS 321 Nursing Care of Adults II 5
NURS 401 Nursing Research 3
Nursing/Health Science Elective 3
Humanities Elective.....3

31 credits

All third year courses must be completed prior to progressing to fourth year courses.

Fourth Year

NURS 410 Nursing Care of Children 6
NURS 420 Nsg Care of the Childbearing Family 6
NURS 429 Advanced Nursing.....6
NURS 440 Community Health Nursing 6
NURS 449 Nursing Capstone 2
General Education Elective.....3
Humanities Elective 3

32 credits

Total Program Credits:.....128-130

Computer Competency Requirements

Students are expected to have basic computer skills upon entering Beth-El. If not, students can take a computer literacy course to count for general education elective credit.

Continuing Students

Once students have accepted an invitation for a clinical spot their status will be changed from Nursing Prep to Nursing. The nursing curriculum is a very structured program and must be adhered to in order. Second year courses must be successfully completed prior to progression of third year courses. Third year courses must be successfully completed prior to progression of fourth year courses. If an interruption in the sequencing of courses is necessary, students accept their Leave of Absence knowing that a possible delay in program completion may occur. Non-matriculating students only return on a space available basis. Students must make an appointment with the Nursing Advisor or the Chair of the Undergraduate Nursing Department prior to registration. Sophomore and junior level nursing students must meet with their academic advisor prior to registration for any semester and will be notified by mail for appointment opportunities.

Leave of Absence

Leave of Absence requests must be made in writing to the Chair of the Undergraduate Nursing Department. Refer to the Beth-El Student Handbook for an explanation of the policy.

Nursing for Registered Nurses – Bachelor of Science

Multiple entry levels facilitate the educational upward mobility of RNs. All students seeking advanced standing will be required to meet the same prerequisites and terminal objectives of the college as traditional students. Advanced placement credit may be obtained by transfer credit, or credit by examination. Those seeking advanced placement in the baccalaureate program must meet the following requirements:

- Clinical practice experiences of at least 1,000 hours within the past three years or completion of an approved R.N. refresher course
- Advanced placement students must have an active unrestricted R.N. license in Colorado and have graduated from an accredited program. Request information related to the "Colorado Articulation" to answer additional questions for registered nurses seeking advanced placement

Curriculum Plan for Advanced Placement in R.N. to B.S.N.

General Education

ANTH 104 Cultural Anthropology.....3
BIOL 201 Anatomy and Physiology I.....4
BIOL 202 Anatomy and Physiology II.....4
BIOL 203 Microbiology.....4
*HSCI 207 Nutrition for Health Science 3
CHEM 101 Chemistry I.....4
*CHEM 102 Chemistry II.....4
ENGL 131 Rhetoric and Writing I 3
ENGL 141 Rhetoric and Writing II..... 3
HSCI 206 Health Science Statistics..... 3
PSY 100 General Psychology..... 3
PSY 362 Developmental Psych.....3
SOC 111 Intro to Sociology..... 3
Humanities Elective (2)..... 6
General Education Elective (2) 6

56 credits

Nursing/Health Science Required Courses

HSCI 301 Pathophysiology 3
NURS 304 Patterns of Knowing (R.N.).....3
NURS 305 Health Assessment (R.N.) 3
NURS 401 Nursing Research 3
NURS 425 Professional Nursing Practice (R.N.) 3
NURS 435 Nursing Management (R.N.).....3
NURS 445 Community Health (R.N.) 6
NURS 448 Capstone (R.N.).....2
Nursing/Health Science Elective (2).....6

32 credits

Colorado Articulation: Credits granted through articulation for RNs .....40 credits

Total Program Credits: .... 128-130 credits

*For RN programs with integrated content, substitutions for these courses are possible.

Nursing-Accelerated Program – Bachelor of Science

Students who have completed a bachelor's degree in a non-nursing field may be eligible to apply for the accelerated BSN program if they have successfully completed (C- or better) all of the general education requirements as detailed on our website at web.uccs.edu/bethel and have a cumulative GPA of 3.0 or better. Contact the Chair of the Undergraduate Nursing Program or the Nursing Advisor for specific information.

B.S.N. Program Requirements

Clinical Requirements for Students in the B.S.N. Program

Nursing students are to keep a personal file of the following information. It will be reviewed by clinical faculty prior to any clinical courses.

- Colorado Nursing License (for R.N. to B.S.N. students)
- CPR card
- Date and result of PPD test or last chest x-ray report if unable to take PPD
- Date and result of Rubella Titer or evidence of MMR boosters (2) if born after 1957
- Dates of Heptavax series
- Verification of Medical Insurance
- Date and results of TD within last 10 years

B.S.N. State Board Passing Rates

B.S.N. graduates of the program are eligible to apply to the Colorado State Board of Nursing to take the R.N. licensure examination.

State Board of Nursing passing rates for those taking the licensing exam (NCLEX) for the first time are one of the highest in the state of Colorado for B.S.N. Nursing programs.

Health Care Science – Bachelor of Science

The Bachelor of Science in Health Care Science prepares the graduate for professional practice in health related settings. The program includes a foundation in general education as well as a broad understanding of health care delivery systems.

It is possible to choose options within the program to develop advanced specialization in a specific or chosen discipline such as forensics, sports health and wellness promotion, nutrition and health care management or a self defined option. An upper division completion option is available in radiation technology and paramedicine for students with associate degrees in these areas.

Admission requirements for Bachelor of Science in Health Care Science

Freshmen

Students applying as freshmen must meet the following criteria:

- Rank in the upper 40% of high school graduating class
- Complete suggested high school course units with an un-weighted G.P.A. of 2.8 or better
- Achieve a composite score of 24 on the ACT or a total score of 1080 on the SAT

Suggested High School Course Units

English ..... 4 years
Math-College Prep ..... 3 years
Chemistry ..... 1 year
Biological Science ..... 1 year
Non-lab Science ..... 1 year
Social Sciences ..... 2 years
Foreign Language ..... 2 years
Academic Electives ..... 1 year

Freshmen applicants whose records vary in any way from the above admissions criteria will be considered on an individual basis by evaluation of their overall academic records including (a) the quality of their high school program of study; (b) the level of their college entrance test scores (SAT or ACT); and (c) any information unique to an individual situation.

Students not admitted directly into the College of Nursing & Health Sciences may still be admitted to UCCS under the College of Letters, Arts and Sciences Pre-Health Care program. Freshmen admitted to the Pre-Health Care program may apply to transfer to the College of Nursing & Health Sciences once 30 credit hours of designated health care science curriculum courses have been completed with a cumulative GPA of 2.5 or better. Contact the Nursing Advisor in the Student Success Center for details. Admission eligibility to the University of Colorado does not constitute a guarantee of enrollment in any specific health care science program.

Transfer Students

Students who have attended a collegiate institution outside of the CU system or who have been admitted to a different College within the University may apply to transfer into the Health Care Sciences program once 30 credit hours have been completed with a cumulative GPA of 2.5 or better. While transferability of credits is determined by the Office of Admissions, final application to the degree program is determined by the College of Nursing and Health Sciences.

Emergency Health Services Completion Option

Students must complete an EMT-Paramedic program at another approved program and submit a current National Registry Certification for credit hours (31) to be applied to the degree. Students then complete the health science program listed below.

General Education Course Requirements

ENGL 131 Rhetoric and Writing I 3
ENGL 141 Rhetoric and Writing II 3
HSCI 206 Health Science Statistics 3
Humanities Electives (2) 6
PSY 100 General Psychology 3-4
SOC 111 Introduction to Sociology 3-4
General Education Electives 6-9

Credits 30

Health Science Prerequisites

BIOL 201 Anatomy and Physiology I 4
BIOL 202 Anatomy and Physiology II 4
CHEM 101 Chemistry I 4
CHEM 102 Chemistry II 4
MATH 104 College Algebra 3
Science Electives 4
Social Science Electives 6

Credits 29

Health Science Core Requirements

HSCI 200 Professional Practice Foundations 3
HSCI 245 Health Care Environments 3
HSCI 248 Computer Applica Hlth Care 3
HSCI 301 Pathophysiology 3
HSCI 345 Trends and Issues 3
HSCI 401 Health Science Research 3
HSCI 436 Health Care Management 3
HSCI 450 Legal/Ethical Issues 3

Credits 24

EHS Option Requirements

HSCI 205 Pharmacology 3
HSCI 210 Patient Assessment 3
Paramedic Certificate Portfolio 31

Credits 37

Total Program Credits 120

Forensic Health Sciences

General Education Course Requirements

ENGL 131 Rhetoric and Writing I 3
ENGL 141 Rhetoric and Writing II 3
HSCI 206 Health Science Statistics 3
Humanities Electives (2) 6
PSY 100 General Psychology 3-4
SOC 111 Intro to Sociology 3-4
General Education Electives 6-9

Credits 30

Health Science Prerequisites

BIOL 201 Anatomy and Physiology I 4
BIOL 202 Anatomy and Physiology II 4
CHEM 101 Introduction to Chemistry I 4
CHEM 102 Introduction to Chemistry II 4
MATH 104 College Algebra 3
Social Science Electives 6

Credits 25

Health Science Core Requirements

HSCI 200 Professional Practice Foundations 3
HSCI 210 Patient Assessment 3
HSCI 245 Health Care Environments 3
HSCI 248 Computer Applications in Health Care 3
HSCI 301 Pathophysiology 3
HSCI 345 Trends and Issues 3
HSCI 401 Health Science Research 3
HSCI 436 Health Care Management 3
HSCI 450 Legal/Ethical Issues 3

Credits 27

Forensic Health Sciences Option Requirements

HSCI 4-- Health Science Elective 3
HSCI 429 Legal Aspects: Civil and Criminal 3
HSCI 430 Sexual Assault 3
HSCI 431 Introduction to Forensics 3
HSCI 432 Investigation of Injury and Death 3
HSCI 433 Crime Scene & Crime Lab 3
HSCI 434 Psychosocial Aspects of Forensics 3
HSCI 437 Violence and Human Rights 3
HSCI 438 Substance Abuse 3
HSCI 439 Forensic Photography 3
HSCI 440 Forensic Practicum 4
HSCI 441 Forensic Chemistry and Toxicology 4

Credits 38

Total Program Credits 120

Health Care Management Option

Students in this program can obtain a minor in Applied Management in addition to their bachelor's degree with completion of the following curriculum.

General Education Course Requirements

ENGL 131 Rhetoric and Writing I 3
ENGL 141 Rhetoric and Writing II 3
Humanities Electives (2) 6

PSY 100 General Psychology.....3-4
QUAN 201 Business Statistics.....3
SOC 111 Intro to Sociology.....3-4
General Education Electives.....6-9

Credits 30

Health Science Prerequisites
BIOL 201 Anatomy and Physiology I.....4
BIOL 202 Anatomy and Physiology II.....4
CHEM 101 Introduction to Chemistry I.....4
CHEM 102 Introduction to Chemistry II.....4
MATH 104 College Algebra 3
Science Electives 4
Social Science Electives
(ECON 101 or 202) 6

Credits 29

Health Science Core Requirements
HSCI 200 Professional Practice
Foundations.....3
HSCI 245 Health Care Environments 3
HSCI 345 Trends and Issues 3
HSCI 401 Health Science Research.....3
HSCI 436 Health Care Management 3
HSCI 450 Legal/Ethical Issues 3
HSCI 459 Concepts of Health and Disease3
INFS 110 Information-based Decision
Making 3

Credits 24

Health Care Management Option Requirements
ACCT 201 Intro to Financial Accounting.....3
FNCE 305 Basic Finance 3
HRMG 438 Personnel Human Resources
Mgmt 3
HSCI 4– Health Science Elective.....3
HSCI 472 Health Care Budget and Finance 3
HSCI 473 Community Network
Development 3
HSCI 477 Management Practicum 4
HSCI 479 Synthesis Seminar 3
MKTG 300 Principles of Marketing.....3
MKTG 440 Service Management and
Marketing 3
OPTM 300 Fundamentals of
Operation Mgmnt 3
QUAN 202 Process & Decision-based
Stats.....3

Credits 37

Total Program Credits.....120

Nutrition Option

General Education Courses
ENGL 131 Rhetoric and Writing I 3
ENGL 141 Rhetoric and Writing II.....3
HSCI 206 Health Science Statistics.....3
Humanities Electives (2).....6
PSY 100 General Psychology.....3-4
SOC 111 Intro to Sociology.....3-4
General Ed Electives
(Include ACCT 201) 6-8

Credits 29

Health Science Prerequisites
BIOL 110/111General Biology I w/Lab 4
BIOL 201 Anatomy and Physiology I.....4
BIOL 202 Anatomy and Physiology II.....4
BIOL 203 Microbiology.....4
CHEM 103 General Chemistry I.....5
CHEM 106 General Chemistry II.....5
HSCI 106 Personal Nutrition 3
MATH 104 College Algebra.....3
Social Science Electives
(ECON 101 or 202) 6

Credits 33

Health Science Core Courses
HSCI 200 Professional Practice
Foundations.....3
HSCI 207 Nutrition for Health Professionals3
HSCI 245 Health Care Environments 3
HSCI 301 Pathophysiology.....3
HSCI 345 Trends and Issues 3
HSCI 401 Health Science Research.....3
HSCI 436 Health Care Management.....3
HSCI 450 Legal/Ethical Issues 3

Credits 24

Nutrition Option Requirements

BIOL 430 Advanced Nutrition 3
CHEM 330 Organic Chemistry.....3
CHEM 340 Organic Chemistry Lab.....2
BIOL 483 Biochemistry Principles.....3
HSCI 392 Nutrition Science and Community2
HSCI 394 Nutrition Science & Food Prep ..3
HSCI 402 Food Service Management 3
HSCI 492 Nutritional Assess Across
Lifespan 3
HSCI 493 Diet Therapy and Intervention ...3
HSCI 494 Nutrition Practicum.....4

Credits 29

Total Credits 120

Radiation Technology Completion Option

Students must complete a certificate or associate's degree in Radiation Technology from an accredited program for credit hours (31) to be applied to the degree. Students then complete the health science program listed below.

General Education Course Requirements
ENGL 131 Rhetoric and Writing I 3
ENGL 141 Rhetoric and Writing II 3
HSCI 206 Health Science Statistics.....3
Humanities Electives (2) 6
PSY 100 General Psychology..... 3-4
SOC 111 Introduction to Sociology 3-4
General Education Electives..... 6-9

Credits 30

Health Science Prerequisites
BIOL 201 Anatomy and Physiology I..... 4
BIOL 202 Anatomy and Physiology II.....4
CHEM 101 Introduction to Chemistry I.....4
CHEM 102 Introduction to Chemistry II.... 4
MATH 104 College Algebra 3
Science Electives 4
Social Science Electives (2) 6

Credits 29

Health Science Core Requirements
HSCI 200 Professional Practice
Foundations..... 3
HSCI 245 Health Care Environments 3
HSCI 248 Computer Appli Health Care.....3
HSCI 345 Trends and Issues 3
HSCI 401 Health Science Research..... 3
HSCI 436 Health Care Management..... 3
HSCI 450 Legal/Ethical Issues 3
HSCI 459 Concepts of Health & Disease ..3

Credits 24

Radiation Technology Completions Option Requirements
Upper Division Electives.....6
Articulation Credit for Associate Degree or
Radiology Technology Certificate.....31

Credits 37

Total Credits 120

Sports Health and Wellness Promotion Option

General Education Course Requirements
ENGL 131 Rhetoric and Writing I 3
ENGL 141 Rhetoric and Writing II.....3
HSCI 206 Health Science Statistics 3
Humanities Electives (2)..... 6
PSY 100 General Psychology.....3-4
SOC 111 Intro to Sociology.....3-4
General Education Electives 6-9

Credits 30

Health Science Prerequisites
BIOL 110/111 General Biology w/Lab 4
BIOL 201 Anatomy and Physiology I.....4
BIOL 202 Anatomy and Physiology II..... 4
CHEM 101 Introduction to Chemistry I.....4
MATH 104 College Algebra 3
PES 101 Physics for Life Sciences 4
Social Science Electives 6

Credits 29

Health Science Core Requirements
HSCI 200 Professional Practice Foundations 3
HSCI 245 Health Care Environments 3
HSCI 248 Computer Applications in Health Care 3
HSCI 345 Trends and Issues 3
HSCI 401 Health Science Research 3
HSCI 436 Health Care Management 3
HSCI 450 Legal/Ethical Issues 3
HSCI 459 Concepts of Health & Disease .3

Credits 24

Sports Health and Wellness Option Requirement
BIOL 330 Exercise Physiology 3
BIOL 455 Biomechanics/Kinesiology 3
HSCI 100 Emergency Medical Technician .3
HSCI 207 Nutrition for Health Prof. 3
HSCI 210 Patient Assessment 3
HSCI 4—Health Science Electives (2) 6
HSCI 460 Fitness and Wellness Concepts.3
HSCI 461 Sports Injury and Prevention.....3
HSCI 462 Internship in Sports Health.....4
HSCI 495 Exercise Testing and Prescription 3
PSY 348 or SOC 330 Sports Psychology ..3

Credits 37

Total Credits 120

Minor Options in Health Care Science

Minors are available in three areas of Health Care Science: Forensic Health Science, Health Care Management, and Sports Health and Wellness Promotion. Each minor requires a minimum of 21 credit hours chosen from a list of approved courses and no more than 9 credit hours of transfer work may be applied. Individual courses must be completed with a C- or better grade and the GPA of the minor courses must be a cumulative 2.0 or better. Some courses that apply to the minor may have pre-requisites and those pre-requisites do not necessarily apply to the minor hours. Minors may be obtained by students enrolled in any undergraduate degree program.

Forensic Health Science Minor Option
HSCI 430 Sexual Assault Implications for Health Care Delivery
HSCI 431 Introduction to Forensics
HSCI 432 Investigation of Injury and Death
HSCI 433 Crime Scene & Crime Lab
HSCI 434 Psychosocial and Legal Aspects of Forensic Science
HSCI 435 Internship in Forensic Science
HSCI 437 Violence and Human Rights Issues
HSCI 438 Substance Abuse
HSCI 439 Forensic Photography
HSCI 440 Forensic Practicum
HSCI 441 Forensic Chemistry and Toxicology

Health Care Management Minor Option
ACCT 201 Intro to Financial Accounting
FNCE 305 Basic Finance
HRMG 438 Human Resource – Management, Staffing and Development
HSCI 345 Trends and Issues in Health Care
HSCI 436 Health Care Management
HSCI 472 Health Care Budget and Finance
HSCI 473 Community Care Networks
HSCI 477 Management Practicum
HSCI 479 Synthesis Seminar
MKTG 300 Principles of Marketing
MKTG 440 Service Management and Marketing

Sports Health and Wellness promotion Minor Option
BIOL 330 Exercise Physiology
BIOL 455 Biomechanics/Kinesiology
HSCI 210 Patient Assessment
HSCI 345 Trends and Issues in Health Care
HSCI 459 Concepts of Health and Disease
HSCI 460 Fitness and Wellness Concepts (can be substituted w/BIOL 403 Health and Fitness)
HSCI 461 Sports Injury and Prevention (can be substituted w/BIOL 423 Injury Prevention & Treatment)
HSCI 462 Internship in Sports Health
HSCI 495 Exercise Testing and Prescription
PSY 348 Sports Psychology (can be substituted w/SOCI 330)

Master of Science in Nursing

The graduate nursing program at Beth-El builds upon and expands the knowledge, values, and skills of the baccalaureate prepared nurse. Beth-El College of Nursing and Health Sciences offers a program of advanced study leading to a Master of Science degree. In addition to courses which prepare for expanded clinical roles, the student gains experience with research, health care policy, nursing theory, clinical problem solving/critical thinking and creativity. Students choose a clinical specialty of nurse practitioner or clinical nurse specialist. Additional credit hours are required if students choose a dual clinical role. Students choose a major in adult, neonatal, family, forensic, community health, gerontological nursing or choose a self defined major. A pediatric or psychiatric option is also available in collaboration with University of Colorado Health Sciences Center. A nonclinical major in nursing administration is also available. A post certificate masters option is available in neonatal, women's and adult health. Students may also complete a minor in business or public administration through collaboration with the respective colleges or schools. Post masters certificates are available in selected specialties.

Admission Requirements

- Completion of an accredited baccalaureate degree in nursing
- Prerequisite undergraduate courses include: Introduction to Statistics, Nursing Research & Health Assessment
- Vitae documenting current work experience (Adult 1 yr.; Family 2 yr.; Neonatal 2 yr. in level II or III nursery)
- Current unrestricted Registered Nurse license or in the state where clinical practice will take place.
- Passing score on the Test of English as a Foreign Language (TOEFL) if your native language is not English
- Computer technology skills required

NNP Applicant: satisfactory completion of pre-entrance exam.

If a student does not meet eligibility requirements for admission, petitioning of the Graduate Committee for provisional status is possible.

Guaranteed Admission is available to those undergraduate baccalaureate nursing students from Beth-El who maintain a 3.0 G.P.A. (nursing and cumulative) and are recommended for admission by the Department of Undergraduate Nursing. Specific admission requirements are waived and students remain eligible for guaranteed admission for one year after completion of B.S.N.

Transfer Students

A transfer student is a student who is seeking the M.S.N. degree, has attended another institution and meets all M.S.N. admission requirements. Articulation course work may be required of a transfer student. The student must petition the Graduate Department for acceptance of transfer credits.

M.S.N. Program

The Master of Science in Nursing at Beth-El College of Nursing and Health Sciences has three distinct bodies of knowledge; graduate core, advanced practice core and specialty courses related to the selected clinical specialty. All graduate core and advanced practice core courses are offered on-line as well as on site. The Adult Nurse Practitioner and Family Nurse Practitioner options may be taken entirely on-line. Other specialty courses (Forensic and Holistic) are blocked to facilitate part-time residency.

M.S.N. Curriculum

Core Course Requirements
(Required of all M.S.N. Students)

NURS 610 Philosophy and Theory of Nursing Practice 3

NURS 611 Advanced Nursing Practice and Health Care Policy 3

NURS 612 Research and Data Management 4

NURS 702 Clinical Research Application plus Elective 3

or NURS 700 Thesis 5

Credits 16

Advanced Practice Nursing Core
(Required of all M.S.N. Students - *courses and hours are dependent on degree specialty)

*NURS 628 Clinical Pharmaco-therapeutics 3-4

*NURS 673 Advanced Health Assessment 3-4

*NURS 674 Pathophysiology 3-4

Credits 10-12

Nurse Practitioner Option Specialty Courses

Adult Nurse Practitioner
NURS 627 Family Theory 3

NURS 678 Primary Care I 4

NURS 679 Primary Care II 3

NURS 784 Practicum 6

Credits 41

Adult/Geriatric Nurse Practitioner
NURS 622 Collaborative Health Care Management w/Elderly 3

NURS 623 Physiological Problems of Aging 3

NURS 627 Family Theory 3

NURS 678 Primary Care I 4

NURS 679 Primary Care II 3

NURS 784 Practicum 6

Credits 47

Family Nurse Practitioner
NURS 627 Family Theory and Intervention 3

NURS 662 Family I 4

NURS 664 Family II 4

NURS 667 Family III 3

NURS 789 Practicum 6

Credits 50

Neonatal Nurse Practitioner
Students take NURS 651, 652 and 654 in place of NURS 673, 674 and 628 in general masters.

NURS 627 Family Theory and Intervention 3

NURS 651 Preinatal /Newborn Assess 3

NURS 652 PathoPhysiology of Newborn 4

NURS 653 Clinical Management 4

NURS 654 Neonatal Pharmacotherapeutics4

NURS 780 Practicum I 5

NURS 781 Practicum II 5

Credits 44

Collaborative Nurse Practitioner Option

Pediatric Nurse Practitioner and Psychiatric Nurse Practitioner collaborative programs are available with UCHSC and UCCS. Contact program director for more information.

Articulation for Nurse Practitioners

Articulation for Nurse Practitioners returning to school for the M.S.N. degree. Individuals seeking this option should contact the college for information regarding admission, portfolio requirements and curriculum.

Clinical Nurse Specialist Option

Clinical Nurse Specialist Option Self Defined Clinical Nurse Specialist
NURS 615 CNS Seminar 3

NURS 666 Promotion and Management of Health and Disease.....3

Nursing Specialty Course work 6

NURS 782 CNS Practicum 5

Credits 42-44

Forensic Clinical Nurse Specialist
NURS 615 CNS Seminar.....3

NURS 627 Family Theory 3

NURS 666 Promotion and Management of Health and Disease.....3

NURS 782 CNS Practicum 5

Nursing specialty forensic courses 6

Credits 46

Neonatal Clinical Nurse Specialist
Students take NURS 651, 652 and 654 in place of NURS 673, 674 and 628 in general Masters

NURS 615 CNS Seminar.....3

NURS 627 Family Theory 3

NURS 651 Perinatal/Newborn Assess. 3

NURS 652 PathoPhysiology of Newborn 4

NURS 653 Clinical Management.....4

NURS 654 Neonatal Pharmacotherapeutics4

NURS 782 CNS Practicum 5

Credits 41

Community Clinical Specialist
NURS 615 CNS Seminar.....3

NURS 627 Family Theory 3

NURS 663 Community & Rural 2

NURS 629 Resource Management 3

NURS 666 Promotion and Management of Health and Disease.....3

NURS 782 CNS Practicum 4

NURS 783 Community Assessment Practicum 1

Credits 46

Courses related to the selected clinical specialty provide the student an opportunity to use empirical, ethical, esthetic, personal, and socio-political knowledge in the clinical setting specific to the student's chosen advanced practice role.

Nursing Administration Option

Designated to prepare qualified individuals seeking management careers in hospitals, health maintenance organizations, long-term care facilities, health departments and other health care organizations. Option done in collaboration with the College of Business. Curriculum includes graduate nursing core courses (17 credits) plus 27 credits in specialty administration courses.

NURS 629 Resource Management: Budget and Finance 3

NURS 705 Health Care Ethics and Law 3

NURS 704 Health Care Administration I 3

NURS 706 Health Care Administration II ...3

BAD 680 New Venture Management or other Business Elective 3

NURS 790 Administrative Internship 3

NURS 791 Administrative Practicum 3

Electives 6

Credits 44

Post Certificate MSN Option

Students with a Nurse Practitioner National Certificate in neonatal, women's health, adult or geriatric nursing:

Certificate program materials are evaluated for transfer credit. Masters core courses and advanced practice courses are required. Specialty courses needed will be determined individually after transcript evaluation. Interviews may be required.

On-line Option

Core courses in the graduate program are offered on-line. For further information contact the Department (719) 262-4424. The ANP and FNP are offered totally on-line. The CNS core is offered on-line, with many of the specialty courses offered in one-week blocks. The Nursing Administration Specialty course will be offered on-line 2003-2005.

RN to MSN Option

Designation for individuals with an associate degree in nursing and a bachelors degree in a non-nursing discipline. Students apply for admission to graduate nursing program (see graduate nursing admission requirement). Student must meet all MSN admission requirements except graduation from NLN accredited BSN program. Students will be admitted provisionally to the graduate program until completion of 18 credits of undergraduate prerequisite course work (with a grade of B or better).

HSCI 206 Statistics for Health Science.....3
NURS 301 Pathophysiology 3
NURS 305 Health Assessment 3
NURS 445 Community Health Nursing 6
NURS 401 Nursing Research 3

Requirements for Prescriptive Authority

Specific courses may differ for the selected specialty but must include Advanced Pathophysiology, Advanced Assessment, and Clinical Pharmacotherapeutics. State requirements differ in various state jurisdictions, currency of course work and practice hours as an APN may be required.

Program Minor

A minor can be received by taking nine to twelve hours in one of the following specialty focuses: Community Health (12), Forensics (9), Gerontology (9), Holistic Health Nursing (9), Business (12) or Public Administration (9). A minor can be self-defined if the selected focus meets identified program criteria.

M.S.N. Program Advising

Graduate students are responsible for meeting with the Chair of the Graduate Nursing Department to develop a degree plan. Students are assigned an advisor while completing academic requirements of the program. Students meet with their advisors twice a year in October and April. Advisors facilitate development and enhancement of program outcomes in a required student portfolio. Advising is mandatory and failure to participate may result in a recommendation to postpone progression toward degree completion.

New student orientation is provided each semester. Graduate students should obtain a copy of the Graduate Nursing Department Student Handbook and familiarize themselves to policies and procedures of the Department to facilitate success toward completion of the advanced degree. Students will receive a Schedule of Deadlines for Masters Degree Candidates.

Degree Requirements

- Completion of a minimum of 39-53 credits at the graduate level
- A grade of "B" in all required nursing courses
- Final comprehensive examination or thesis
- Students are admitted to candidacy following successful academic advisor approval and comprehensive examination or thesis defense
- Completion of degree requirements within five years

Certificate Programs

Beth-El College of Nursing and Health Sciences offers two levels of certificate programs:

Undergraduate Certificate

Graduate Certificate

Certificate programs can be taken through regular university enrollment or the Beth-El division of extended study.

Certificate Options

- Forensics studies (graduate, undergraduate or extended studies)
- Gerontological Nursing (graduate, undergraduate or extended studies)
- Holistic nursing (undergraduate, graduate or extended studies)
- Neonatal nursing (graduate or extended studies)
- Teaching Certificate in Nursing (graduate)

Post-Master's Degree Certificates in Nursing

Students with master's degrees in nursing may apply for these certificate programs: adult, family, neonatal, holistic and adult/gerontology. If the student's initial master's degree did not require a course in advanced pathophysiology the student is required to take Advanced Pathophysiology. Please request information from the college.

Application Procedures contact:
Undergraduate and Certificate Programs:
UCCS
1420 Austin Bluffs Parkway
PO Box 7150
Colorado Springs, CO 80933-7150

(719) 262-3000 or 1-800-990-UCCS

E-mail: Admissions and Records:
ADMREC@MAIL.UCCS.EDU

on the WEB: http://www.uccs.edu

Graduate Program: Department of Graduate Nursing 262-4424

Extended Studies: 262-4486

Academic Policies website http://web.uccs.edu/bethelstudenthandbook

Collaborative Degrees

Master of Basic Science: Forensic Science Option

Department of Biology and Department of Health Sciences

The Department of Biology in collaboration with the Department of Health Sciences, offers a program leading to the degree of Master of Basic Science (MBS) in Forensic Science. Graduate students pursue coursework in forensic science and related disciplines (Biology, chemistry, psychology, sociology and anthropology) providing the students with a diverse integrated curriculum of study.

For admission into the program contact Sandy Berry-Lowe, Coordinator, MBS 719-339-5276, Science Building 228.

Master of Business Administration-Health Care Administration Option

The College of Business in collaboration with the College of Nursing and Health Sciences, offers a program leading to the degree Master of Business Administration (MBA) with Health Care Administration Option.

For Admission into the program see the College of Business section of this Bulletin.

COLLEGE OF BUSINESS AND ADMINISTRATION

ACCOUNTING

ACCT 201-3. Introduction to Financial Accounting. Focuses on the selection and preparation of basic financial information for the principal financial statements of the business enterprise, with emphasis on asset and liability valuation problems and the determination of net income. Includes use of spreadsheets. Prer., INFS 100 or 110, sophomore standing.

ACCT 202-3. Introduction to Managerial Accounting. Preparation of the statement of cash flows, basic financial statement analysis, the analysis of product, service and period costs, and the role of accounting in the planning and control of business enterprises. Emphasis on management decision making uses of accounting information. Includes the use of spreadsheets. Prer., INFS 100 or INFS 110 and ACCT 201.

ACCT 301-3. Intermediate Accounting I. A comprehensive analysis of the practice of financial accounting and reporting by public corporations to investors, creditors and other users. Includes analysis of standards setting, accounting theory and generally accepted accounting principles. Emphasis is on the purpose of financial statements with a focus on income determination and asset valuation. Includes the use of spreadsheets. Prer., Junior standing, INFS 100 or INFS 110 and ACCT 202 or ACCT 550 or ACCT 600.

ACCT 302-3. Intermediate Accounting II. A continuation of ACCT 301 with focus on liabilities, equity, and special areas, including cash flow statements, leases, pensions, income taxes, earnings per share and changing prices. Includes the use of spreadsheets. Prer., ACCT 301.

ACCT 311-3. Cost Accounting. Cost analysis for purposes of control and decision making. Analysis of cost behavior, role of accounting in planning and control, and managerial uses of cost accounting data. Includes use of spreadsheets. Topics of current interest will be discussed, including activity-based costing. Includes the use of spreadsheets. Prer., Junior Standing, ACCT 202 or ACCT 550 or ACCT 600.

ACCT 401-3. Advanced Financial Accounting. Advanced financial accounting provides an in-depth analysis into the theory and practices of accounting for business combinations, consolidated financial statements, international operations and partnerships. Prer., ACCT 301 and ACCT 302. Completion of all skills courses or COB Director permission.

ACCT 402-3. Financial Accounting Theory. In-depth analysis of contemporary accounting issues and problems, the development of accounting thought and principles, and critical review of generally accepted accounting principles. Prer., ACCT 301. May be taken concurrently with ACCT 302. Completion of all skills courses or COB Director permission.

ACCT 411-3. Managerial Accounting Issues. Critical analysis of advanced topics in managerial accounting. Uses cases and readings from the current managerial accounting literature to focus on issues of concern to managers. Prer., ACCT 311. Completion of all skills courses or COB Director permission.

ACCT 421-3. Individual Income Tax. Analysis of basic concepts of federal income taxes such as income, exclusions, deductions, passive losses, and property transactions. Concepts will be applied to actual situations by the use of a computer-generated tax return package. Focus is on individual considerations and planning. Prer., ACCT 202 or ACCT 550 or ACCT 600 and ECON 102. Completion of all skills courses or COB Director permission.

ACCT 422-3. Corporate and Partnership Taxation. Primary emphasis is on C and S corporations and partnerships. Basic analysis of planning and compliance of most forms of corporate and partnership organization, operations, mergers and dissolution. Business planning and international taxation are also considered. Prer., ACCT 421. Completion of all skills courses or COB Director permission.

ACCT 431-3. Introduction to Accounting Systems. An introduction to the elements in an accounting information system, one of an organization's central information systems. Explores the newest technology and the accountant's/financial analyst's role in designing systems. Includes "hands-on" projects designed to expose the student to various software tools commonly used by accountants and financial analysts. Students will also complete several projects on a leading accounting software package. Prer., Junior standing, INFS 100 or INFS 110, FNCE 305, ACCT 202, or ACCT 550 or ACCT 600. Completion of all skills courses or COB Director permission.

ACCT 441-3. Fund Accounting for Government and Nonprofit Organizations. To provide an introduction to accounting practices in governmental and nonprofit organizations. Fund accounting and budgetary control techniques will be covered in detail. Emphasis will be placed on management uses of this information. Necessary for CPA exam preparation. Prer., Junior standing, ACCT 202, or ACCT 550 or ACCT 600. Completion of all skills courses or COB Director permission.

ACCT 451-3. Accounting Ethics and Institutions. An in-depth study of the technical and behavioral ethical standards existing for professional accountants in all fields, and of the political and regulatory institutions that affect the practice of professional accounting including the SEC, IRS, FASB, AICPA and state authorities. Prepares students for dealing successfully with ethical issues throughout their careers Prer., Nine semester hours upper division accounting.

ACCT 461-3. Auditing. A study of generally accepted auditing standards, ethical responsibilities and legal liabilities of the independent auditor and auditing techniques used by the independent public accountant. Prer., ACCT 301; may be taken concurrently with ACCT 302, with consent of instructor. Completion of all skills courses or COB Director permission.

ACCT 495-1 to 3. Topics in Accounting. Experimental course in accounting.

ACCT 496-1 to 3. Internship in Accounting. Undergraduate accounting internship for business students. Prer., Junior/senior business students only.

ACCT 600-3. Contemporary Issues in Accounting. Focuses on the use of accounting information for executive decision making. Accounting information can provide managers with critical data about their organizations and those of customers and competitors. Will enable executives to manage better using accounting reports as effectively as possible. Knowledge of spreadsheets required.

ACCT 601-3. Seminar: Financial Accounting Theory. A concentrated analysis and evaluation of alternative conceptual systems for reporting about and by public corporations in financial statements. Involves considering the

economic and political history of currently acceptable and unacceptable theories and practices for financial accounting in general and for specific topics. Prer., ACCT 301 and ACCT 302 or equivalent.

ACCT 609-3. Contemporary Issues in Accounting. Focuses on the use of accounting information for executive decision making. Accounting information can provide managers with critical data about their organizations and those of customers and competitors. Will enable executives to manage better using accounting reports as effectively as possible. Knowledge of Spreadsheets required. Distance MBA course. Tuition differs from on campus courses.

ACCT 611-3. Seminar: Managerial Accounting Issues. An in-depth exploration of the broad professional field of managerial accounting, especially as related to organizational decision making, planning and control. Development and current problems of the managerial accounting function are analyzed. Prer., ACCT 311 or equivalent.

ACCT 621-3. Seminar: Advanced Topics in Income Taxation. Prepares the student to develop supporting documentation for tax planning and compliance. Research using tax statutes, regulations, rulings, and court cases related to advanced income tax issues is emphasized. Prer., ACCT 600.

ACCT 661-3. Seminar: Issues in Auditing. Development of auditing as a profession including the evolution of auditing standards and audit reports. Current issues relating to ethical and legal responsibilities of the auditor are explored. Historical and contemporary literature in the field is reviewed. Prer., ACCT 600 or equivalent; ACCT 461 desirable.

ACCT 695-1 to 3. Topics in Accounting - Graduate. Experimental course in accounting offered at the graduate level for the purpose of presenting new subject matter. Open only to MBA degree students.

ACCT 696-1 to 3. Internship in Accounting. Graduate internship in accounting. Prer., Instructor and Dean approval.

ACCT 940-1 to 3. Independent Study in Accounting - Undergraduate. With the consent of the instructor who directs the study and the dean.

ACCT 950-1 to 3. Independent Study in Accounting - Graduate. With the consent of the instructor who directs the study and the dean.

BUSINESS ADMINISTRATION

BUAD 100-3. Introduction to Business. Familiarizes students with the structure, operations, management, and socioeconomic aspects of business and nonbusiness entities. Course builds on the college themes of entrepreneurship, technology, team building, and international competitiveness to establish a foundation for integrating information encountered in more advanced business courses. Open only to freshmen and sophomores.

BUAD 209-3. Macroeconomics for Managers. Development of economic skills and knowledge of the modern capitalist economic system. Emphasis on tools of economic analysis, the functioning of the macroeconomy, the growing influence of the international sector on the macroeconomy, and the role of technology in forming a "new" economy. Students will learn to analyze simple market events, understand and interpret key macroeconomic variables, analyze the effect of both domestic and international events on the domestic economy, understand the government's and the Fed's role in the economy, and understand how technological change may be driving the formation of a "new" economy. Distance MBA course. Tuition schedule differs from on-campus courses.

BUAD 295-1 to 3. Topics in Business. Experimental courses offered irregularly at the Sophomore level for the purpose of presenting new subject matter in a particular business field. Course prerequisites will vary depending upon topics covered. Prer., Sophomore standing.

BUAD 300-3. Integrated Skills for Management. Required for the core business courses. Students focus on 3 skill areas: refine communication for management (interpersonal, writing, and presentation); learn principles and practice of teamwork in a lab setting; learn project management in completing two complex projects focusing on outside groups and an ethics study. Students may take this course as a second-semester sophomore. Prer., ENGL 131. INFS 110 high recommended. Second semester sophomore.

BUAD 301-1. Career Strengths: Assessment and Development. Gives students an in-depth understanding of their interests, skills, and values and how these match to particular jobs and professions. Through research and analysis the students will gain a clear, detailed picture of what they want to do and what they have to offer an employer. Pass/fail only. Freshman/Sophomore standing.

BUAD 302-1. Career Skills: Resume Writing and Interviewing. Instructs and gives students hands-on experience on how to: (a) write cover letters and resumes, (b) practice effective interviewing techniques, and c) develop effective job hunting skills. Pass/fail only. Prer., Junior standing.

BUAD 303-1. Career Success: Image and Impact. Helps students converse, interact, and dress in a professional manner for job interviews, telephone calls, written correspondence, and professional work settings. Course will cover working in a diverse, cross-cultural environment, making effective first impressions, and appropriately communicating in a variety of speaking and writing situations. Pass/fail only. Prer., Junior standing.

BUAD 390-3. Improving Personal and Team Creativity. Covers the concepts and theories of creativity but devotes most of the course time to specific, proven approaches to unlock and surface the student's innate creativity. Examples of creative approaches in business and industry are illustrated. Both individual and group creativity techniques are reviewed and practiced, with emphasis on how to form a creative work team. Prer., Junior standing.

BUAD 400-3. Business, Government, Law, and Society. An examination of interrelationships between business, society, and government and the legal significance of transactions in the business decision-making processes. Prer., Business Seniors only.

BUAD 450-3. Cases and Concepts in Business Policy. Takes a general manager's perspective on the administration of the corporation. Topics include the role and responsibility of general management, analysis of threats and opportunities in the competitive environment, strategies for building and sustaining competitive advantage, strategy implementation and management, and strategic management in the international environment. Topics covered through comprehensive case analysis. Prer., QUAN 201, MKTG 300, OPTM 300, FNCE 305, ORMG 330, ENGL 307 or COMM 324. Business seniors only.

BUAD 470-3. Emerging Businesses and Entrepreneurship. How to plan, organize and operate a new independent business. Case studies of local small businesses. Prer., Senior standing.

BUAD 495-1 to 3. Topics in Business - Undergraduate. Experimental courses offered irregularly at the undergraduate level for the purpose of presenting new subject matter in a particular business field. Second semester junior or senior standing required. Course prerequisites will vary depending upon topics covered.

BUAD 496-1 to 3. Internship in General Business. Undergraduate internship for business students. Prer., Junior/senior business students only.

BUAD 550-3. Fundamentals of Economics. Students will learn to apply economic logic in solving business problems and in analyzing current topics. Course emphasis is on the role of free markets in determining economic well-being. Course covers the fundamentals of micro and macro economics.

BUAD 560-3. Business, Government, and Society. The interdependence of business with societal, governmental, and economic environments. Explores the role and balance of responsibilities between business and government, nature of the free market system, current public policy issues, and external trends affecting business. Prer., BUAD 550.

BUAD 569-3. Business, Government, and Society. This course examines the interdependence of business with societal, governmental, and economic environments. The role and balance of responsibilities between business and government, the nature of the free market system, current public policy issues, and external trends affecting business are explored. Distance MBA course. Tuition schedule differs from on-campus courses. Prer., BUAD 209.

BUAD 649-3. Transforming Technology Organizations and Employees. Addresses three major issues facing technology organizations today: 1) How to motivate technical people, 2) How to design the technology-based organizations of the future, and 3) How to implement effective change. The purpose of this course is to link academic theory with practical examples from many global organizations concerning the best practices of technology and organizations and work forces. Distance MBA course. Tuition schedule differs from on-campus courses.

BUAD 650-3. Strategic Management. Taking a global perspective, this course focuses on the role of the general manager in articulating a vision for the business, assessing threats and opportunities in the competitive environment, formulating a strategy for achieving competitive advantage, and designing an organizational architecture for effectively implementing the strategy. Utilizes a combination of lectures, group discussions, and case analysis to raise and examine the key issues. Prer., All preparatory courses or their equivalents and all MBA core courses. Recommended for final semester in the program.

BUAD 659-3. Strategic Management. Taking a global perspective, this course focuses on the role of the general manager in articulating a vision for the business, assessing threats and opportunities in a competitive environment, formulating a strategy for achieving competitive advantage and designing an organizational architecture for effectively implementing the strategy. Utilizes a combination of lectures, group discussions, and case analysis to raise and examine the key issues. Recommended for the final semester in the program. Distance MBA course. Tuition schedule differs from on-campus courses. Prer., All preparatory courses or their equivalents and all MBA core courses.

BUAD 661-3. Managing Technology for Strategic Advantage. This course provides managers with the knowledge necessary to adopt technology to advance an organization's goals. The course is divided into three segments: (1) an overview of existing technologies and the value each offers to an organization, (2) valuing technology and developing technology-based strategy, and (3) developing a business model to implement a technology-based strategy. The progression is from the general to the specific and from principles to applications.

BUAD 669-3. Managing Technology for Strategic Advantage. Provides managers with the knowledge necessary to adopt technology to advance an organization's goals. The course is divided into three segments: (1) an overview of existing technologies and the value each offers to an organization, (2) valuing technology and developing technology-based strategy, and (3) developing a business model to implement a technology-based strategy. The progression is from the general to the specific and from principles to applications. Distance MBA course. Tuition schedule differs from on-campus courses.

BUAD 670-3. World Class Service Management. Effective service management requires a multi - disciplinary approach involving marketing, management, human resource management, and information and production/operations management. Provides a foundation in these areas as they pertain to service management. Content for each area will include a conceptual overview of its importance to service quality, specific tools representative of the area, and exercises to demonstrate practical application. The focus is on the integrative requirements of service quality.

BUAD 671-3. Transforming Technology Organizations and Employees. Addresses three major issues facing technology organizations today: 1) How to motivate technical people, 2) How to design the technology-based organization of the future, and 3) How to implement effective change. The purpose of this course is to link academic theory with practical examples from many global organizations concerning best practices of technology organizations and work forces.

BUAD 679-3. World Class Service Management. Effective service management requires a multi- disciplinary approach involving marketing, management, human resource management, and information and production/operations management. Provides a foundation in these areas as they pertain to service management. Content for each area will include a conceptual overview of its importance to service quality, specific tools representative of the area, and exercises to demonstrate practical application. The focus is on the integrative requirements of service quality. Distance MBA course. Tuition schedule differs from on-campus courses.

BUAD 680-3. New Venture Management. Identifies unique features of new ventures (including start-up companies or internal ventures of established firms), high uncertainty, a newly formed management team, and a shortage of resources. Covers business plan development, recruiting the start-up team, legal and financial issues, start-up operations, managing growth, forming alliances, and exit strategies. Students, working in teams, will develop a business plan for a new venture.

BUAD 690-3. Managing in Global Markets. Designed to prepare students to anticipate global forces that impact present management. Briefly reviews the economic, the social-cultural, and the political/legal context of global management. Also reviews various concepts related to the internationalization process of the firm and frameworks related to global strategy.

BUAD 691-3. Regional Business Environment Europe. A series of international business seminars

conducted abroad by management personnel of European companies. Insight is provided into the cultural, social, and political environments of each country visited. This is an intensive international business and travel experience. Prer., Instructor approval.

BUAD 695-1 to 3. Topics in Business - Graduate. Experimental course offered at the graduate level for the purpose of presenting new subject matter in a particular business field.

BUAD 696-1 to 3. Internship in General Business. Graduate internship in business. Open only to MBA degree students. Prer., Instructor and Dean approval.

BUAD 699-3. Regional Business Environment Europe. Short study abroad. A series of international business seminars conducted abroad by management personnel of European companies. Insight is provided into the cultural, social, and political environments of each country visited. This is an intensive international business and travel experience. Distance MBA course. Tuition schedule differs from on-campus courses. Prer., Instructor approval.

BUAD 940-1 to 4. Independent Study in Business Administration - Undergraduate. Independent study at the undergraduate level with the prior consent of the instructor under whose direction the study is undertaken and the dean.

BUAD 950-1 to 3. Independent Study in Business Administration - Graduate. Independent study at the graduate level with prior consent of the instructor under whose direction the study is undertaken and the dean. Prer., Consent of instructor and dean.

BUSINESS COMMUNICATION

BCOM 550-3. Professional Business Communication. A combination of lectures and workshops help students prepare effective reports and presentations. The elements that form the basis for successful communication include analyzing audiences, organizing information, guiding readers through effective formats, creating active structures with effective transitions, and visualzing information. Students gain experience in professional research and giving effective presentations. Issues of documentation, punctuation, and grammar reviewed as needed.

BCOM 559-3. Professional Business Communication. Practical and theoretical components of effective professional business communication. Provides foundational skills in effective oral and written business communication, including development of business proposals and presentations. Further strategic communication in interpersonal and group and team contexts is investigated through case analysis with special emphasis on the importance of communication in understanding organizational culture, leadership, diversity, emerging organizational technologies, and business ethics. Distance MBA course. Tuition schedule differs from on-campus courses.

BUSINESS LAW

BLAW 200-3. Business Law. The legal significance of business transactions as they are part of the decision making process in business. Coverage of text and statues includes law and its enforcement and integration of the Uniform Commercial Code with the law of contracts, bailments, warehousemen and carriers, documents of title, sales of goods, and commercial paper. No longer required for Business degree; may be taken as a business elective. Recommended for accounting majors who will be sitting for the CPA exam. Prer., Sophomore standing.

FINANCE

FNCE 305-3. Basic Finance. An introduction to the financial management of the firm and the function of finance. Topics include the study of money and capital markets; time value of money; techniques of financial analysis, planning and control; capital budgeting techniques and analysis; management of short and long-term sources of financing; management of working capital; and capital structure theory. Emphasis is placed on the interpretation, analysis and use of accounting measures in making financial decisions. ***Students are encouraged to take QUAN 202 prior to or in the same semester.*** Prer., ECON 101, ECON 202, ACCT 201, and QUAN 201.

FNCE 330-3. Investments and Personal Finance. The study of the basic problems concerning development and implementation of a personal investment program. Includes analysis of investment risk and return, alternative types of investments, obtaining and interpreting investment information, and designing and executing an investment program. No credit given toward degree for finance majors. Students may not receive credit for both FNCE 330 and FNCE 420. Junior standing.

FNCE 340-3. Risk and Insurance Principles. Risk management is an important element of individual and corporate financial plans. Probability, theory of the firm under uncertainty, insurance carriers and contracts, underwriting, and regulation are covered. Types of insurance including life, health, homeowners, auto, other property liability, and individual employee benefits are discussed. Pre/coreq., Junior standing.

FNCE 400-3. Advanced Corporate Finance. The comprehensive study of how corporations make investment decisions, raise capital to finance their investments, and manage their financial affairs to create shareholder value. Topics covered include capital budgeting and the cost of capital, dividend policy, capital structure and financial distress. Emphasis on developing analytical tools and problem solving. Prer., FNCE 305, QUAN 202 and working knowledge of Excel. Second semester junior or senior standing. Completion of all skills courses or COB Director permission.

FNCE 410-3. Cases and Concepts in Finance. The development of analytical and decision-making skills of students in relation to problems that confront financial managers. Areas include planning, control and financing of both current operations and longer term capital commitments, management of income, evaluation of income-producing property, and expansion and contraction. Case method of instruction. Prer., FNCE 400. Second semester junior or senior standing.

FNCE 420-3. Investment and Portfolio Management. The study of the investments industry and instruments. Topics include the investment setting, portfolio theory, risk and return, and valuation of common and preferred stocks, bonds, options and futures. The course discusses investment problems and policies and the methodology for implementing them. Students may not receive credit for both FNCE 330 and FNCE 420. Prer., FNCE 305. Second semester junior or senior standing. Completion of all skills courses or COB Director permission.

FNCE 430-3. Bank Management. An examination of the particular problems of managing a financial intermediary. The analytical tools for addressing the issues of regulatory requirements, the acquisition and management of funds, loan policies and procedures, capital adequacy, liquidity and solvency are developed.

Prer., FNCE 305 and working knowledge of Excel. Second semester junior or senior standing. Completion of all skills courses or COB Director permission.

FNCE 440-3. International Financial Management. Examines the opportunities and risks of firms doing business in a global economy. International capital movements, balance of payment problems, foreign and international institutions, foreign exchange markets, and global investment and financing strategies are explored. Prer., FNCE 305. Second semester junior or senior standing. Completion of all skills courses or COB Director permission.

FNCE 450-3. Money and Banking. The study of the interaction between financial markets and the Federal Reserve system. The course emphasizes how the Federal Reserve Bank conducts monetary policy to promote a stable banking system and strong economic growth while minimizing inflation and unemployment. Topics covered include interest rates, inflation and the money supply and the effect of these variables on the business cycle. Prer., FNCE 305. Second semester junior or senior standing. Completion of all skills courses or COB Director permission.

FNCE 460-3. Financial Modeling. An introduction to advanced financial modeling techniques using spreadsheets. The tool of the financial analyst is Excel. This is a project class where students develop modeling capabilities. Students will learn to build effective dynamic models to analyze capital budgeting, ratios, risk, financial plans, budgets and portfolio allocation. Students will also be introduced to other important financial databases used in financial analysis. Prer., ACCT 202, FNCE 400, and working knowledge of Excel. Second semester junior or senior standing.

FNCE 496-1 to 3. Internship in Finance. Undergraduate internship in finance. Prer., Junior/senior business students only.

FNCE 600-3. Corporate Financial Management. Concerned with the optimal allocation of a company's financial resources and a working knowledge of financial terminology and concepts. Capital market history, time value of money, valuation of securities, risk and return, capital budgeting principles and techniques, financial statement analysis, financial planning, raising capital, and cost of capital. Emphasizes techniques necessary to create and maximize the value of the firm. Prer., ACCT 600, BUAD 550 and QUAN 550.

FNCE 609-3. Corporate Financial Management. Concerned with the optimal allocation of a company's financial resources and a working knowledge of financial terminology and concepts. Capital market history, time value of money, valuation of securities, risk and return, capital budgeting principles and techniques, financial statement analysis, financial planning, raising capital, and cost of capital. Emphasizes techniques necessary to create and maximize the value of the firm. Distance MBA course. Tuition schedule differs from on-campus course. Prer., ACCT 609, QUAN 559, and Macroeconomics.

FNCE 610-3. Problems and Policies in Financial Management. Application of financial analysis to new product evaluation, project finance, working capital management, new issues of debt and equity, acquisitions and divestitures, and financial distress/ turnarounds. Prer., FNCE 600

FNCE 620-3. Investment Management and Analysis. The theory of investment management and security values is presented. Topics include portfolio management; the analysis of investment risks and constraints on investment policies and objectives; the analysis and use of investment information; the development and application of the tools for determining value; the analysis of common stock, bonds, options and futures. Prer., FNCE 600.

FNCE 629-3. Investment Management and Analysis. The theory of investment management and security values is presented. Topics include portfolio management; the analysis of investment risks and objectives; the analysis and use of investment information; the development and application of the tools for determining value; and analysis of common stock, bonds, options, and futures. Distance MBA course. Tuition schedule differs from on-campus courses. Prer., FNCE 609.

FNCE 640-3. International Financial Management. Uses the fundamental tools of financial analysis to assess the risks and opportunities for firms operating in an increasingly global economy. Special emphasis will be placed on the opportunities that arise from both market imperfections and the increasing integration of financial markets worldwide. Focuses on the international financial environment, the measurement and management of foreign exchange rate risk, and global funding and investment opportunities using both quantitative and qualitative decision tools to exploit opportunities and control risk. Prer., FNCE 600.

FNCE 649-3. International Financial Management. Uses the fundamental tools of financial analysis to assess the risks and opportunities for firms operating in an increasingly global economy. Special emphasis will be placed on the opportunities that arise from both market imperfections and the increasing integration of financial markets worldwide. Focuses on the international financial environment, the measurement and management of foreign exchange rate risk, and global funding and investment opportunities using both quantitative and qualitative decision tools to exploit opportunities and control risk. Distance MBA course. Tuition schedule differs from on-campus courses. Prer., FNCE 609.

FNCE 650-3. Managerial Economics and the Business Cycle. Study of forces affecting the US and global business cycle. Interpretation of business cycle indicators and their implications for financial planning and decision-making. Topics include interest rates and inflation, the conduct of monetary policy, aggregate supply and demand, and employment levels. Presents concepts, tools, and methods of economic analysis relevant to decision-making within the firm. Prer., FNCE 600.

FNCE 659-3. Managerial Economics and the Business Cycle. Study of forces affecting the US and global business cycle. Interpretation of business cycle indicators and their implications for financial planning and decision making. Topics include interest rates and inflation, the conduct of monetary policy, aggregate supply and demand, and employment levels. Presents concepts, tools, and methods of economic analysis relevant to decision making within the firm. Distance MBA course. Tuition schedule differs from on-campus courses. Prer., FNCE 609.

FNCE 660-3. Financial Engineering and Corporate Risk Management. Examines "derivative" securities such as options, futures, swaps as instruments for controlling fluctuations in interest rates, exchange rates, and business conditions. Develops common methods for valuing derivative securities and applies these methods to representative cases. Prer., FNCE 600.

FNCE 695-1 to 3. Topics in Finance - Graduate. Experimental course in finance offered at the graduate level for the purpose of presenting new subject matter.

FNCE 696-1 to 3. Internship in Finance. Graduate internship in finance. Prer., Instructor and Dean approval.

FNCE 940-1 to 3. Independent Study in Finance - Undergraduate. Independent study in finance at the undergraduate level given with the consent of the instructor who directs the study and the dean. Prer., Junior/senior standing only and consent of instructor and dean.

FNCE 950-1 to 3. Independent Study in Finance - Graduate. Independent study in Finance at the graduate level given with the consent of the instructor who directs the study and the dean.

HEALTH CARE ADMINISTRATION

HCAD 619-3. Health Care Administration. Examines the social, political and economic influences on health care administrators in the health care system. Analyzes leadership management and organizational theories, human resource management, strategic management and professional development issues. Distance MBA course. Tuition schedule differs from on-campus courses.

HCAD 629-3. Health Care Policy. Focuses on the knowledge and skills needed to effect change in health care policy and delivery. Explores the health care system, focusing on financing, delivery and reimbursement models, regulatory issues, and the legal/ethical parameters. Emphasis is placed on empowerment and the development of leadership skills within the social/political context of health care. Building collaborative interactions within systems is stressed as the policy-making process is studied. Distance MBA course. Tuition schedule differs from on-campus courses.

HCAD 639-3. Health Care Ethics and Law. A theoretical basis for ethical/legal decision-making as applied to contemporary situations encountered in health care settings. Distance MBA course. Tuition schedule differs from on campus courses.

HCAD 649-3. Health Care Budget and Finance. Introduces systems of resource management in health care delivery. Emphasis on strategies of finance and budget, personnel management, management research, and information systems as tools used by health care administrators to impact the health care environment. Individual, societal, and political influences which may alter the process of management will be examined. It is recommended that FNCE 609 be completed prior to taking this class. Distance MBA course. Tuition schedule differs from on-line courses.

HCAD 659-3. Clinical Research Application. Develops skills in scientific inquiry through an understanding and utilization of research in practice. It requires the student to apply the research process in a practice setting using different evaluation techniques. Distance MBA course. Tuition schedule differs from on-campus courses. Prer., HCAD 619, HCAD 629, HCAD 639, and HCAD 649.

HUMAN RESOURCE MANAGEMENT

HRMG 434-3. Labor Relations and Negotiation. Examines the dynamic relationships between labor unions and employers. Topics include the history of labor relations in the United States, labor laws, organizing campaigns, collective bargaining, and conflict resolution. A major focus of this course is the development of students' negotiation skills, a key competency that is necessary for success in the world of business. Legal and ethical practices are emphasized. The course is appropriate for all majors. Prer., Junior standing. ORMG 330 or equivalent recommended. Completion of all skills courses or COB Director permission.

HRMG 438-3. Human Resource Management. Presents an overview of the entire Human Resource (HR) function. Topics include recruiting, staffing, human resource planning, employee separation and retention, training and development, career planning, pay and benefits, and human resource information systems. Prer., Junior standing, ORMG 330 recommended. Completion of all skills courses or COB Director permission.

HRMG 439-3. Legal and Social Issues in Human Resources Management. Covers the myriad of legal and social issues facing Human Resources (HR) and other managers today. Major emphasis is placed on equal employment opportunity, affirmative action, safety, and health. Other topics may include sexual harassment, drug testing programs, employing the disabled, employee privacy rights, and wrongful termination. Prer., Junior standing, ORMG 330 or equivalent recommended. Completion of all skills courses or COB Director permission.

HRMG 441-3. Motivating, Rewarding, and Developing Employees. Examines practices by which organizations and employees can maximize the mutual benefits that accrue to each other. Emphasis is placed on developing and applying skills in compensation and benefits. Other topics include training and development, performance management systems, strategic human resource management (HRM), and international HRM. Prer., Junior standing, ORMG 330 or equivalent recommended. Completion of all skills courses or COB Director permission.

HRMG 485-3. Directed Research Projects in Human Resources and Management. A comprehensive human resources or management research, analysis, and planning project. Students work with a local business under the supervision of the course instructor to perform a literature review, conduct analysis, present information, and put together a comprehensive project on some aspect of human resource management or organizational management. Prer., ORMG 330. Completion of all skills courses or COB Director permission.

HRMG 496-1 to 3. Internship in Human Resources. Undergraduate internship in human resources. Prer., Junior/senior business students only.

INFORMATION SYSTEMS

INFS 100-3. Information Technology and Business Problem Solving. Intro to information technologies and business information processing. Students will learn about careers in the rapidly expanding high-tech arena and how they use information systems skills to help companies be more efficient. The course will enhance the students' personal knowledge of computers. May be taken as a business elective for students who have no experience of computers. Otherwise, Business Students should take the required INFS 110.

INFS 110-3. Information-based Decision Making. Topics include general problem solving techniques for individuals and groups. Students will learn about information systems, including but not limited to: what they are, how they work, how they are created, how they help the different functions of business and problems with information systems. The different aspects of a business are discussed. Students will complete assignments using spread sheets, databases and word processing software, and will also learn some basic trouble-shooting techniques for the internet. Students will learn how to apply information systems to solving various business problems.

INFS 205-3. Introduction to Information Technology. Key technology concepts for information system majors are introduced and applied. Topics include computer

hardware, client-server architectures, operating systems, program design, analysis and design, and databases. The course provides the elementary concept concepts required in subsequent INFS classes. Prer., INFS 110; or equivalent; or instructor permission.

INFS 251-3. Managing Network Interconnections. This is a lab-based course dedicated to working with networking devices. The principles and practice of configuring local and wide area networks are covered with a focus on business practices, software and hardware technologies, and internetworking standards. Prer., INFS 205. Sophomore standing.

INFS 295-1 to 3. Topics in Information Systems. Experimental course offered for the purpose of presenting new subject matter in information systems. Course prerequisites will vary depending on topics covered.

INFS 308-3. Business Programming. Provides comprehensive understanding of beginning programming topics. The emphasis is on structured and object-oriented programming methodologies, procedural abstraction, and top-down design. Introduces file input/output and simple data structures. Proficiency is developed as students design codes, compile, and debug programs. May take as a second semester sophmore. Prer., INFS 205; or instructor permission.

INFS 310-3. Business Programming II. Business program design and development from the perspective of visual programming technologies. Object-oriented programming is the primary focus. Emphasis is on advanced concepts such as database interfaces, GUIs, and web development. An integrative programming project is required. Prer., INFS 308; or instructor permission.

INFS 340-3. Database Concepts and Application. Students are introduced to the fundamental concepts of database design and implementation including high level entity-relationship and object modeling, design, and coding via a Structured Query Language. This class involves heavy computer tools use and is regularly scheduled in a computer lab. Prer., INFS 205; or instructor permission.

INFS 370-3. Computer Networks and Telecommunications. Introduces students to the hardware, topology, and terminology aspects of computer networks and telecommunications. Students differentiate between the different networks, learn how they work, and learn business applications for networks. Includes the basics of data transmission and LAN protocols. Prer., INFS 205; or instructor permission.

INFS 380-3. Web Development. Topics include using HTML, creating web pages, creating applets with JAVA, server development, server applications, and the web server/database interface. No credit for Information Systems majors.

INFS 395-1 to 3. Topics in Information Systems - Juniors. Experimental courses offered irregularly at the undergraduate level for the purpose of presenting new subject matter in information systems. Junior standing is required. Course prerequisites will vary depending upon topics covered.

INFS 410-3. Systems Analysis and Design. Provides an introduction to systems analysis and design concepts, methodologies, techniques, tools, and perspectives essential for systems analysts to successfully develop information systems. Students will be exposed to both structured and object oriented methodologies of analysis, design, and implementation. Prer., BUAD 300, INFS 340, INFS 308 or instructor permission.

INFS 440-3. Emerging Technologies. Each year, many new technologies enter the development arena, bringing new advantages and new risks, new benefits and new challenges. Looks at the most recent developments and provides an overview of their place in the industry. Will focus on helping participants gain an insight into these technologies and understand their place in organizational settings. An integrative project is required. Prer., INFS 410.

INFS 450-3. Information Systems Project Management. A capstone course for IS majors. Covers all aspects of planning, tracking and controlling projects involving the development of realistic applications using all IS technology and concepts covered in earlier courses. Students are expected to apply techniques in this course to a project. Critical to success will be the demonstration of the ability to determine the actual expected cost and schedule for an in-house development and be able to contrast it with a "buy option." Prer., INFS 370 and INFS 410. Completion of all skills courses or COB Director permission.

INFS 485-3. Directed Research Project. Different phases of research investigating key issues in information systems. Students conduct a variety of analyses using spss-pc and work on real research projects. Focus on descriptive statistics, frequencies, crosstabs and measures of association, correlation analysis, regression analysis, and X-Y plotting. Knowledge of statistical methods and interest in information systems required. Prer., INFS 100 or INFS 110 and QUAN 201. Junior/senior standing.

INFS 495-1 to 3. Topics in Information Systems - Seniors. Experimental courses offered irregularly at the undergraduate level for the purpose of presenting new subject matter in information systems. Second semester Junior or Senior standing required. Course prerequisites will vary depending upon topics covered. Prer., INFS 308; or instructor permission.

INFS 496-1 to 3. Internship in Information Systems. Undergraduate internship in information systems. Prer., Junior/senior business students only.

INFS 600-3. Information Systems. Introductory course. Students will learn what information systems are, how they work, and what purposes they serve. Students will also learn about data and information, decision making and the value of information. This course touches on such topics as trends in hardware and software, telecommunications, and data-bases. Also covered will be the integration of information with the organization, and what is required to manage the creation of information systems.

INFS 609-3. Information Systems. Introductory course. Students will learn what information systems are, how they work, and what purposes they serve. Students will also learn about data and information, decision making and the value of information. This course touches on such topics as trends in hardware and software, telecommunications, and databases. Also covered will be the integration of information with the organization, and what is required to manage the creation of systems. Distance MBA course. Tuition schedule differs from on campus courses.

INFS 630-3. Principles of Programming. Provides introductory understanding of structured and object-oriented programming. The emphasis on structured programming includes methodology, procedural abstraction, and top-down design. The primary concepts of objects, inheritance, polymorphism, and data hiding are stressed as valuable components of object-oriented programming. Introduces file input/output and simple data structures. Visual techniques for design are included. Proficiency in programming developed as students designs, codes, compiles, and debugs programs.

INFS 639-3. Principles of Programming. Provides introductory understanding of structured and object-oriented programming. The emphasis on structured programming includes methodology, procedural abstraction, and top-down design. The primary concepts of objects, inheritance, polymorphism, and data hiding are stressed as valuable components of object-oriented programming. Introduces file input/output and simple data structures. Visual techniques for design are included. Proficiency in programming is developed as students design, code, compile, and debug programs. Distance MBA course. Tuition schedule differs from on campus courses.

INFS 640-3. Development of Information Systems. Planning, analysis, design, and implementation phases of information systems development projects. Provides an overview of a variety of information systems development concepts, methodologies, techniques, tools, and the criteria for choosing between those approaches. Emphasizes the skills needed to plan, analyze, and design information systems. Prer., INFS 600 or INFS 609; INFS 630/639 or equivalent.

INFS 649-3. Development of Information Systems. Planning, analysis, design, and implementation phases of information systems development projects. Provides an overview of a variety of information systems development concepts, methodologies, techniques, tools, and the criteria for choosing between those approaches. Emphasizes the skills needed to plan, analyze, and design information systems. Distance MBA course. Tuition differs from on campus courses. Prer., INFS 600 or INFS 609; INFS 630/639 or equivalent.

INFS 650-3. E-commerce Practice. Focus on the breadth of aspects making e-commerce the driving force of business initiatives. Technology infrastructure issues are examined in detail with an added look at the traditional infrastructure required to be a player in the expanding e-marketplace. Prer., INFS 600.

INFS 659-3. E-commerce Practice. Focus on the breadth of aspects making e-commerce the driving force of business initiatives. Technology infrastructure issues are examined in detail with an added look at the traditional infrastructure required to be a player in the expanding e-marketplace. Distance MBA course. Tuition schedule differs from on-campus courses. Prer., INFS 600 or INFS 609.

INFS 660-3. Database Principles. Design, management, and implementation of data - oriented systems on all organizational levels including individual, departmental, corporate, distributed and international are covered. The course focuses on theories of data modeling and operational implementation of those models. Topics include systems and database planning, entity-relationships and object oriented data modeling, data normalization, data administration, SQL, client server processing, and distributed databases. This class involves computer use and is regularly scheduled in a computer lab. Prer., INFS 600 or INFS 609; INFS 630/639 or equivalent.

INFS 661-3. Data Warehouse Implementation and Applications. An examination of the business case for data warehouse. Alternative designs for data warehouses are critically examined including architectures of distribution, data models and data marts. Policies for the protection and utilization of the data are discussed. Current systems to use the data warehouse in decision settings are explored, including data mining and OLAPs. Prer., INFS 660 or instructor permission.

INFS 669-3. Database Principles. Design, management, and implementation of data oriented systems on all organizational levels including individual, departmental, corporate, distributed and international are covered. The course focuses on theories of data modeling and operational implementation of those models. Topics include systems and database planning, entity-relationships and object oriented data modeling, data normalization, data administration, SQL, client server processing, and distributed databases. This class involves computer use. Distance MBA course. Tuition schedule differs from on campus courses. Prer., INFS 600 or INFS 609; INFS 630/639 or equivalent.

INFS 670-3. Systems Development Project. Students will work through a real-world industry information systems project to build development and research skills. Explores business problems, identifies areas where information technology can have an impact, implements re-engineering techniques, assesses and uses key project tools, and develops systems for those areas. Students will be exposed to the different phases of research investigating key issues in information systems. Prer., INFS 640.

INFS 671-3. Enterprise Systems. Systems that integrate the multiple functional areas of an organization are examined in depth. The emphasis is on the reduction and replacement of complex legacy systems to improve data quality and build competitive advantage. Comparisons are made of enterprise systems and models of complete systems are developed to foster creative development of future integrative information systems. Prer., INFS 640 or instructor permission.

INFS 673-3. IT Portfolio Management. The focus is on making investment decisions about the organizational technology infrastructure in order to create value. Detailed components of an information technology infrastructure are examined in light of contribution to the enterprise. Perspectives of investment include identification of risk and value while the balance of components includes hardware, software, services and personnel. Prer., INFS 600 or instructor permission.

INFS 681-3. Telecommunications and Networking Principles. This course provides a background in telecommunications technologies, hardware and software architectures, topologies, protocols, and standards. Students will study telecommunication devices, media systems, network hardware and software; network configuration; network applications; coding of data; cost-benefit analysis; distributed versus centralized systems; performance analysis; privacy, security, reliability, installation of networks, monitoring and management of telecommunication. The last quarter of this class will focus on managing networks, supporting customers, and the latest topics in this area. Prer., INFS 600 or INFS 609

INFS 683-3. Building Virtual Organizations. Using computer and communications technology to achieve a physically unbounded enterprise. The technology structures required to achieve anywhere, anytime operations are fully explored as are current business practices, social barriers, and legal issues associated with implementing global practices. Prer., INFS 681 or instructor permission.

INFS 689-3. Telecommunications & Networking Principles. This course provides a background in telecommunications technologies, hardware and software architectures, topologies, protocols, and standards. Students will study telecommunication devices, media systems, network hardware and software; network configuration; network applications; coding of data; cost-benefit analysis; distributed versus centralized systems; performance analysis; privacy, security, reliability,

installation of networks, monitoring and management of telecommunication. The last quarter of this class will focus on managing networks, supporting customers, and the latest topics in this area. Distance MBA course. Tuition schedule differs from on campus courses. Prer., INFS 609 or INFS 600.

INFS 690-3. Special Topics in Information Technology. For IS majors and for persons who want to manage IT activities within a functional area, such as marketing or finance. Topics include the changing nature of information technology, managing information, strategic value of information systems, business process redesign, ensuring effective interaction of IS and client organizations, information technology planning, managing systems development and computer operations, managing end-user computing, decision support, group support and executive information systems, project management, recruitment, selection, placement, motivation, and performance evaluation, and the expanding universe of computing. Prer., INFS 600.

INFS 696-1 to 3. Internship in Information Systems. Graduate internship in information systems. Prer., Instructor and Dean approval.

INFS 940-1 to 3. Independent Study in Information Systems - Undergraduate. Independent study in Information Systems at the undergraduate level given with the consent of the instructor who directs the study and the dean. Prer., Junior/senior standing only and consent of instructor and dean.

INFS 950-1 to 3. Independent Study in Information Systems - Graduate. Independent study in Information Systems at the graduate level given with the consent of the instructor who directs the study and the dean.

INTERNATIONAL BUSINESS

INTB 360-3. International Business. An introduction to international business. Examines economic, political and cultural systems and provides a broad overview of how these effect business management. Addresses managerial issues related to all the functional areas of business. Provides an overview of major aspects of planning, organizing and controlling international business ventures. Prer., ORMG 330, MKTG 300, Junior/senior standing only.

INTB 461-3. Regional Business Environment Europe. A series of international business seminars conducted abroad by management personnel of European companies. Insight is provided into the cultural, social, and political environments of each country visited. This is an intensive international business and travel experience. Prer., Instructor approval.

INTB 480-3. International Management. Provides an overview of management issues related to international markets. Major topics covered are organizing operations, decision making and controlling, motivation and leadership across cultures, international labor relations, human resource selection and repatriation, and human development across cultures. Prer., ORMG 330. Completion of all skills courses or COB Director permission.

INTB 496-1 to 3. Internship in International Business. Undergraduate internship in international business. Prer., Junior/senior business students only.

INTB 619-3. Managing in Global Markets. Designed to prepare students to anticipate global forces that impact present management. Briefly reviews the economic, the social-cultural, and the political/ legal context of global management. Also reviews various concepts related to the internationalization process of the firm and frameworks related to global strategy. Distance MBA course. Tuition schedule differs from on-campus program.

INTB 660-3. Contemporary Topics in International Business. This seminar examines major contemporary issues in international business. It takes a global view and particularly assesses key US, European, and Asian events and processes in a managerial context. Prer., Completion of all MBA preparatory courses.

INTB 670-3. International Field Project. May be an independent student research project, an international internship, or an international field study. Offered on an ad hoc basis and occasionally with a specific focus. Students must get instructor's approval prior to registration. Prer., B AD 690 or instructor permission.

INTB 696-1 to 3. Internship in International Business. Graduate internship in international business. Prer., Instructor and Dean approval.

INTB 950-1 to 3. Independent Study in International Business. With the consent of the instructor who directs the study and the dean.

MANAGEMENT

MGMT 600-3. Leading and Managing in Changing Times. This course is designed to help students succeed personally and professionally in a rapidly changing, global world. The course begins with a focus on our changing environment and the need for personal and organizational excellence. The remainder of the course focuses on developing leadership and management skills and applying them with an understanding of individual, group, and organizational behavior. Students will also lead and manage change. The course concludes with a discussion of one or more contemporary organizational issues.

MGMT 609-3. Leading and Managing in Changing Times. This course is designed to help students succeed personally and professionally in a rapidly changing, global world. The course begins with a focus on our changing environment and the need for personal and organizational excellence. The remainder of the course focuses on developing leadership and management skills and applying them with an understanding of individual, group, and organizational behavior. Students will also learn how to develop high performance teams and to lead and manage change. The course concludes with a discussion of one or more contemporary organizational issues. Distance MBA course. Tuition schedule differs from on-campus courses.

MGMT 610-3. Development of Groups and Organizations. An introductory study of the dynamics involved in managing and facilitating change in groups and organizations by application of behavioral science knowledge. Emphasis is placed on both cognitive and experiential learning.

MGMT 620-3. Managing Organization Development and Change. In an environment of dynamic, non-stop change and ever increasing competition, the organizations that have the best skills in managing change and developing healthy, high performance organizations will have a significant competitive advantage. The problem is that few people are trained in these important skills. Those who are can significantly increase their value to organizations. This is an applied course that provides sound theory and practical training in how to develop high performing individuals, teams, and organizations and how to successfully manage organization changes. Prer., MGMT 600.

MGMT 629-3. Managing Organizational Change. This course provides students with an understanding of how they can serve as proactive participants in the many organizational changes occurring

today and can develop a feel for what works and what does not. Difficulties, obstacles, and resistance will be addressed and, while there are no pat answers, the more successful paths for bringing about change in complex organizations will be explored. Distance MBA course. Tuition schedule differs from on-campus courses.

MGMT 630-3. Managing Human Resources for Competitive Advantage. Presents an overview of contemporary personnel/human resource management. Topics include job analysis, staffing, performance appraisal and development, training, compensation, career planning, equal employment opportunity and affirmative action, and ethics. Application of personnel/human resource management principles is emphasized through discussion and in-class cases and exercises.

MGMT 639-3. Managing Human Resources for Competitive Advantage. This course probes the underlying values and techniques associated with employee recruitment, selection, motivation, training, affirmative action, compensation, benefits, performance appraisal, and related topics. Distance MBA course. Tuition schedule differs from on-campus courses.

MGMT 640-3. Legal Issues in Managing Human Resources. Examines the profusion of legal, social, and ethical issues confronting human resource managers, though the course is appropriate for all majors. Emphasis is on equal employment opportunity, affirmative action, safety and health. Other topics include sexual harassment, drug testing programs, employing the disabled, employee privacy rights, wrongful termination, and honesty testing. Application of principles are emphasized with in-class cases and exercises. The overall objective for the course is to explain how organizations can manage employees legally and ethically, while still maintaining a productive work force.

MGMT 696-1 to 3. Internship in Management. Graduate internship for business students. Prer., Admitted MBA students only. Instructor and Dean approval.

MGMT 950-1 to 3. Independent Study in Management. Management-Graduate. With the consent of both the instructor who directs the study and the dean.

MARKETING

MKTG 300-3. Principles of Marketing. Analytical survey of issues involved with the development and exchange of goods and services. Takes a marketing management approach in attacking problems related to product planning, channels of distribution, pricing and promotion. Emphasizes the role of marketing in responding to changing environmental conditions. Prer., ENGL 131. Junior standing.

MKTG 330-3. Marketing Research. Course emphasizes marketing research as a decision - making tool with special attention to creativity and innovation. Practical experience in evaluating and using the following research methodology: planning an investigation, questionnaire design, sampling, experimentation, interpretation of results, and report preparation. Prer., INFS 100 or INFS 110, QUAN 201, and MKTG 300. Junior standing.

MKTG 431-3. Introduction to Marketing Information Systems. This applied course reviews the principles of gathering and organizing information about customers. Gives students a survey of design of marketing information systems. Proven practical ways to introduce successful marketing information systems into for-profit and not-for-profit organizations. Prer., MKTG 330. Junior standing. Completion of all skills courses or COB Director permission.

MKTG 440-3. Service Management and Marketing. The service component of business requires a distinctive approach to marketing strategy both in development and execution. In addition, quality service cannot be delivered without understanding and developing the organizational and human resources of the firm. The course builds and expands on the introductory marketing course by showing adaptations and applications of marketing ideas to the service setting. Designed for those students who are interested in working in either traditional service industries or in the service areas of manufacturing industries. Prer., MKTG 300. Junior standing. Completion of all skills courses or COB Director permission.

MKTG 450-3. Retail Merchandising, Management and Promotion. Prepares PGM students to work within and manage a successful retailing operation in the golf industry. Topics include inventory management, buying, supply chain issues, display, promotion and pricing strategies. Prer., MKTG 300. Junior standing. Completion of all skills courses or COB Director permission.

MKTG 451-3. Sports Marketing. Prepares PGM students to market golf and other sports activities. Topics include the practical and legal aspects of providing spectator events and participative golf events. Involves extensive contact with successful sports marketers and several site visits. Prer., MKTG 300. Junior standing. Completion of all skills courses or COB Director permission.

MKTG 455-3. Contemporary Issues in Marketing. Course provides a comprehensive review of important marketing issues. The topics vary between semesters. Course uses a seminar format allowing in-depth discussion and exploration of topics. Prer., MKTG 300. Junior standing. Completion of all skills courses or COB Director permission.

MKTG 460-3. Business Marketing Management. A detailed description of commercial, institutional and governmental markets with emphasis on analyzing and understanding organizational buyer behavior. Major differences between business-to-business marketing and consumer marketing are examined and implications to marketing management of these differences are discussed. Prer., MKTG 300. Junior standing. Completion of all skills courses or COB Director permission.

MKTG 465-3. Promotion Management and Strategy. Emphasis on the management and integration of the promotion mix (advertising, personal selling, sales promotion and publicity). The impact of buyer behavior variables on promotional strategy is examined and several communication models are described. The relationship between the organization's marketing communications program and its marketing strategy is also explored. Prer., MKTG 300. Junior standing. Completion of all skills courses or COB Director permission.

MKTG 470-3. E-Commerce. The focus of this class is on the expanding role of e-commerce (electronic commerce) and direct marketing in contemporary business settings. Both consumer oriented and business-to-business aspects of e-commerce will be explored. Prer., MKTG 300, Junior standing. Completion of all skills courses or COB Director permission.

MKTG 480-3. Marketing Policies and Strategies. Detailed consideration of the process of formulating and implementing marketing policies. Major emphasis on market analysis, product/brand management, promotion, distribution and pricing. Case analyses used to develop analytical abilities and to

integrate all major areas of marketing. It is recommended that students take two required marketing courses in addition to MK 300 before enrolling in this course. Prer., MKTG 300. Junior standing. Completion of all skills courses or COB Director permission.

MKTG 485-3. Marketing Analysis and Planning Project. A comprehensive marketing research and planning project. Students work with a local business, under the supervision of the course instructor, to analyze a marketing opportunity and to develop a comprehensive plan to exploit that opportunity. Prer., Nine hours marketing or instructor's permission. Junior standing. Completion of all skills courses or COB Director permission.

MKTG 490-3. International Marketing. Provides an overview of marketing issues related to international markets. Major topics covered are description of major world markets, market analysis including cultural and political assessment, target market selection, market entry modes, marketing strategy, program management and implementation issues. Prer., MKTG 300. Junior standing. Completion of all skills courses or COB Director permission.

MKTG 496-1 to 3. Internship in Marketing. Undergraduate internship in marketing. Prer., Junior/senior business students only.

MKTG 600-3. Marketing Strategy. A concentrated examination of fundamental principles of marketing including product and service development, positioning, distribution, promotion, and pricing.

MKTG 609-3. Marketing Strategy. A concentrated examination of fundamental principals of marketing including product and service development, positioning, distribution, promotion, and pricing. Distance MBA course. Tuition schedule differs from on-campus courses.

MKTG 610-3. MBA Seminar in Contemporary Topics in Marketing. An in-depth examination of selected topics in marketing. Course topics are chosen based on their current importance to the theory and practice of marketing. This study of advanced marketing material is accomplished through various activities including presentation, discussion groups, and experiential learning activities.

MKTG 630-3. Marketing Research and Decision Making. The acquisition, organization, and dissemination of information for the purposes of making better decisions. Alternative approaches for accomplishing these tasks will be evaluated with special emphasis being placed on emerging information systems. Gives students the knowledge and tools to conduct business research and to use that information in developing marketing plans and assist in making other critical marketing decisions. Prer., MKTG 600.

MKTG 640-3. Service Marketing. Focuses on customer needs, expectations, and decision processes as they relate to the purchase and evaluation of services. Topics include service quality, assessment of customer satisfaction, marketing planning for services, internal marketing, and customer evaluation of services.

MKTG 650-3. Marketing Communications. Theories of communication and buyer behavior are applied to the process of communicating with critical constituencies. The emphasis is on the practical aspects of creating and managing effective marketing communication programs with special attention being placed on business-to-business environments. Prer., MKTG 600.

MKTG 660-3. Marketing Field Project. A comprehensive field project. Students will work with local businesses on a project emphasizing development and implementation of a marketing program. Prer., MKTG 600.

MKTG 670-3. E-Commerce. The focus is on advanced topics in e-commerce (electronic commerce) and direct marketing including the integration of internet and traditional promotions, service quality, and pricing strategies. This class will examine these issues within both consumer and business-to-business environments.

MKTG 690-3. International Marketing and Export Management. Provides an overview of international marketing issues. It provides detailed analysis of international market entry modes and strategy. Modes such as exporting, licensing, franchising, management contracts, alliances and partnerships, joint ventures, and the establishment and management of foreign sales subsidiaries are discussed. A major portion of the course is concerned with managing the export function. Prer., MKTG 600.

MKTG 696-1 to 3. Internship in Marketing. Graduate internship in marketing. Prer., Instructor and Dean approval.

MKTG 940-1 to 3. Independent Study in Marketing - Undergraduate. With the consent of the instructor who directs the study and the dean. Prer., Junior standing.

MKTG 950-1 to 3. Independent Study in Marketing - Graduate. Independent study in Marketing at the graduate level given with the consent of the instructor who directs the study and the dean. Prer., Consent of instructor and dean.

OPERATIONS MANAGEMENT

OPTM 300-3. Fundamentals of Operations Management. Intro to the design and analysis of production systems in manufacturing, service and public organizations. Topics include facility location and layout, job design and work standards, production and inventory planning and control, quality control, forecasting, simulation, waiting line analysis, linear programming, and productivity and competitiveness. Prer., ACCT 202, QUAN 201. Junior standing. Pre-coreq., BUAD 300.

OPTM 600-3. Operations: Competing Through Capabilities. Operations management focuses on the strategies and processes involved in providing goods and services to customers. This course will provide students with the ability to evaluate key factors in the design of an effective operations system and to align an operations system with an organization's business strategy. The course provides the tools to effectively design, analyze, and manage operations systems in manufacturing, service, and public entities. Prer., ACCT 600 and QUAN 550.

OPTM 609-3. Operations: Competing Through Capabilities. Operations management focuses on the strategies and processes involved in providing goods and services to customers. This course will provide students with the ability to evaluate key factors in the design of an effective operations system and to align an operations system with an organization's business strategy. The course provides the tools to effectively design, analyze, and manage operations systems in manufacturing, service, and public entities. Distance MBA course. Tuition schedule differs from on-campus courses. Prer., ACCT 609 and QUAN 559.

OPTM 610-3. Customer Focused Processes: Quality Management and Metrics. Customer satisfaction provides the critical link of operations to the marketplace. This course examines service and manufacturing processes and their impact on quality. Students are provided with tools to document processes, diagnose problems, develop innovative process improvements

solutions, and design metrics for process analysis. Through strategic quality management programs and techniques, students will develop an understanding of the critical link between productive systems and success in the marketplace. Prer., OPTM 600.

OPTM 620-3. Managing Supply Chains. As companies seek to provide their products and services to customers faster, cheaper, and better than the competition, the need for cooperation between suppliers, manufacturers, and markets becomes increasingly important. Addresses the strategic implications of an integrated supply chain and the management of functional activities required to make a supply chain successful. Develops the integration of functional activities within the company and between supply chain partners with the help of textbooks, cases, and selected readings. Prer., OPTM 600.

OPTM 630-3. Managing Projects for Competitive Advantage. Covers the fundamental project management topics necessary for implementation of and excellence in project management. Emphasis will be from a management perspective that addresses the basic nature of managing projects for business, information systems and the public. Students will deal with the problems of selecting projects, initiating them, operating them and controlling them. Also covered are the issues associated with terminating a project and with conducting a project that involves what project managers like to call the 'real world'. Prer., ACCT 600 and QUAN 550.

OPTM 639-3. Managing Projects for Competitive Advantage. Covers the fundamental project management topics necessary for implementation of and excellence in project management. Emphasis will be from a management perspective that addresses the basic nature of managing projects for business, information systems and the public. Students will deal with the problems of selecting projects and initiating them and operating and controlling them. Also covered are the issues associated with terminating a project and with conducting a project that involves what project managers like to call the 'real world'. Distance MBA course. Tuition schedule differs from on-campus courses. Prer., ACCT 609 and QUAN 559.

OPTM 649-3. Organizational Skills for Project Management. Through a team experience, students learn both theory and practice of teamwork, with an emphasis on negotiation and mediation. Students learn how to adapt communication media to achieve management goals both inside and outside the team. Additionally, the course emphasizes the need to develop human resources as capital and intellectual assets to effectively manage projects within a dynamic organization. Distance MBA course. Tuition schedule differs from on-campus courses. Prer., OPTM 639.

OPTM 659-3. Project Estimation and Risk Management. Management of successful projects includes estimation and proactive risk management in areas of project scope, cost, resource allocation, schedule, and financial planning. Uncertainty is reduced when project risks, both technical and non-technical, are identified, quantified, and mitigation strategies implemented. Included will be tools, techniques, and methodologies commonly used by successful project managers. Distance MBA course. Tuition schedule differs from on-campus courses. Prer., FNCE 609 and OPTM 639.

OPTM 669-3. Bridging Strategy and Tactics in Project Management. Managers of project managers operate in the broad context of a business, unlike project managers who generally need to complete a project on time, within budget and within quality constraints. This course covers a broad range of topics including managing multiple projects, motivating project managers, make-vs.-buy decisions, outsourcing, project assessment, portfolio management, running project offices, maturity monitoring, and communication. Distance MBA course. Tuition schedule differs from on-campus courses. Prer., OPTM 639, OPTM 649, and OPTM 659.

OPTM 696-1 to 3. Internship in Operations. Graduate Internship for Business Students in operations. Prer., Admitted MBA students only. Instructor and Dean Approval.

OPTM 950-1 to 3. Independent Study in Operations and Technology Management. With the consent of both the instructor who directs the study and the dean. Prer., Instructor consent.

ORGANIZATIONAL MANAGEMENT

ORMG 330-3. Introduction to Management and Organization. An introductory study of management fundamentals and organizational behavior. How individuals adapt to organizations; how managers motivate and lead in work situations; how organizations are designed and managed. Students are urged to complete PSY 100 and SOC 111 before taking this course. Prer. Junior standing. . Pre-coreq., BUAD 300.

ORMG 411-3. Experiences in Leadership. Through lectures, videos, exercises, case studies and a major project, students learn the needed skills to become effective leaders. Topics covered include building relationships, dealing with conflict, planning, change, teams and the major leadership theories that have been developed. Prer., ORMG 330. Junior standing. Completion of all skills courses or COB Director permission.

ORMG 436-3. Organizational Processes and Design. How organizations are structured and designed. The organization's environment, technology, size and age, and goals and strategies. Includes decision-making in organizations, innovation and change, organizational culture, power and politics, and organizational learning and renewal. Prer., Junior standing. ORMG 330 is recommended.Completion of all skills courses or COB Director permission.

ORMG 437-3. Organizational Development and Change. Introduction to the field of organization development. Provides practical skills for managers and human resource professionals in understanding, developing and changing individuals, teams and whole organizations. Students will also learn how to manage organization changes and increase the probability of successful change. Prer., Junior standing. ORMG 330 or equivalent. Completion of all skills courses or COB Director permission.

ORMG 496-1 to 3. Undergraduate Internship in Organizational Management. Undergraduate Internship in Organizational Management or Human Resources Management. Prer., Junior/ senior business students only.

ORMG 940-1 to 3. Independent Study in Organizational Management. With the consent of the instructor who directs the study and the dean.

PROFESSIONAL GOLF MANAGEMENT

PGMT 100-1. Orientation to Professional Golf Management. Course objective is to immerse PGM students into the culture of the golf professional, including expectations of ethics and integrity, courtesy, concern for others, conscientiousness, game skills and knowledge, trustworthiness, and dependability.

PGMT 101-3. Introduction to Golf Professional Training Program. Course objective is to initiate PGM students' involvement in the Golf Professional Training Program, including the requirements of the training program and the checkpoints. Class includes a lab. Prer., PGMT 100.

PGMT 110-6. Cooperative Internship I. Provides the PGM student with practical knowledge and experience of golf operations through employment at a golf facility or other suitable organization. Prer., PGMT 101.

PGMT 210-6. Cooperative Internship IIa. Provides PGM students with practical knowledge and experience of golf operations through employment at a golf facility or other suitable organization. Prer., PGMT 110.

PGMT 211-6. Cooperative Internship IIb. Provides the PGM student with practical knowledge and experience of golf operations through employment at a golf facility or other suitable organization. Prer., PGMT 210.

PGMT 300-3. Learning Styles and Teaching. Course objective is to prepare PGM students to be effective instructors by describing various learning and teaching theories, by allowing them to assess the style displayed by their students, and by adapting their teaching strategy to fit the situation. Prer., PGMT 211.

PGMT 400-3. Turf Grass Management. Prepares PGM students to supervise the management of turf grass features of golf facilities for economy, efficiency, playability, attractiveness, durability, safety, legality, and environmental protection. Topics include biology of turf grass, its cultivation and maintenance, and equipment. Prer., PGMT 411.

PGMT 401-3. Food and Beverage Management. Prepares PGM students to manage the offering and sale of food and beverages to customers in individual and group settings. It covers broad principles, practical experiences, and legal requirements. Includes a hands-on work experience. Prer., PGMT 400.

PGMT 410-6. Cooperative Internship IIIa. Provides the PGM student with practical knowledge and experience of golf operations through employment at a golf facility or other suitable organization. Prer., PGMT 211.

PGMT 411-6. Cooperative Internship IIIb. Provides the PGM student with practical knowledge and experience of golf operations through employment at a golf facility or other suitable organization. Prer., PGMT 410.

QUANTITATIVE METHODS

QUAN 201-3. Business Statistics. Statistical applications in business. Includes descriptive statistics, probability distributions, sampling theory, statistical inference and quality control, simple and multiple regression, and decision theory. Prer., MATH 111 and MATH 112, INFS 100 or INFS 110. Sophomore standing.

QUAN 202-3. Process and Statistics-Based Decisions. The course covers advanced problem solving techniques required in upper division business classes. Decision tools, including application software and custom programs are stressed as devices to study advanced decision, process, and organizational models. The techniques are applied to managerial settings. Prer., QUAN 201. Pre/coreq., ACCT 201.

QUAN 550-3. Fundamentals of Business Statistics. MBA preparatory course. Provides basic understanding of business statistics essential for graduate study in business.

QUAN 559-3. Fundamentals of Business Statistics. An introductory course in business statistics. It covers descriptive statistics and such topics as frequency distributions, graphs, and tables. It also teaches the essential elements of experimental design and common inferential statistics such as correlation, regressions, t tests, and analysis of variance. Distance MBA course. Tuition schedule differs from on-campus courses.

QUAN 619-3. Research Tools for Managers. Business statistics with an emphasis on techniques for data analysis and inference in management. Students are assumed to be familiar with basic descriptive statistics, probability theory, and probability distributions from the prerequisite statistics course. Presentation of technical material is combined with hands-on analysis of data to aid managerial decision making. Course objectives are to develop a conceptual understanding of statistics and the role of data analysis in management, and to master the mechanics of applied statistics using Microsoft Excel. Distance MBA course. Tuition schedule differs from on-campus program. Prer., QUAN 559.

STUDENTS IN FREE ENTERPRISE

SIFE 100-1 to 3. Students in Free Enterprise. Collegiate organization focused on educating in entrepreneurship, business ethics and market economics. Students identify and execute their own community projects at a Freshman or Sophomore level of work. With an approved and appropriate academic level of work, students can receive academic credit. Prer., Instructor consent required.

SIFE 300-1 TO 3. Students in Free Enterprise (SIFE) - Collegiate Organization. Collegiate Organization focused on educating in entrepreneurship, business ethics and market economics. Students identify and execute their own community projects. With an approved and appropriate academic level of work, students can receive academic credit. Repeatable for credit in different semesters for a maximum of 3 credits. Prer., Instructor consent required.

COLLEGE OF EDUCATION

EDUC

COUNSELING

COUN 320-3. Choice Theory, Reality Therapy, and Lead Management: Basic Week. This basic course is designed to instruct participants on choice theory, reality therapy and lead management. Participants will learn William Glasser's Basic Concepts Chart and process of change and conditions of quality. Participants will attend lectures and experiential activities and complete all assignments.

COUN 321-3. Choice Theory, Reality Therapy, and Lead Management: Advanced Week. This advanced course is designed to instruct participants on choice theory, reality therapy and lead management. Participants will apply William Glasser's Basic Concepts Chart and process of change and conditions of quality. Participants will attend lectures and experiential activities and complete all assignments.

COUN 322-3. Choice Theory, Reality Therapy, and Lead Management: Certification Week. This certification course is designed to instruct participants on choice theory, reality therapy and lead management. Participants will apply and evaluate William Glasser's Basic Concepts Chart and process of change and conditions of quality. Participants will attend lectures and experiential activities and complete all assignments.

COUN 483-1 to 3. Workshop in Professional Counseling. Explores selected topics in-depth in professional counseling including conflict resolution, human resource development, child abuse or topics in counseling research.

Counts toward masters degree with advisor approval only. Prer., upper division standing.

COUN 498-1 to 4. Special Topics in Counseling. Extended Studies offering. Designed to allow specific topics and issues to be explored in-depth. May apply toward a degree program at the UCCS with permission of advisor and department chairperson.

COUN 499-1 to 4. Special Topics in Counseling. Extended Studies offering. Designed to allow specific topics and issues to be explored in-depth. Will not apply toward a degree program at the UCCS.

COUN 500-3. Introduction to Counseling and Human Services. Provides an overview of the field of counseling and human services. Students will learn about career opportunities in this field and the roles and functions of professional counselors in various settings. The history of the field and future trends will be presented.

COUN 501-3. Theories and Techniques of Individual Counseling. Major theories of individual counseling and their philosophic bases will be studied in this course. Techniques used in the application of theory to practice in counseling and consultation will be presented. Basic and advanced counseling skills will be introduced in this course and practiced in COUN 502, taken concurrently. Prer., Admitted to counseling program.

COUN 502-2 to 3. Lab and Practicum in Individual Counseling. Provide basic interviewing, assessment and counseling skills and characteristics of counselors and counselees that impact the counseling and consulting process. Students engage in self-examination of characteristics that may affect them as professional counselors. Core counseling/ consultation skills are practiced and refined. Prer., Admission to CHS program. Coreq., COUN 501.

COUN 504-3. Human Growth and Development. Provides a broad understanding of life span theories of human development; understanding of the nature and needs of individuals at all developmental levels; normal and abnormal human behavior indicators; personality theory and development; and learning theory with cultural contexts.

COUN 505-3. Introduction to Play Therapy. Provides a developmental and systems approach to play therapy with content areas including history, theory, techniques, methods applications to special settings or populations. Also included is sandplay therapy which is based on the work of Jung.

COUN 506-3. Issues and Trends in College Student Development. Examines theories of college student development to include: intellectual, moral, ethical, ego, psychosocial, and systems and career development. Contemporary issues and trends in providing services to traditional and non-traditional students will be presented.

COUN 507-3. Adventure Education. This training is designed for educators looking for ways to help students/clients develop trust, enhance teamwork and encourage cooperation. Participants will develop a comprehensive, experientially-based adventure program including initiatives, activities, games and processing skills.

COUN 508-3. Counseling and Student Affairs in Higher Education. Studies the philosophy and history of counseling and student services in higher education. Examines models for designing, managing, and evaluating student affairs programs, including use of information technology. Explores current trends, issues, and challenges in service delivery.

COUN 509-3. Spiritual Dimensions of Counseling. An experiential and analytic investigation of our spiritual dimension as persons, and of methods of assessment and intervention regarding spiritual and religious issues in counseling and psychotherapy.

COUN 510-3. Theories and Techniques of Group Counseling. Includes studies that provide a broad understanding of group development, group dynamics, group leadership styles and group counseling theories. Core group counseling skills and techniques will be studied in this course and practiced in COUN 511, a small group laboratory experience taken concurrently. Prer., COUN 501 and COUN 502.

COUN 511-2 to 3. Laboratory and Practicum in Group Counseling. Taken in conjunction with COUN 510, this course provides the student with experiences as both a group member and leader. Students will apply group counseling skills and techniques and evaluate the effectiveness of several group counseling strategies. Students also complete a 100 hour field experience. Prer., COUN 501 and COUN 502; must be admitted to CHS program. Co-req., COUN 510.

COUN 512-3. Practicum in Professional Counseling. Provides students with experience in counseling and consultation. Introduces the counselor and client characteristic that may affect the counseling process. Students complete 100 clock hours of supervised field experience of which 40 hours must be in direct service to clients. Prer., COUN 501, COUN 502 and admission to CHS program.

COUN 513-3. Introduction to Marriage and Family Counseling. Introduction to marriage and family therapy with a focus on the transition from individual and group theories to systems theories. Students will learn to think in systems terms and gain an appreciation for the multiple levels of systemic functioning. A treatment of the nuclear family and alternate family forms will be included in this course. Prer., COUN 501 and 510 or consent of instructor.

COUN 514-3. Advanced Theories and Techniques of Family Counseling. Examines the following theories of family counseling: strategic, structural, experiential, object relations, communication and behavioral. Students will become familiar with the differences and similarities of these theories as well as consider the techniques for change associated with each. Prer., COUN 513 or consent of instructor.

COUN 515-3. Conflict Resolution Training. This workshop course presents a win-win approach to conflict resolution that can be utilized with individuals, families, groups and organizations. Participants will be asked to examine their personal conflict resolution strategies and change any win-lose strategies into win-win strategies. Prer., Open only to students enrolled in Counseling and Human Services program.

COUN 520-3. Choice Theory, Reality Therapy, and Lead Management: Basic Week. This basic course is designed to instruct participants on choice theory, reality therapy and lead management. Participants will learn William Glasser's Basic Concepts Chart and process of change and conditions of quality. Participants will attend lectures and experiential activities and complete all assignments.

COUN 521-3. Choice Theory, Reality Therapy, and Lead Management: Advanced Week. This advanced course is designed to instruct participants on choice theory, reality therapy and lead management. Participants will apply William Glasser's Basic Concepts Chart and process of change and conditions of quality. Participants will attend lectures and experiential activities and complete all assignments.

COUN 522-3. Choice Theory, Reality Therapy, and Lead Management: Certification Week. This certification course is designed to instruct participants on choice theory, reality therapy and lead management. Participants will apply and evaluate William Glasser's Basic Concepts Chart and process of change and conditions of quality. Participants will attend lectures and experiential activities and complete all assignments.

COUN 525-3. Systems Leadership: Organizational Theory and Change. An exploration of the complex phenomenon of systems leadership based on formal organizational theory and a fundamental belief that students will become more effective leaders once they have developed the art of reading and understanding organizational life.

COUN 526-1. Practicum in Counseling and Leadership. Provides students with experience in counseling and leadership and introduces the counselor and client characteristics that may affect the counseling process. Students complete 100 clock hours of supervised field experience of which 40 hours must be in direct service to clients; the balance is indirect service. May be repeated 3 times. Prer., Concurrent with COUN core courses.

COUN 530-3. Laboratory and Practicum in Professional Counseling. Provides students with skills in rapport building; information gathering and giving; structuring the session; reflecting and summarizing content and feeling; self disclosure; confrontation; and session closure for use in professional counseling sessions. Prer., COUN 501 and COUN 511. Co-req., COUN 513.

COUN 533-3. Issues, Ethics and Trends in Professional Counseling. A comprehensive study of professional roles and functions, professional goals and objectives, professional organizations and associations, professional history and trends, professional preparation standards and professional credentialing.

COUN 540-3. Research in Counseling and Human Services. A comprehensive study of types of research, basic statistics, research project development, program evaluation, needs assessment, and ethical and legal considerations. A thorough review of the recent research literature in the student's area of emphasis is required for this course. Prer., COUN 501 and COUN 502 or instructor consent.

COUN 541-3. Measurement and Appraisal. A comprehensive study of group and individual educational and psychometric theories and approaches to appraisal, data and information-gathering methods, validity and reliability, psychometric statistics, factors influencing appraisals, and use of appraisal results in helping processes. Prer., COUN 513 and COUN 540 or instructor consent.

COUN 543-3. Career Development. A comprehensive study of career development theories, occupational and educational information sources and systems, career and leisure counseling, guidance and education, lifestyle and career decision-making, career development program planning and resources, and effectiveness evaluations.

COUN 544-3. Advanced Psychopathology and Diagnosis. An intensive survey of the major theories, research findings and behavioral characteristics associated with mental illness and behavior disorders. Requires thorough working knowledge of the DSM IV and related diagnostic tools. Prer., COUN 513 or instructor consent.

COUN 550-3. Advanced Play Therapy. Builds on the basic concepts presented in Intro to Play Therapy and includes using play to help children and families communicate through symbols, metaphors and stories. Puppet play, the hero/heroine's journey, family art and games are highlighted. Prer., COUN 505 or consent of instructor.

COUN 570-3. Internship in School Counseling. To complete the school counselor program the student must complete a 600 clock hour internship in an appropriate school setting under the supervision of a licensed school counselor. The intern will perform a variety of activities that a regularly employed school counselor would be expected to perform. The intern must complete 240 hours of direct service as part of the 600 clock hour internship. Direct service may include but is not limited to individual counseling, group work, developmental classroom guidance and consultation with faculty, staff and parents. May be repeated for credit three times. A minimum of two semesters of internship is required for graduation from the CHS program. Prer., Instructor consent.

COUN 572-3. Internship in Community Counseling. Graduation from the counseling and human services program requires students to complete an appropriate supervised internship of six hundred (600) clock hours. The internship must include a minimum of two hundred forty (240) hours of direct service work with clientele appropriate to the program emphasis area. Students must be enrolled in the internship while working toward completion of this requirement. Direct service may include but is not limited to individual counseling, group work, developmental classroom guidance and consultation with faculty, staff and parents. May be repeated for credit three times. A minimum of two semesters of internship is required for graduation from the CHS program. Prer., Instructor consent.

COUN 574-3. Internship in Student Affairs. To complete the student affairs in higher education program, students must complete a 600 hour internship; 40% in direct service, 60% indirect. May be repeated three times. Prer., Completion of core courses.

COUN 575-3. Internship in Counseling and Leadership. To complete the Leadership track in the Counseling program students must complete a 300 hour Internship; 40% direct service, 60% indirect. May be repeated 3 times to meet licensure requirements. Prer., COUN core courses.

COUN 580-3. Roles and Functions of the School Counselor. Studies include but are not limited to the following: history/philosophy of the school counseling profession; ethical standards and laws; developmental programming; comprehensive guidance services; standards-based services; surveys/interviews to design, implement, and manage/evaluate a comprehensive developmental standards-based program.

COUN 581-3. Organization/ Administration of the School Counseling Program. Studies include, but are not limited to:learning theories, classroom motivation/management, and effective instruction; interrelationships/ collaborations with school and community; characteristics and interventions for at-risk youth; special education process; educational strategies for assessment, transition, and advising students; and program leadership/advocacy.

COUN 583-1 to 4. Topics in Counseling. Explores selected topics in professional counseling in depth including conflict resolution, human resource development, or advanced topics in counseling research. Prer., Consent of instructor.

COUN 584-3. Advanced Workshop in Counseling. In-depth study of selected counseling topics based on directed readings. For example, examination of original writings of major counseling theorists.

COUN 585-3. Advanced Theories and Techniques of Marriage Counseling. Presents marriage counseling from perspectives of psychodynamic, behavioral and systems theories. Introduces mate-selection, pre-marital counseling, marriage enrichment, sex therapy, counseling blended families and divorce mediation. Prer., COUN 513.

COUN 586-3. Social and Cultural Foundation of Professional Counseling. Examines socioeconomic trends in society including sources of conflict and methods of conflict resolution, trends and changes in human roles, multicultural and pluralistic trends including characteristics and concerns of subgroups, and major societal concerns including discrimination on the basis of human characteristics such as age, race, religious preference, physical condition, sexual preference, ethnicity or gender, and methods for alleviating these concerns.

COUN 587-3. School Counseling Techniques. Course teaches counselors practical skills in the school setting. Studies include but are not limited to: applying counseling theories to the school setting; professional advocacy practices/techniques for diverse student populations; and essential services school counselors provide. Prer., COUN 580 and COUN 581.

COUN 588-2. Gender Issues in Counseling. Course will explore personal and cultural biases about gender, ethnicity, stereotypes and cultural differences. Discussion, research and investigation into socialized bias, prejudice, and sexual harassment concerns will offer students an expanded view of gender issues prevalent in our society.

COUN 592-3. Role and Function of the Community Counselor. Broad examination of the context of the mental movement with focus on the role and functions of the community counselor. Students will engage in studies that examine the clinical, administrative and specialized skills that community counselors must develop to serve as effective members of the health care team.

COUN 598-1 to 4. Special Topics in Counseling. Extended Studies offering. Designed to allow specific topics and issues to be explored in-depth. May apply toward a degree program at the UCCS. Prer., Undergraduate degree.

COUN 599-1 to 4. Special Topics in Counseling. Extended Studies offering. Designed to allow specific topics and issues to be explored in-depth. Will not apply toward a degree program at the UCCS. Prer., Undergraduate degree.

COUN 950-1 to 3. Independent Study in Counseling. Independent investigation of topics of specific interest to the student and completed under the direction of a faculty member. The specifics of the investigation and the topic are a joint decision by the student and faculty member. Meeting times, expectations and evaluation are arranged with the faculty member. Students must have written consent of instructor to participate. Students using the independent study for degree purposes should also have written consent of their advisor. Prer., Consent of instructor.

COUN 999-0. Candidate for Degree. To be used only by those students who will not be registered for coursework or independent study during the semester in which the student will take comprehensive examinations for the master's degree. Registration as candidate for degree will fulfill the requirement for registration during the semester in which comprehensives are taken. No credit will be earned and the fee is that of a one-semester credit hour course. Prer., Consent of advisor is required.

CURRICULUM AND INSTRUCTION

CURR 3199-1 to 3. Educational Technology Laboratory. A series of self-paced modules including operating systems, word processing, graphics, gradebooks, presentation programs, e-mail, multimedia, and the internet available for both MAC and PC. Number of credits to be arranged with instructor. Prer., This course is open only to those admitted to and participating in TEP.

CURR 4100-2. Introduction to Technology in Education. Covers the fundamental concepts of computer uses in education. The course is designed for practicing or prospective educators who wish to explore computer uses in the classroom. Demonstrations of classroom activities, modern applications, and electronic mail will be conducted. Coreq., CURR 4101.

CURR 4102-1 to 4. Selected Topics in Education Technology. Offered by guest lecturers to the university or by regular faculty where special topics or special needs arise. Examples of appropriate topics include the study of hypermedia, desktop publishing in educational settings, the application of microcomputers to a field or subject area, or the study of advanced technologies such as a videodisk integration. Topics and prerequisites to be announced.

CURR 4103-3. Technology for the Learner with Special Needs. Participants will review and synthesize literature on a broad variety of technological solutions that meet the needs of special learners (with different school- based disabilities). Students will also conduct investigations into the use of adaptive devises and assistive technologies, demonstrate their use, and design learning environments to support the learner's needs for education in the least restrictive environment. Meets with CURR 5122.

CURR 4131-1 to 3. Web-Based Delivery of Training. This series of six half-credit modules addresses a range of topics relating to web-based delivery of training. The topic mix for the modules evolves as the technology evolves. Students must take modules in multiples of two. Meets with CURR 5131.

CURR 4440-1 to 6. Selected Topics in Reading Education. Selected topics and issues in reading education will be explored in depth. Examples of special topics include: Introduction to Whole Language; Whole Language and Phonics Instruction; Reading; Writing and Spelling Connections; and others as issues arise. Prer., Bachelor's degree in Education or related field.

CURR 4498-1 to 4. Special Topics in Curriculum. Extended Studies offering. Designed to allow specific topics and issues to be explored in-depth. May apply toward a degree program at the UCCS with permission of advisor and department chairperson.

CURR 4499-1 to 4. Special Topics in Curriculum. Extended Studies offering. Designed to allow specific topics and issues to be explored in-depth. Will not apply toward a degree program at the UCCS.

CURR 4504-1 to 4. Topics in Teaching Science. Explores selected topics in science teaching. Topics will vary each time course is offered. Meets with CURR 5504.

CURR 4599-1 to 4. Special Topics in Curriculum. Extended Studies offering. Designed to allow specific topics and issues to be explored in-depth. Will not apply toward a degree program at the UCCS.

CURR 5002-3. Issues, Strategies and Models in Curriculum Design. Designed to prepare students to write challenging, differentiated, and effective curricula for a variety of learners. A variety of curriculum models and strategies will be explored.

CURR 5011-3. Education Profession: Its Bases and Contexts. Philosophical and historical bases of current educational issues, the role of education in a democratic society, reciprocal rights and responsibilities in teaching, the ethics of teacher decision-making, fostering effective home-school and community-school relationships. Prer., Acceptance into COE Alternative Licensure Program.

CURR 5012-3. Understanding Learners and Learning. Understanding human developmental processes and variations; understanding how factors in the home, school, and the community may affect learners; understanding diverse student populations; understanding learning processes and strategies that foster student learning. Prer., Acceptance into COE Alternative Licensure Program.

CURR 5013-3. Instructional/Classroom Management Strategies I - Elementary. Instructional methods, standards-based curriculum, materials classroom management and discipline, reading and writing literacy teaching and learning, assessment, and integrating curriculum across content and with technology. Prer., Admission into ALP program.

CURR 5014-3. Instructional/Classroom Management Strategies I - Secondary. General teaching strategies designed to promote learning and the use of literacy in secondary content areas. Specific strategies for developing standards- based curriculum and methods in particular subject areas. Technological supports; developing assessment and evaluation strategies, classroom management strategies. Prer., Acceptance into COE Alternative Licensure Program.

CURR 5015-2 to 4. Instructional/ Classroom Management Strategies II - Elementary. Continuation of CURR 5013 with emphasis on math and reading methods, analyzing results, and reflecting on the teaching process. Prer., Acceptance into COE Alternative Licensure Program.

CURR 5016-2 to 4. Instructional/ Classroom Management Strategies II - Secondary. Continuation of CURR 5014 with emphasis on applying strategies, analyzing results, and reflecting on the teaching process. Prer., Acceptance into the COE Alternative Licensure Program.

CURR 5017-3 to 6. School Residency and Teaching Seminar - Elementary. Full-time service in a school as a resident teacher planning, delivering, and evaluating instruction, managing the classroom environment and student behavior, developing collaborative relationships with parents and colleagues. Prer., Acceptance into COE Alternative Licensure Program.

CURR 5018-3 to 6. School Residency and Teaching Seminar - Secondary. Full-time service in a school as a resident teacher planning, delivering, and evaluating instruction, managing the classroom environment and student behavior, developing collaborative relationships with parents and colleagues. Prer., Acceptance into COE Alternative Licensure Program.

CURR 5019-3. Teaching Seminar in Elementary Education. Exploration of learning from theory and practice; developing and presenting a teaching portfolio; developing a problem-based approach to teaching; self-analysis and reflection on teaching. Prer., Acceptance into the COE Alternative Licensure Program.

CURR 5020-3. Teaching Seminar in Secondary Education. Exploration of learning from theory and practice; developing and presenting a teaching portfolio; developing a problem-based approach to teaching; self-analysis and reflection on teaching. Prer., Acceptance into COE Alternative Licensure Program.

CURR 5050-1 to 4. Workshop in Curriculum. Contemporary national, state, and local issues in education. An overview of current issues and trends in elementary and secondary education is developed for reference, discussion, and debate.

CURR 5090-1 to 3. Research Project. During this course the student will complete a research paper/project which investigates a topic of specific interest to the student under the guidance of the faculty member. This project serves as the comprehensive exam for the C & I masters. Prer., Graduate acceptance in Curriculum and Instruction Masters Degree and LEAD 570.

CURR 5100-2. Introduction to Technology in Education. Introduction to the fundamentals of microcomputer use in the classroom. The course covers a variety of educational applications including information processing, teacher utilities, problem solving in various programming environments, selection of software and management of hardware, and other relevant topics. Coreq., CURR 5101.

CURR 5101-1. Introduction to Technology in Education Laboratory. Accompanies CURR 5100. Participants will individually use microcomputers to experience the methods and outcomes of hands-on activities. Coreq., CURR 5100. $20 lab fee required.

CURR 5110-3. Evaluation of Computer-Based Training and Education Programs. Instructional designers are responsible for validating the effectiveness of their training or educational programs. This course covers the design of a program evaluation, design and application of measures and instruments, presentation of formative and summative evaluation reports, and the evaluation of cost effectiveness. Prer., CURR 5001.

CURR 5120-3. Project. Students will be required to design and implement a project involving the practical application of the principles and techniques addressed by the degree program. Details will be arranged through the student's advisor. Projects based on activities in the field are encouraged. Prer., CURR 5212 and CURR 5213.

CURR 5121-1 to 3. Selected Topics in Educational Technology. Graduate level courses to be offered by guest lecturers to the university or by regular faculty where special topics or special needs arise. Examples of appropriate topics include the study of hypermedia, desktop publishing in educational fields or settings, the application of microcomputers to a field or subject area, or the study of advanced technologies such as videodisk integration. Topics and prerequisites to be announced. Course cannot be used to satisfy graduate degree requirements.

CURR 5122-3. Technology for the Learner with Special Needs. Students will synthesize literature on a variety of technological solutions that meet the needs of special learners, conduct investigations into the use of adaptive devices and assistive technologies, demonstrate their use, and design learning environments that support the learner in the least restrictive environment. Meets with CURR 4103.

CURR 5123-1 to 4. Field-based Practicum in Educational Computing and Technology. Students will develop and complete under the direction of a faculty member an in-depth field experience involving educational technology in an educational setting. The specifics of the investigation and the topic are a joint decision by the student and the faculty member. The meeting times, expectations, and evaluation are arranged with the faculty member. Students must have written consent of the instructor. Students using field experience for degree purposes should have the written consent of their advisor. Students are expected to submit a written proposal of their work to the instructor involved. Suggested

examples of field experiences are as follows: (1) Work with students in lab situations to acquire computer skills, (2) develop, design, and evaluate curricular programs for implementation of computer skills at the district, school, or classroom level, (3) develop, design, and field test educational computer software in an educational setting.

CURR 5130-1 to 3. Multimedia Development. This series of six half-credit modules addresses a range of topics relating to multimedia development. The topic mix for the modules evolves as the technology evolves. Students must take modules in multiples of two. Graduate credit will involve a review of research literature on multimedia use in training. Prer., CURR 5131. Meets with CURR 4130.

CURR 5131-1 to 3. Web-Based Delivery of Training. This series of six half-credit modules addresses a range of topics relating to web-based delivery of training. The topic mix for the modules evolves as the technology evolves. Students must take modules in multiples of two. A review of the literature on web applications of media analysis will be required for graduate credit. Meets with CURR 4131.

CURR 5140-1 to 3. Graphics Design. This series of six half-credit modules addresses a range of topics relating to graphics design. The topic mix includes graphics design, desktop publishing, and a variety of graphics applications. Students must take modules in multiples of two. An instruction design/visual literacy submission will be required for graduate credit. Meets with CURR 4140.

CURR 5150-3. Instructional Message Design. Design of instructional environments that support effective learning. Environments may include computer-based instruction, web designs and computer- augmented classrooms.

CURR 5151-3. Instructional Design I. Provides an introduction to the major theories and principles of systematic instructional design and evaluation. Students will be required to create, field test, and evaluate their own instructional designs. Prer., CURR 5150.

CURR 5152-3. Instructional Design II. Building upon the theories and principles of instructional design introduced in CURR 5151, this course will explore the application of ID in a broad spectrum of environments. Field work may be required. Prer., CURR 5151.

CURR 5153-3. Authoring. Students will learn to use software tools for media integration and the development of Computer Based Training. Topics include navigation design coding, CMI, and Cross platform integration. The primary application used is AUTHORWARE. Prer., CURR 5130 or instructor's permission.

CURR 5154-3. Technologies for Computer-Based Training and Assisted Instruction. Hardware and software technologies that support computer-based training and computer-assisted instruction. Students will be required to present their findings in class.

CURR 5162-6. Practicum Instructional Technology. Students will meet with course instructor to design a CBT project (corporate) or classroom interventions for both students and teachers (educator). Prer., CURR 5152.

CURR 5171-3. K-12 Web-Based Educational Resources. Students will read current literature involving using the Internet in the K-12 curriculum as well as evaluate various web-based educational resources to use in educational settings. Students will design and develop several lessons/units involving web-based resources in this hands-on class.

CURR 5201-3. Seminar: Current Research Issues in Gifted Education. Students enrolled in this seminar explore contemporary research related to the identification of gifted students, programs for the gifted, affective needs of gifted students, and other related educational issues. Meets with SPED 590.

CURR 5202-3. Methods and Materials for Teaching Multiple Intelligence. Focuses upon the examination of giftedness through the lens of Howard Gardner's theory of multiple intelligences. Participants will examine educational research and practice relative to multiple intelligence theory. Methods for infusing multiple intelligence teaching strategies into the curriculum will be studied. Meets with SPED 533.

CURR 5210-3. Arts for the Gifted. Explores a variety of arts activities for the elementary and middle grades. There will be a focus on a multi-faceted approach to teaching arts within creative, stimulating environments where the gifted student can evolve and thrive. Creativity, hemisphericity, problem solving, and practical applications of visual arts, music, dance, drama, and creative writing are addressed. Meets with SPED 559.

CURR 5211-3. Curriculum Strategies for the Gifted and Talented. Prepares participants to write challenging, effective, and differentiated curricula for gifted learners. A variety of curriculum models and strategies will be explored. Participants will create curriculum units for gifted students in content areas of their choice.

CURR 5212-3. Reading and Language Arts for the Gifted. Explores a wide variety of reading and writing activities for gifted learners. Children's and adolescent literature, biography, independent study, creative dynamics and expository and creative writing are among the many topic areas addressed. Meets with SPED 562.

CURR 5213-3. Social Studies and Humanities for the Gifted. Addresses the teaching of social studies and the humanities to gifted and talented students, grades K-12. An integrated, holistic approach to social studies is emphasized. Meets with SPED 563.

CURR 5220-3. Creative Problem Solving and Future Problem Solving for Gifted Learners. Covers four areas: creativity, problem solving, future studies, and future problem solving. Course content will focus on both the theoretical frameworks underlying each topic as well as concomitant teaching strategies. Meets with SPED 564.

CURR 5230-1 to 3. Supervised Practicum - Gifted/ Talented Education. Practicum credit may be obtained through selected, supervised field placements in teaching of supervisory roles in gifted education.

CURR 5301-3. Mathematical Connections and Concepts. Exploration of current mathematics curriculum topics in ways which will allow students to develop deeper conceptual knowledge and a better understanding of the connections between various mathematical topics. Applications of mathematics to other disciplines. Historical background of secondary curriculum.

CURR 5302-3. Mathematics for Today's Teacher: Standards-Based Teaching, Technology, and Testing. Current perspectives on effective, standards-driven mathematics teaching in K-12 classrooms will be studied. Mathematical inquiry, exploration with manipulatives, integration of oral and written mathematical communication, problem solving approaches and integration of technology to enhance K-12 test preparation will be emphasized.

CURR 5303-3. Quantitative Literacy in American Schools. An overview of essential standards-based mathematics in today's schools to include effects of building a strong sense of number (number sense), real-world application,

and discipline integration on becoming mathematically literate will be surveyed including developing teaching and planning strategies for enhancing quantitative literacy and deep mathematical understanding.

CURR 5304-3. Mathematics & Cognition. How students' approach, process, and apply mathematical tasks based on current cognitive theories and brain research will lead this course. Problem solving and reasoning, via Cognitively Guided Instruction, will be emphasized, including incorporation of concrete manipulatives, interactive technologies, and higher-order thinking.

CURR 5305-3. Teaching & Assessing Manipulative-Based Mathematical Inquiry. Using, integrating, and assessing K-12 students' explorations with manipulatives through performance-based, alternative assessments will be emphasized. Students will be encouraged to create concrete strategies and assessment tools, ask questions, and encourage synthesis while gathering useful information about how K-12 students think and feel about mathematical skills and tasks.

CURR 5400-3. Teaching Reading and Writing in Content Areas. Format variations from content area to content area, materials, equipment, readability of content materials, vocabulary, variations in comprehension, and variations in study procedures.

CURR 5401-3. Teaching Reading in the Elementary School. Comparative analysis of predominant current philosophies/ methodologies of reading instruction, current organizational procedures, skill development, and comprehension activities in the elementary school.

CURR 5402-3. Teaching the Basal. Application of current instructional techniques in reading to basal readers in use. Focus on the instruction of average to below average readers.

CURR 5403-3. Introduction to Clinical Experiences. Introduction to diagnostic, evaluative, prescriptive and remedial principles. Tutorial approach.

CURR 5404-2 to 3. Facilitating Reading in the Preschool and Kindergarten Classroom. Historical background of reading readiness and strategies for advancing literacy in the preschool and kindergarten classroom. Workshop approach.

CURR 5410-3. Informal Diagnostic and Remedial Techniques of Reading. Causes of low reading ability and techniques employed in teaching the poor reader, diagnosis, motivation, and skills.

CURR 5411-3. Psycholinguistics and Reading. An analysis of the reading process from a psycholinguistic orientation. Emphasis on research studies and selected readings dealing with linguistic development and appropriate implications for reading acquisition. Prer., CURR 5401 or CURR 5410.

CURR 5412-3. The Reading-Writing Connection. Explores the relationships that exist between reading (decoding) and writing (encoding). Both reading and writing are viewed as inseparable parts of the complete language arts complex. Reading to write and writing to read are both important focus areas of this course.

CURR 5413-3. Developing and Implementing Literacy programs. Procedures involving organization of programs which include selection of staff, materials, scheduling, budgeting, and evaluation. Prer., 6 hours of instruction in reading or consent of instructor.

CURR 5420-3. Children's Literature. Reading and evaluation of books for children, information about children's books, children's interests in reading, important authors and illustrators, and problems in the guidance of reading.

CURR 5421-3. Literature for Adolescents. Reading and evaluation of literature for adolescents. Emphasis on modern literature as well as literature by female and minority group authors. Meets with SPED 545.

CURR 5430-4. Reading Clinical Procedures I (Elementary). Supervised diagnosis of reading problems; evaluation instruments; pertinent research; case study approach. Prer., CURR 5410 or consent of instructor. Meets with CURR 5431.

CURR 5431-4. Reading Clinic Procedures II (Secondary). Supervised remediation of reading problems; methods and teaching materials; use of readability measures. Prer., CURR 5410 or consent of instructor. Meets with CURR 5430.

CURR 5432-3. Supervised Practicum in Reading: Elementary. For advanced students working toward reading certification at the elementary level. Supervised field placements focusing on the application of program planning components. Prer., CURR 5410 and consent of instructor.

CURR 5433-3. Supervised Practicum in Reading: Secondary. For advanced students working toward reading certification at the secondary level. Supervised field placements focusing on the application of program components. Prer., CURR 5410, CURR 5431, and consent of instructor.

CURR 5440-1 to 6. Selected Topics in Reading Education. Selected topics and issues in reading education will be explored in depth. Examples of special topics include: Introduction to Whole Language; Whole Language and Phonics Instruction; Reading, Writing, and Spelling Connections; and others as issues arise. Prer., Bachelor's degree in Education or related field.

CURR 5462-3. Elementary Literacy Methods. Elementary reading and writing literacy practice and strategies, methods, and materials with emphasis on Colorado Model Content Standards. Prer., Acceptance in ALP program.

CURR 5464-3. Elementary Mathematics Methods. Elementary mathematics strategies to successfully implement mathematics instruction with emphasis on problem solving; thinking; and addressing Colorado Content Math Standards. Prer., Acceptance into ALP program.

CURR 5491-3. Secondary English Methods. Secondary English Methods gives an overview of instructional theory, methods, and materials in English and helps the students develop teaching strategies and address the Colorado model content standards. Prer., Only those admitted to and participating in ALP. Meets with T ED 491 and T ED 591.

CURR 5492-3. Secondary Math Methods. Secondary Math Methods gives an overview of instructional theory, methods, and materials in math and helps students develop teaching strategies and address the Colorado model content standards. Prer., Only those admitted to and participating in ALP. Meets with T ED 492 and T ED 592.

CURR 5493-3. Secondary Science Methods. Secondary Science Methods gives an overview of instructional theory, methods, and materials in science and helps students develop teaching strategies and address the Colorado model content standards. Prer., Only those students admitted to and participating in ALP. Meets with T ED 493 and T ED 593.

CURR 5494-3. Secondary Social Studies Methods. Secondary Social Studies Methods gives an overview of instructional theory, methods, and materials in social studies and helps students develop teaching strategies and address the Colorado model content standards. Prer.,

Only those admitted to and participating in ALP. Meets with T ED 494 and T ED 594.

CURR 5495-3. Secondary Spanish Methods. Secondary Spanish Methods gives an overview of instructional theory, methods, and materials in Spanish and helps students develop teaching strategies and address the Colorado model content standards. Prer., Only those admitted to and participating in ALP. Meets with T ED 495 and T ED 595.

CURR 5501-3. Exploring the Science Curriculum. Explores the curriculum, instructional strategies, and foundations for teaching science K-12. The course presents a variety of strategies for creating and implementing science curriculum. Participants will acquire knowledge and skills necessary to implement a holistic approach to science teaching that considers knowledge, process skills, scientific attitudes, and mandated standards.

CURR 5502-3. Developing Manipulative Materials for Science Teaching. Designed to enable teachers at all levels to develop manipulative science materials from easily available resources. Participants will develop and demonstrate materials for teaching science in a contemporary fashion on a limited budget.

CURR 5503-3. Integrating Reading and Science. Familiarizes teachers with contemporary practices in science and reading education. Particular emphasis is placed on integrating "learning-cycle" procedures from science education with "marginal gloss" and other "whole language" techniques from reading education. Many activities with direct application to classroom practice will be presented.

CURR 5504-1 to 4. Topics in Teaching Science. Explores selected topics in science teaching. Topics will vary each time course is offered. Prer., Bachelor's degree in Education or related field. Meets with CURR 4504.

CURR 5510-3. Science and Environmental Education for Gifted Students. Designed for K-12 educators interested in developing their ability to work with gifted and talented students in science education and environmental education. The course emphasizes using and developing science resources for gifted and talented students. It also explores contemporary methodology for teaching science to gifted and talented students. Prer., Teaching experience.

CURR 5511-3. Teaching Energy and Environment. Focuses on contemporary energy and environmental topics and issues. It is designed for elementary through secondary teachers. Emphasis is placed on clarifying environmental issues; showing relationships between energy, environment, and society.

CURR 5512-3. Energy and Environmental Activities. Focuses on developing and utilizing activities, games, and role playing simulations in the area of energy, environment and conservation. This course is designed to enable classroom teachers at all levels to present and clarify various related concepts.

CURR 5513-2. Activities for Teaching Earth Science. Focuses on using and developing classroom activities for anyone teaching earth science topics. Most activities presented are adaptable from preschool through high school. The course will cover five main topics including: space, land, water, air, and the earth's past.

CURR 5514-3. Activities for Teaching Weather. Provides many classroom activities demonstrating various aspects of weather and weather prediction. Topics include aspects of weather ranging from local up-slope caused by an "Albuquerque Low" to global warming. Activities presented will be applicable for elementary through high school grades.

CURR 5520-3. Activities for Teaching Physical Science. Designed for teachers at all levels and includes a wide variety of activities for teaching physical science concepts. Contemporary science teaching methods will be modeled to develop physical science concepts through manipulative and inquiry experiences.

CURR 5521-2. Activities for Teaching Electricity and Magnetism. Provides classroom activities involving electricity and magnetism for teachers. Activities are designed for use with materials easily available from local sources. The course covers a wide variety of activities ranging from simple interactions of magnets to generation of electricity.

CURR 5522-1. Teaching Cosmology - Explaining the Universe. Utilizes the PBS series "Stephen Hawking's Universe" as a basis for presenting an overview of the universe from its theoretical origins to its ultimate demise. The course will focus on understanding the broad principles and incorporating cosmology into classroom instruction.

CURR 5530-3. Cutting Edge Science for Cutting Edge Teachers. Focuses on the readings from contempo-rary journals, magazines, data-bases, etc. It will bring participant up- to-date with recent developments in science and technology. It allows teachers to explore current scientific information along with strategies for including new information in their science teaching from K-12.

CURR 5542-3. Biological and Physical Research. Search with the experts for the answers to how humans can expand beyond home to maximize the benefits from space exploration. Discover fundamental laws of nature. Learn how the human body functions in space.

CURR 5543-3. Astronomy Principles for the Classroom. Focus on NASA's Enterprise for Space Science. Study of solar systems, galaxies, stars and sky identification and the physics of space. View the night sky at the Air Force Academy Observatory.

CURR 5545-3. Space History and Space Law. Course combines science fiction, science, technology and world events into a single survey course for educators. Participants will follow the course of space exploration through a variety of strands focusing on manned and unmanned exploration, military space, economics and politics. Prer., undergraduate degree.

CURR 5598-1 to 4. Special Topics in Curriculum. Extended Studies offering. Designed to allow specific topics and issues to be explored in-depth. May apply toward a degree program at the UCCS. Prer., Undergraduate degree.

CURR 5599-1 to 4. Special Topics in Curriculum. Extended Studies offering. Designed to allow specific topics and issues to be explored in-depth. Will not apply toward a degree program at the UCCS. Prer., Undergraduate degree.

CURR 5670-3. Philosophy, Organization, and Current Issues in Middle Level Schools. Philosophy and goals of middle level education and current issues in middle level education: testing and test results, grouping students, staffing and staffing design, teaming structures, new and innovative programs effecting middle level schools.

CURR 5671-3. Introduction to Middle Level Schools. Overview of the middle school: definition of terms, organization of the middle school, philosophy, staffing and staffing design, teaming, interdisciplinary teaching, programs that are unique to middle level schools, and scheduling.

CURR 5672-3. Curriculum, Instruction, and Assessment for Middle Level Schools. Effective middle school curriculum that is responsive to the needs of the early adolescent will be

the focus of this course. Topics that will be covered include the components of middle level curriculum, instructional delivery techniques and strategies, and multifaceted evaluation methods. Various models will be presented and practitioners will provide their insight into curriculum models.

CURR 5673-3. Communication and Technology in the Middle Level School. Communication in a middle level school is unique in terms of parent, peer, and student communication. Technology and how it has affected communication in middle level schools will be explored.

CURR 5675-3. Interdisciplinary Teaming for Middle Level Teachers. Creating a classroom atmosphere where maximum learning can take place. Topics will include: team organization, teaching through thematic units, block scheduling, guidelines for teaching middle level learners through teaming and interdisciplinary approaches.

CURR 5676-3. Leadership in the Middle Level School. The course will examine the role of teachers and administrators in the middle level school. Topics that will be covered include: organization of the middle level school, philosophy, staffing and staffing design, role of the team leader, teaming, site-based management, transition programs, school/community relations, school climate, instructional leadership, decision-making, and providing for a safe learning environment.

CURR 5700-3. Introduction to ESL/ Multicultural Education. Provides comprehensive survey of ESL and multicultural education programs. Includes history and legislation of bilingual/ ESL education, instructional models, philosophies, theories of bilingual/ESL education, the culture of ESL classroom, instructional strategies and important considerations for teaching the LEP student. Meets with T ED 370.

CURR 5701-3. Materials and Methods in ESL/Multi- Cultural Education. Provides an in-depth study of curriculum options available for the ESL classroom. Presents, reviews and critiques specific methods and strategies for teaching language minority students. Emphasizes methods for implementing cooperative learning strategies among students. Prer., CURR 5700. Meets with T ED 371.

CURR 5702-3. Literacy for Linguistically Different Learners. Presents current and emerging philosophies and methods on teaching reading to culturally diverse second language learners. Includes review of materials, strategies for teaching reading and writing skills, and important considerations for transference from L1 to L2 reading, and field based assignments. Prer., CURR 5700. Meets with T ED 372.

CURR 5703-3. Methods, Materials, and Theories of Assessments for ELLs. Prepares teachers to assess and evaluate ESL language students in a field-based setting. Includes particular assessment instruments, mediation strategies and materials, and formal and informal diagnostic strategies. Covers both theoretical and applied aspects of assessing language learning and teaching. Prer., CURR 5702. Meets with T ED 373.

CURR 5704-3. Practicum in ESL/ Multicultural Education. A field-based, standards-based course that provides at least 150 hours of site-based work in addition to in-school work. Students are placed into classrooms with ELLs if they do not already have such classrooms. Instructors supervise the placements. Prer,. CURR 5703. Meets with T ED 374.

CURR 5705-3. Second Language Acquisition: Capstone. Presents broad survey of second language acquisition research. Stresses theoretical concerns, research findings, practical applications to teaching second languages. Gives emphasis to applied second language acquisition, cultural awareness, social and economic factors that contribute to ELL's success in schools. Prer,. CURR 5704. Meets with T ED 375.

CURR 5706-3. Curriculum for Multicultural Education. Analyzes curriculum programs used in the classrooms and applies principles and innovation for education of ethnic minority and majority students in the elementary grades. Meets with T ED 376.

CURR 5707-3. Pro-Seminar: Parent and Community Involvement. Focuses on models and strategies for improving parent and community involvement in the schools. Discusses administrative concerns, such as parent advisory councils, instructional concerns, such as helping children with school assignments, and family literacy issues and programs. Field-based assignments are required. Prer,. CURR5704. Meets with T ED377.

CURR 5708-3. Research Issues in ESL/Multicultural Education. Offers practical experience in review, critique and conceptualization of contemporary research studies in second language acquisition. Provides experiences in the design of classroom-based evaluation systems. Prer,. CURR5704, CURR 5705.

CURR 5709-3. Theories of Learning and Development. Examines current theory and research on child development, learning and motivation. Emphasizes the relationship between and among development, learning, motivation, and how theory and research can inform instructional decisions in the elementary classroom. Prer,. CURR5705.

CURR 5710-3. Education and Sociolinguistics. Examines current theory and research on child development, learning and motivation. Emphasizes the relationship between and among development, learning, motivation, and theory and research can inform instructional decisions in the elementary classroom. Prer,. CURR5705.

CURR 5711-3. Introduction to Research and Statistics. Introduces measures of central tendency, variability, percentiles, standard scores, and correlation. Explores basic concepts in statistical inference by evaluating, designing, and analysis of education research. A minor research project will be completed. Prer,. CURR5709, CURR5710.

CURR 5712-3. Ethnographic Methods in Educational Research. Explores the history of ethnography in cultural anthropology and its translation into educational research. Students learn about and practice participant observation, interviewing, journal writing artifact searches, data processes, strategies for qualitative analysis and interpretation and styles of reporting. Prer,. CURR5709, CURR5710.

CURR 7000-1 to 6. Master's Thesis.

CURR 9500-1 to 5. Independent Study in Reading. Independent investigation of topics of specific interest to the individual student and completed under the direction of a faculty member. The specifics of the investigation and the topic are a joint decision by the student and faculty member. The meeting times,, expectations, and evaluation are arranged with the faculty member. Students must have written consent off the instructor. Students using independent study for degree purposes should have the written consent of their advisors.

CURR 9600-1 to 3. Independent Study in Curriculum. Independent investigation of topics of specific interest to the individual student and completed under the direction of a faculty member. The specifics of the investigation and the topic are a joint decision between the student and faculty member. The meeting times, expectations, and evaluation are arranged with the faculty member. Students must have written consent of the instructor.

CURR 9601-1 to 3. Independent Study in Junior High/ Middle School Curriculum. Independent investigation of topics of specific interest to the individual student and completed under the direction of a faculty member. The specifics of the investigation and the topics are a joint decision between the student and the faculty member. The meeting times, expectations, and evaluation are arranged with the faculty member. Students must have written consent of the instructor.

CURR 9602-1 to 3. Independent Study in Gifted/ Talented. Independent investigation of topics of specific interest to the individual student and completed under the direction of a faculty member. The specifics of the investigation and the topic are a joint decision between the student and faculty member. The meeting times, expectations, and evaluation are to be arranged with the faculty member. Students must have written consent of the instructor.

CURR 9603-1 to 3. Independent Study in Educational Computing and Technology. Designed to accommodate students who wish to pursue study of a special topic of interest. Approval must be sought from the instructor prior to registration. A proposal outlining the planned study, including readings and written reports to be submitted, should be filed during the first week of the semester. Sample topics for study: computers and the handicapped; research on computing in education; emerging technologies; artificial intelligence; hypermedia; desktop publishing; advanced graphics; and telecommunications in education.

CURR 9604-1 to 3. Independent Study in Reading. Independent investigation of topics of specific interest to the individual student and completed under the direction of a faculty member. The specifics of the investigation and the topic are a joint decision by the student and faculty member. The meeting times, expectations and evaluation are arranged with the faculty member. Students must have written consent of the instructor. Students using independent study for degree purposes should have the written consent of their advisors.

CURR 9999-0. Candidate for Degree.

EDUCATIONAL PSYCHOLOGY

EPSY 507-3. Educational Applications of Learning Theory. A seminar designed to introduce a spectrum of current theories of learning including elements of cognitive psychology, social learning theory and behaviorism. Students will be expected to read extensively and lead discussion of their areas of investigation.

EPSY 510-3. Human Growth and Development. Provides a broad understanding of life span theories of human development; understanding the nature and needs of individuals at all developmental levels; normal and abnormal human behavior indicators; personality theory and development; and learning theory within cultural contexts. Meets with COUN 504.

EPSY 525-3. Teaching the Gifted and Creative Student. This introductory course explores the nature and nurture of gifted children and adolescents. Characteristics, identification, program alternatives, and teaching strategies are addressed as is the gifted child movement.

LEADERSHIP

LEAD 105-3. Self-Leadership: Developing Competency and Character. Provides an opportunity to explore the nature of leadership and to identify personal leadership abilities. Through various experiences, students discover the expectations of leaders, explore and expand competencies in communication and collaboration, apply skills in leadership projects, and plan for future leadership roles.

LEAD 150-2. Personal Management and Community Service. This course imparts a basic knowledge of financial planning and provides for a service learning education project. Topics include fundamentals of money management, insurance, investments, tax planning, retirement planning, and estate planning. Culminates with a service learning education project in the student's community.

LEAD 151-2. Character Education and Community Service. This course imparts a basic knowledge of identifying, acquiring and matching crucial personal behaviors and provides for a service learning education project in the student's local community. The course is designed to empower students to identify their present behavioral communication strengths, identify behaviors required to meet personal objectives, and provide concrete strategies for facilitating career choices.

LEAD 152-2. Citizenship and Community Service. This course is designed to have students better understand the development of the United States' system of government, learn the mechanics of how government works in the United States through hands-on exercises and experiences, and develop interpersonal skills that will assist them throughout their personal and professional lives. The course culminates with a service learning education project in the student's local community.

LEAD 211-3. Profiles of Leadership. Creates insight relative to the breadth and depth of leadership potential within a multicultural society. Students are challenged to develop personal profiles of leadership based upon multiple factors including leadership theory and non-traditional forms of leadership. Prer., COMM 111 or equivalent.

LEAD 400-3. Principles of Student Leadership. Designed as a participatory class with a focus on leadership theories, styles of leadership, and strategies for successful student leadership. Topics included are conflict management, strategic planning, goal setting, leading leaders, leadership ethics and other related topics. Meets with LEAD 500.

LEAD 411-3. Experiences in Leadership. Leadership in the context of organizational management, the political arena, and social causes. Students organize expert discussion panels. Special issues include women and minorities in leadership. Students research and prepare their own leadership development programs with emphasis on application and skill development. Prer., COMM 111 and LEAD 211 or equivalent.

LEAD 450-1 to 3. Student Leadership Seminar. Offers opportunities for undergraduate students to discuss problems of practice in leadership, plan and implement service projects and coordinate student leadership development activities.

LEAD 453-1 to 4. Workshop in Leadership. Contemporary national, state, and local issues in education from the perspective of the education leader. An overview of current issues and trends in elementary and secondary education will be developed for reference, discussion debate, and policy purposes.

LEAD 498-1 to 4. Special Topics in Leadership. Extended Studies offering. Designed to allow specific topics and issues to be explored in-depth. May apply toward a degree program at the UCCS with permission of advisor and department chairperson.

LEAD 499-1 to 4. Special Topics in Leadership. Extended Studies offering. Designed to allow specific topics and issues to be explored in-depth. Will not

apply toward a degree program at the UCCS.

LEAD 500-3. Introduction to Leadership Studies. Meets with LEAD 400.

LEAD 502-2. Vision, Values and Leadership in a Democratic Society. Students explore leadership theory, values, and assumptions inherent in public education within a democratic society, and personal beliefs relative to education and democracy. Personal educational philosophy and strategies facilitating vision, community, and common purpose are developed. Field work required.

LEAD 507-3. Human Resources Development. Personnel practices, policy development, employee- employer relationships, employee contracts, due process procedures, collective bargaining, performance appraisal, hiring and dismissal processes, staff development, induction of new employees, legal implications of ADA, affirmative action, and sexual harassment are explored. Field work required.

LEAD 516-2. Curriculum Leadership in a Multicultural Society. Study of the nature of curriculum, the historical evolution of curriculum, conflicting philosophical perspectives on curriculum, and current issues and trends affecting curriculum implementation and change. Emphasis placed upon creating congruent curriculum amidst competing forces. Field work required.

LEAD 522-2. Program Evaluation and Curriculum Assessment. Designed to be taken with LEAD 523. Offers students an opportunity to explore various methods of evaluating school programs and assessing the effectiveness of curriculum. Field work is included in the requirements for this course. Prer., LEAD 516 or equivalent.

LEAD 523-1. Action Research Laboratory. Designed to be taken concurrently with LEAD 522. Offers students an opportunity to apply methods in program evaluation and curriculum assessment to actual school problems. Students apply methods completing a school-based action research project.

LEAD 524-1. Leadership and Management of Programs for Special Populations. Students explore challenges and needs placing students at risk of school failure. Emphasis placed on the legal and educational requirements of special programs including Title I, Special Education, Gifted and Talented, ESL, Section 504, ADA, and IDEA. Field work required.

LEAD 525-2. Creative Communication for School Leaders. Strategies for effective communication and its role in group process, organizational effectiveness, persuasion, and conflict including criteria for effectiveness in communication are examined. Emphasis placed upon the role of technology and creativity in communication for leaders. Field work required.

LEAD 545-3. The Principalship. Examination of the principalship at elementary, middle, and high school levels based upon research and recommended practices. Analysis of instructional, organizational, political, and leadership challenges. Assessment of policies and principles guiding coordination of the instructional program. Field work required.

LEAD 553-1 to 4. Workshop in Leadership. Contemporary national, state, and local issues in education from the perspective of the education leader. An overview of current issues and trends in elementary and secondary education will be developed for reference, discussions, debates, and policy purposes.

LEAD 554-1 to 4. Advanced Topics in Leadership. In-depth analysis and application of leadership principles related to contemporary school issues.

LEAD 560-3. Social Foundations of Education Trends. Addresses the relationship of schooling to society by focusing on the question of whether the schools can significantly reduce the environmentally related inequalities in achievement which exist in America. Zeros in on relationships between the federal government and education. Various speakers will present and discuss these and other issues.

LEAD 570-3. Introduction to Research and Statistics. Introduces measures of central tendency, variability, percentiles, standard scores, and correlation. Covers basic concepts in statistical inference, evaluating and using research, design and analysis of educational research, and critical evaluation of published research. Completion of research project required.

LEAD 598-1 to 4. Special Topics in Leadership. Extended Studies offering. Designed to allow specific topics and issues to be explored in-depth. May apply toward a degree program at the UCCS, with permission of advisor and department chairperson. Prer., Undergraduate degree.

LEAD 599-1 to 4. Special Topics in Leadership. Extended Studies offering. Designed to allow specific topics and issues to be explored in-depth. Will not apply toward a degree program at the UCCS. Prer., Undergraduate degree.

LEAD 604-2. Developing Collaborative School Communities. Leadership principles, change process research, and organizational theory applied to school research, and administration. Strategies for facilitating collaborative decision making and change processes, building community, and including and motivating diverse population of stakeholders in program planning and evaluation. Field work required.

LEAD 605-3. Financing Schools and Programs. Funding sources for public schools, procedures in financial planning, budgeting implications, and the relationship between costs and effectiveness explored including resource procurement, control of funds, accounting requirements, and payment procedures. Emphasis on management of building level budgets. Field work required.

LEAD 612-3. Educational Politics in a Democratic Society. A study of models, concepts, and processes regarding the organization of the American public school system at the federal, state, intermediate, and local school district levels including the values, resources, and power structures of the local community. Field work required.

LEAD 614-3. Supervision and Evaluation of Instruction. The role of instructional leader facilitating instructional effectiveness toward student success. Evaluation and supervision strategies included are: data collection, data analysis, legal aspects, evaluation report writing, conferencing, goal setting, motivation, and focusing on student outcomes. Field work required.

LEAD 640-3. Legal Issues for School Leaders. Federal and state laws from statutes, key court decisions, and recent legal developments are studied. Governance challenges of American education with emphasis on the legal duties, rights, and restraints of principals and administrators are explored. Field work required.

LEAD 670-3. Methods of Qualitative Inquiry. Prepares students to conduct field research employing qualitative methods and perspectives. Students analyze qualitative studies from various fields of study. A field research project is required. Prer., Introductory course in research.

LEAD 671-3. Applications of Qualitative Inquiry. Builds upon the basic foundations of qualitative inquiry and is designed to

assist doctoral level students in designing and implementing research studies and analyzing data. Prer., LEAD 670 or equivalent.

LEAD 675-3. Intermediate Statistics. Advanced methods of analyzing data with an emphasis on the use and interpretation of descriptive and inferential techniques. Topics covered include one-way and two-way ANOVA, power, multiple correlation and regression, ANCOVA, and selected packaged statistical programs. Prer., Introduction to Statistics or equivalent.

LEAD 682-3. Practicum in School Leadership: The Principalship. A minimum of 300 clock hours of administration activities at the elementary, middle, and high school levels supervised by site mentors in varied settings with educationally, culturally, and socioeconomically diverse populations. Professional portfolio documents competencies required for program completion.

LEAD 686-3. Superintendent as Transformational Leader. Exploration of leadership challenges of the superintendency and central office administrators. Content is based upon Colorado licensure standards, NCATE curriculum standards, and AASA professional standards for the superintendency. Field work is required. Prer., Completion of Approved Principal Licensure Program.

LEAD 687-3. The Superintendent as Manager of Quality Systems. Exploration of management challenges of the superintendency and central office administrators. Content is based upon Colorado licensure standards, NCATE curriculum standards, and AASA professional standards for the superintendency. Field work is required. Prer., Completion of approved Principal Licensure Program or consent of instructor.

LEAD 688-3. Practicum in Central Office Leadership and the Superintendency. A minimum of 300 clock hours of central office administration activities supervised by site mentors in varied settings with educationally, culturally, and socioeconomically diverse populations. Professional portfolio documents required competencies. Prer., LEAD 686 and 687.

LEAD 700-1 to 6. Master's Research Laboratory in Leadership. Laboratories organized by professors to engage students in on-going research projects. Students extend and apply knowledge and skills developed in coursework. Student complete portfolio requirements and/ or work on thesis. Prer., Admission to Master's Program or consent of instructor.

LEAD 750-1 to 6. Doctoral Research Laboratory in Leadership. Laboratories are organized by professors to engage students in on-going research programs. They provide opportunities for students to extend and apply knowledge and skills developed in coursework. The laboratories enable students to complete portfolio requirements and work on doctoral dissertations. Prer., Only students enrolled in the UCD/ UCCS PhD program may enroll.

LEAD 755-1 to 3. Readings in Leadership. Selected readings for advanced study in a specific area of Educational Leadership or Leadership Studies. Prer., Admission to Master's or Ph.D. program or consent of instructor.

LEAD 950-1 to 6. Independent Research in Educational Leadership. Independent investigation of topics of specific interest completed under guidance of a faculty member. Specifics of the investigation are a joint decision requiring a written research proposal. Used for degree purposes only upon written consent of an advisor. Prer., Consent of instructor.

LEAD 999-0. Candidate for Degree. Used only by students not registered for course work or independent research during the semester in which the student takes the comprehensive examination. Fulfills requirement for registration during the semester in which comprehensive is taken. No credit is earned.

SPECIAL EDUCATION

SPED 300-3. Introduction to Special Education. An overview of the physical, cognitive, and affective characteristics and development of exceptional individuals in relation to normal development is presented. The course examines why students succeed or fail, the teaching-learning process, individualized instruction, service delivery, ethics, and how general educators, special educators, and parents work together to maximize student development in the least restrictive environment. Participants are introduced to the historical, legal, and financial aspects of special education. Understanding and appreciating multicultural influences on educational practices are also discussed. Variable credit is only available for students in TEP. Meets with SPED 500.

SPED 401-3. Special Education Policies and Procedures. Examines current special education law and procedures, financial structures, and delivery systems. Additionally, students discuss educational problems and discuss potential solutions. Students are introduced to current research and foundational concepts that are studied in depth in future coursework. These include examining multicultural influences on educational practice, framing special education services in a problem solving model, and constructing a unified system for delivering educational services to all students. Prer., SPED 300, SPED 405, SPED 432, and SPED 455. Meets with SPED 502.

SPED 405-3. Applied Behavior Analysis. Examines applied behavior analysis principles and techniques, including observational analysis, database instruction, and social validity. These concepts are emphasized as means to increase or decrease target behavior, and to facilitate behavior maintenance and generalization. Additionally, students are exposed to current research findings related to applied behavior analysis. APA writing style, ethics, legal issues, and materials are also covered. Prer., SPED 300. Meets with SPED 505.

SPED 406-2. Mathematics Instruction. Students will learn specific procedures for designing mathematics lessons for students with mild and moderate disabilities. Students will learn procedures for evaluating, selecting, and modifying mathematics curricula to meet the needs of students in diverse instructional environments. Current research findings and instructional delivery systems such as cooperative learning and precision teaching will also be discussed. Meets with SPED 506.

SPED 407-3. Language Arts Instruction. Introduction to the design of curriculum and the use of effective instructional practices for students with mild and moderate disabilities. Students will learn specific procedures for designing reading and written language lessons, practice applying teacher presentation techniques to improve student achievement outcomes. The Colorado Language Arts Standards will also be discussed. Prer. or coreq., SPED 405. Meets with SPED 507.

SPED 410-3. Assessment and Instructional Monitoring. Provide the skills necessary to plan and conduct systematic assessments of students who are at risk for academic failure in educational environments. Class lectures, activities, and assignments will focus on how to select assessment procedures for: a) planning prereferral interventions, b) determining eligibility for special education services, c) planning efficient

instructional programs, and d) monitoring student progress. The linkage of assessment data to intervention planning and effective instructional practices will be emphasized throughout the course. Additionally, current research findings and contemporary issues in educational assessment will be addressed. Prer., SPED 405 and 407. Meets with SPED 510.

SPED 414-3. Self-Determination and Transition II. Elementary and secondary career education and transition concepts including history, legal issues, IEP transition planning, assessment, labor laws, and community-based instructions are presented. Coordination of post-school services is discussed in relation to supported and competitive employment and community agencies. Prer., SPED 300/SPED 500. Meets with SPED 514.

SPED 416-3. Significant Support Needs. Focus on the development, implementation, and evaluation of instructional programs for students with severe cognitive and physical needs in elementary and secondary settings. Prer., SPED 300 and SPED 405. Meets with SPED 516.

SPED 420-3. Behavioral and Social Skills I. Focus on the development, implementation, and evaluation of instructional programs for students with challenging behaviors. Course content focuses on defining characteristics of children and youth with emotional and behavioral disorders across educational settings. Prer., SPED 405. Meets with SPED 519.

SPED 421-3. Behavioral and Social Skills II. Focus on the development, implementation, and evaluation of instructional programs for students with challenging behaviors. Course content includes behavioral assessment, social skills instruction, and techniques for managing aggressive behavior. Prer., SPED 300, SPED 405 and SPED 420. Meets with SPED 539.

SPED 428-3. Self-Determination and Transition I. Presents self-determination instructional methodology including assessment and instructional programs. Focus is upon teaching students how to choose goals, express goals through learning to actively participate in the IEP meeting, and taking action on achieving their own goals. Prer., SPED 300. Meets with SPED 528.

SPED 429-3. Consultation and Collaboration. Emphasizes data-based consultation models and collaborative problem solving techniques that are effective across learning environments. Meets with SPED 530.

SPED 431-2. Consultation and Collaboration II. Emphasizes data-based consultation and the design, implementation, monitoring, and evaluation of interventions to improve students' opportunities to benefit from their learning and social environments. Strategies for coordinating and managing educational staff and programs in a variety of environments will also be presented. Prer., SPED 430; Coreq., SPED 476 or 477.

SPED 432-3. Mathematics Instruction. Students will learn procedures for evaluating, selecting, modifying, and teaching mathematics curricula to meet the learning needs of students with mild and moderate disabilities. Prer., SPED 300 and SPED 405. Meets with SPED 532.

SPED 436-6. Elementary Student Teaching: Moderate, Affective, Cognitive Needs. This supervised student teaching experience provides students with the opportunity to apply and integrate principles and techniques learned in previous course in elementary school settings. Student teaching application due dates: Fall (October 15) and Spring (March 15). Prer., SPED 300/SPED 500 through SPED 550. Meets with SPED 536.

SPED 437-6. Secondary Student Teaching: Moderate, Affective, Cognitive Needs. This supervised student teaching experience provides students with the opportunity to apply and integrate principles and techniques learned in previous course in secondary school settings. Student teaching application due dates: Fall (October 15) and Spring (March 15). Prer., SPED 300/SPED 500 through SPED 550. Meets with SPED 537.

SPED 450-3. Teaching Seconddents in Content Classes. Provides participants with procedures and techniques teachers may use to increase student achievement in content area courses. Participants will learn effective strategies for planning, implementing, and evaluating complex content area instruction. A variety of ways to deliver instruction including cooperative learning, peer tutoring, and coteaching will also be addressed. Meets with SPED 540.

SPED 455-3. Language Arts II. Provides participants with procedures and techniques to increase student achievement in content area courses. Participants will learn effective strategies for planning, implementing, and evaluating complex content. A variety of ways to deliver instruction will also be addressed. Prer., SPED 300, SPED 405 and SPED 407. Meets with SPED 555.

SPED 471-3. Practicum II. Participants will develop skills to implement an effective, research-based language arts reading program for low achieving students and students with disabilities in a variety of educational settings. Meets with SPED 585.

SPED 476-7. Elementary Student Teaching: Moderate, Affective, Cognitive Needs. Provides students the opportunity to apply and integrate the principles and techniques learned in previous courses in an elementary setting. Students will work with children with moderate, affective, and cognitive disabilities under the supervision of a cooperating teacher. Competency assignments and current issues are discussed during student teaching seminars. Coreq., SPED 430 or 431 and permission of instructor.

SPED 477-7. Secondary Student Teaching: Moderate, Affective Cognitive Needs. Provides students the opportunity to apply and integrate the principles and techniques learned in previous courses in a secondary setting. Students will work with adolescents with moderate, affective, and cognitive disabilities under the supervision of a cooperating teacher or district supervisor. Competency assignments and current issues are discussed during student teaching seminars. Coreq., SPED 430 or 431 and permission of instructor.

SPED 481-4. Elementary Student Teaching. Supervised student teaching that provides the opportunity to apply and integrate principles and techniques learned in previous courses in elementary school settings. Student teaching application due dates: Fall (October 15) and Spring (March 15). Meets with SPED 581.

SPED 482-4. Secondary Student Teaching. Supervised student teaching that provides the opportunity to apply and integrate principles and techniques learned in previous course in secondary school settings. Student teaching application due dates: Fall (October 15) and Spring (March 15). Meets with SPED 582.

SPED 491-1 to 4. Workshop. Designed to allow specific topics and issues to be explored in-depth. Prer., Permission of instructor.

SPED 495-2 to 3. Summer Institutes. Provides participants with a variety of training opportunities that specifically

relate to programs, policies, and procedures for working with at-risk students. Participants will have multiple opportunities to reflect on knowledge learned and develop practical application plans. Meets with SPED 595.

SPED 498-1 to 4. Special Topics in Special Education. Extended Studies offering. Designed to allow specific topics and issues to be explored in-depth. May apply toward a degree program at the UCCS with permission of advisor and department chairperson.

SPED 499-1 to 4. Special Topics in Special Education. Extended Studies offering. Designed to allow specific topics and issues to be explored in-depth. Will not apply toward a degree program at the UCCS.

SPED 500-3. Introduction to Special Education. An overview of the physical, cognitive and affective characteristics and development of exceptional individuals in relation to normal development is presented. The course examines why students succeed or fail, the teaching-learning process, individualized instruction, service delivery, ethics, and how general educators, special educators and parents can work together to maximize student development in the least restrictive environment. Students are introduced to the historical, legal, and financial aspects of special education. Understanding and appreciating multi-cultural influences on educational practices are discussed also. Meets with SPED 300.

SPED 501-1. Trends and Legal Issues. Examines current special education trends and special education law, procedures, financial structures, and delivery systems. Additionally, students discuss educational problems and discuss potential solutions. Students are introduced to current research and foundational concepts that are studies in depth in future and foundational concepts that are studied in depth in future courses. These include examining multicultural influences on educational practice, framing special education services in a problem-solving model, and constructing a unified system for delivering educational services to all children. Meets with SPED 401.

SPED 502-3. Special Education Policies and Procedures. Examines current special education laws, including IDEA, Section 504, and ADA. In addition, students learn how to develop legally correct and educationally useful Individualized Education Programs. Prer., SPED 500 and SPED 505. Meets with SPED 401.

SPED 505-3. Applied Behavior Analysis. Examines applied behavior analysis principles and techniques including observational analysis, database instruction, and social validity. These concepts are emphasized as means to increase or decrease target behavior, and to facilitate behavior maintenance and generalization. Additionally, students are exposed to current research findings related to applied behavior analysis. APA writing style, ethics, legal issues and materials are also covered. Prer., Concurrently with SPED 500. Meets with SPED 405.

SPED 506-2. Mathematics Instruction. Specific procedures for designing mathematics lessons for students with mild and moderate disabilities. Students will learn procedures for evaluating, selecting, and modifying mathematics curricula to meet the needs of students in diverse instructional environments. Prer., SPED 505. Meets with SPED 406.

SPED 507-3. Language Arts Instruction. Design of curriculum and the use of effective instructional practices for students with mild and moderate disabilities. Students will learn specific procedures for designing reading and written language lessons, and practice applying teacher presentation techniques to improve student achievement outcomes. Prer., SPED 500 and SPED 505. Meets with SPED 407.

SPED 510-3. Academic Assessment and Instruction. Provides the skills necessary to plan and conduct systematic assessments of students who are at risk for academic failure in educational environments. Class lectures, activities, and assignments will focus on how to select assessment procedures for: a) planning prereferral interventions, b) determining eligibility for special education services, c) planning efficient instructional programs, and d) monitoring student progress. The linkage of assessment data to intervention planning and effective instructional practices will be emphasized throughout the course. Additionally, current research findings and contemporary issues in education will be addressed. Prer., SPED 500, SPED 505, and SPED 507. Meets with SPED 410.

SPED 516-3. Significant Support Needs. Focus on the development, implementation, and evaluation of instructional programs for students with severe cognitive and physical needs in elementary and secondary settings. Prer., SPED 500, SPED 505 and CURR 5122. Meets with SPED 416.

SPED 519-3. Behavioral and Social Skills I. Focus on the development, implementation, and evaluation of instructional programs for students with challenging behaviors. Course content focuses on defining characteristics of children and youth with emotional and behavioral disorders across educational settings. Prer., SPED 500 and SPED 505. Meets with SPED 420.

SPED 528-3. Self-Determination and Transition I. Self-determination instructional methodology including assessment and instructional programs. Focus is upon teaching students how to choose goals, express goals through learning to actively participate in the IEP meeting, and taking action on achieving their own goals. Prer., SPED 300/SPED 500. Meets with SPED 428.

SPED 530-3. Consultation. Focus on collaborative consultation services as framed in an ecological, problem-solving model for delivering educational services to students. Consultation models, theory and techniques will include group process and teamwork, collaborative problem solving, ongoing monitoring of the effectiveness of interventions, and conflict resolution. The course will emphasize database consultation and the use of learning strategies with other educators across environments. The student's regular curriculum and social environment is the focal point for intervention. Prer., SPED 510, 512, 513 and 516.

SPED 532-3. Mathematics Instruction. Procedures for evaluating, selecting, modifying, and teaching mathematics curricula to meet the learning needs of students with mild and moderate disabilities. Prer., SPED 500 and SPED 505. Meets with SPED 432.

SPED 533-3. Multiple Intelligence and Gifted Students. Focus upon the creation and development of teaching materials to assist school personnel charged with meeting the instructional needs of gifted, creative, and talented students in both regular and special education classrooms, Grades K-12. Participants will examine existing educational research to determine the most effective ways and means of instructing gifted students. They will study and evaluate existing methods and materials designed for the target population, and they will design new materials to utilize in the teaching of gifted students. Meets with CURR 5202.

SPED 536-6. Elementary Student Teaching: Moderate, Affective, Cognitive Needs. Supervised student teaching that provides the opportunity

to apply and integrate principles and techniques learned in previous course in elementary school settings. Student teaching application due dates: Fall (October 15) and Spring (March 15). Prer., SPED 300/SPED 500 through SPED 550. Meets with SPED 436.

SPED 537-6. Secondary Student Teaching: Moderate, Affective, Cognitive Needs. Supervised student teaching that provides the opportunity to apply and integrate principles and techniques learned in previous courses in secondary school settings. Student teaching application due dates: Fall (October 15) and Spring (March 15). Prer., SPED 300/SPED 500 through SPED 550. Meets with SPED 437.

SPED 539-3. Behavioral and Social Skills II. Focus on the development, implementation, and evaluation of instructional programs for students with challenging behaviors. Course content includes behavioral assessment, social skills instruction, and techniques for managing aggressive behavior. Prer., SPED 500, SPED 505 and T ED 552. Meets with SPED 421.

SPED 540-3. Teaching Secondary Students in Content Area. Participants will learn effective strategies for planning, implementing, and evaluating complex content area instruction. A variety of ways to deliver instruction including cooperative learning, peer tutoring, and co-teaching will also be addressed. Prer., SPED 405/ 505. Meets with SPED 450.

SPED 545-3. Literature for gifted adolescents. Reading and evaluation of literature for gifted and talented adolescents. Emphasis is on contemporary literature, especially literature by and about female, minority and gifted and talented persons. Meets with CURR 5421.

SPED 550-3. Applied Research Project. The basic premise of this seminar is that applied behavior analysis and the teacher as a researcher- scientist are integral components of an effective educational setting. Based on individual interests, students will design a research project for the purpose of evaluation interventions in their own setting. Students will (a) develop a research proposal in APA format, (b) conduct the research, and (c) submit a final research paper to the special education faculty. All papers will be evaluated by the research review committee consisting of three university faculty members. This course is required to fulfill the MA comprehensive exam requirement. Prer., All graduate coursework completed.

SPED 555-3. Language Arts II. Procedures and techniques to increase student achievement in content area courses. Participants will learn effective strategies for planning, implementing, and evaluating complex content. A variety of ways to deliver instruction will also be addressed. Prer., SPED 500, SPED 505 and SPED 507. Meets with SPED 455.

SPED 559-3. Arts for the Gifted. Explores a variety of arts activities for the elementary and middle grades. There will be a focus on a multifaceted approach to teaching arts within creative, stimulating environments where the gifted student can evolve and thrive. Creativity, hemisphericity, problem solving, and practical applications of visual arts, music, dance, drama, and creative writing are addressed. Meets with CURR 5210.

SPED 560-2 to 3. Teaching the Gifted and Creative Student. This introductory course explores the nature and nurture of gifted children and adolescents. Characteristics, identification, program alternatives and teaching strategies are addressed as is the history of the gifted child movement. Meets with EPSY 525.

SPED 561-3. Curriculum Strategies for Gifted and Talented. Prepares participants to write challenging, effective and differential curricula for gifted learners. A variety of curriculum models and strategies will be explored. Participants will create curriculum units for gifted students in content areas of their choice. Meets with CURR 5211.

SPED 562-3. Reading and Language Arts for the Gifted. Explores a wide variety of reading and writing activities for gifted learners. Children's and adolescent literature, biography, independent study, creative dramatics and expository and creative writing are among the many topic areas addressed. Meets with CURR 5212.

SPED 563-3. Social Studies and Humanities for the Gifted. Addresses the teaching of social studies and the humanities to gifted and talented students, grades K-12. An integrated, holistic approach to social studies is emphasized. Meets with CURR 5213.

SPED 564-3. Creative Problem Solving and Future Problem Solving for Gifted Learners. Covers four areas: creativity, problem solving, future studies, and future problem solving. The course content will focus on both the theoretical frameworks underlying each topic, as well as concomitant teaching strategies. Meets with CURR 5220.

SPED 569-3. Supervised Practicum - Gifted/Talented Education. Practicum credit may be obtained through selected, supervised field placements in teaching or supervisory roles in gifted education.

SPED 576-3. Elementary Student Teaching: Moderate, Affective, Cognitive Needs. Supervised student teaching or on-the-job teaching experience provides the opportunity to apply and integrate principles and techniques learned in previous courses in an elementary setting. Applications are due March 15 for Fall semester and October 15 for Spring semester. Prer., SPED 500-550.

SPED 577-3. Secondary Student Teaching: Moderate, Affective, Cognitive Needs. Supervised student teaching or on-the-job teaching experience provides the opportunity to apply and integrate principles and techniques learned in previous courses in a secondary setting. Applications are due March 15 for Fall semester and October 15 for Spring semester. Prer., SPED 500-550.

SPED 581-4. Elementary Student Teaching. Supervised student teaching that provides the opportunity to apply and integrate principles and techniques learned in previous courses in secondary school settings. Student teaching application due dates: Fall (October 15) and Spring (March 15). Meets with SPED 481.

SPED 582-4. Secondary Student Teaching. Supervised student teaching that provides the opportunity to apply and integrate principles and techniques learned in previous courses in elementary school settings. Student teaching application due dates: Fall (October 15) and Spring (March 15). Prer., All course work completed. PLACE test must be passed. Meets with SPED 482.

SPED 585-3. Practicum II. Participants will develop skills to implement an effective, research-based language arts reading program for low achieving students and students with disabilities in a variety of educational settings. Prer., SPED 500 and SPED 505. Meets with SPED 471.

SPED 590-3. Seminar: Current Research Issues in Gifted Education. Students explore contemporary research related to the identification of gifted student, programs and other related educational issues. Meets with CURR 5201.

SPED 591-1 to 4. Workshop. Designed to allow specific topics and issues to be explored in-depth.

SPED 593-2. Step Up to Writing: Basic, Practical and Helpful Writing Instruction. Participants will receive training using the Step Up to Writing curriculum published by Sopris West. This program provides training in how to organize ideas and information, write topic sentences and thesis statements, connect main ideas, write conclusions, think creatively, and other components of effective writing.

SPED 594-3. Language! Professional Development Course for Reading Educators. Uses Language! curriculum published by Sopris West. A comprehensive intervention curriculum for students who lack age or grade level mastery in reading, writing and spelling. Participants will be trained using integrated strands that include decoding, spelling, comprehension, grammar, vocabulary, mechanics, usage, figurative language, expository and narrative writing, and literature.

SPED 595-2 to 3. Summer Institutes. The institute provides participants with a variety of training opportunities that specifically relate to programs, policies, and procedures for working with at-risk students. Participants will have multiple opportunities to reflect on knowledge learned and develop practical application plans. Prer., Bachelors degree. Meets with SPED 495.

SPED 598-1 to 4. Special Topics in Special Education. Extended Studies offering. Designed to allow specific topics and issues to be explored in-depth. May apply toward a degree program at the UCCS, with permission of advisor and department chairperson. Prer., Undergraduate degree.

SPED 599-1 to 4. Special Topics in Special Education. Extended Studies offering. Designed to allow specific topics and issues to be explored in-depth. Will not apply toward a degree program at the UCCS. Prer., Undergraduate degree.

SPED 945-1 to 4. Independent Study. Independent investigation of topics of specific interest to the student and completed under the direction of a faculty member. The specifics of the investigation are a joint decision by the student and faculty member. The meeting times, expectations, and evaluation are arranged. Courses leading to licensure are seldom completed through an independent study. Prer., Permission of instructor.

SPED 950-1 to 4. Independent Study in Special Education. Independent investigation of topics of specific interest to the student and completed under the direction of a faculty member. The specifics of the investigation are a joint decision by the student and faculty member. The meeting times, expectations and evaluation are arranged. Certification and/or endorsement courses are seldom completed through an independent study.

SPED 955-1 to 4. Independent Study in Gifted and Talented Education. Independent research, study and planning in gifted education may be completed under the direction of a faculty member. The specifics of the investigation and the topic are a joint decision by the student and faculty member. The meeting times, expectations and evaluation are arranged with the faculty member. Students must have written consent of the instructor.

SPED 999-0. Candidate for Degree. To be used only by those students who will not be registered for course work during the semester in which the comprehensive examination for the master's degree is taken. Consent of advisor is required.

TEACHER EDUCATION

T ED 201-1. Beginning School Field Experience. This course provides an overview of curriculum, instruction, operation and the culture of area public schools through a combination of structured field experience and seminars. For undergraduates this is a prerequisite to T ED 300 and T ED 301.

T ED 300-3. Contemporary American Education. Provides an introduction to contemporary American education for anyone interested in today's schools as well as for potential teachers. Meets with T ED 500.

T ED 301-1 to 3. Early School Experience. Provides early school experience for potential teachers in public school classrooms. This experience focuses on the roles, responsibilities and qualities of the professional teacher through practical experience. Prer., T ED 300, prior or concurrent.

T ED 370-3. Introduction to ESL/ Multicultural Education. Provides comprehensive survey of ESL and multicultural educations programs. Includes history and legislation of bilingual/ESL education, instructional models, philosophies, theories of bilingual/ESL education, the culture of ESL classroom, instructional strategies and important considerations for teaching the LEP student. Meets with CURR 5700.

T ED 371-3. Materials and Methods in ESL/Multi- Cultural Education. Provides an in-depth study of curriculum options available for the ESL classroom. Presents, reviews and critiques specific methods and strategies for teaching language minority students. Gives students the opportunity to develop and present teaching units using ESL methodology as appropriate in classrooms. Prer., T ED 370. Meets with CURR 5701.

T ED 372-3. Literacy for Linguistically Different Learners. Presents current and emerging philosophies and methods on teaching reading to culturally diverse second language learners. Includes review of materials, strategies for teaching reading and writing skills, and important considerations for transference from L1 to L2 reading, and field-based assignments. Prer., T ED 370. Meets with CURR 5702.

T ED 373-3. Methods, Materials, & Theories of Assessments for ELLs. Prepares teachers to assess and evaluate ESL language students in a field-based setting. Includes particular assessment instruments, mediation strategies and materials, and formal and informal diagnostic strategies. Covers both theoretical and applied aspects of assessing language learning and teaching. Prer., T ED 372.

T ED 374-3. Practicum in ESL/ Multicultural Education. A field-based, standards-based course that provides at least 150 hours of site-based work in addition to in- school work. Students are placed into classrooms with ELLs if they do not already have such classrooms. Instructors supervise the placements. Prer., T ED 373. Meets with CURR 5704.

T ED 375-3. Second Language Acquisition: Capstone. Presents a broad survey of second language acquisition research. Stresses theoretical concerns and research findings and practical applications to teaching second languages. Gives emphasis to applied second language acquisition, cultural awareness, and social and economic factors that contribute to ELLs' success in schools. Prer., T ED 374.

T ED 376-3. Curriculum for Multicultural Education. Analyzes curriculum programs used in the classrooms, and applies principles and innovation for education of ethnic minority and majority students in the elementary grades.

T ED 377-3. Pro-Seminar: Parent and Community Involvement. Focuses on models and strategies for improving parent and community involvement in the schools. Discusses administrative

concerns, such as parent advisory councils, instructional concerns, such as helping children with school assignments, and family literacy issues and programs. Field-based assignments are required. Prer., T ED 374.

T ED 441-1. Children's Literature Methods. Surveys historical and contemporary literature for children to promote literacy growth. Author studies, technology connections in children's literature, and genre such as picture books, biography, nonfiction, and mystery and adventure are among the critical topics covered, as well as the Colorado content standards for reading and writing. Meets with T ED 541.

T ED 444-3. Mathematical Connections and Concepts. Exploration of current mathematics curriculum topics in ways which will allow students to develop deeper conceptual knowledge and a better understanding of the connections between various mathematical topics. Applications of mathematics to other disciplines. Historical background of secondary curriculum. Meets with CURR 524.

T ED 450-1. The Professional Educator. Provides student teachers in the final semester of teacher training with the skills and strategies to successfully enter the teaching profession including portfolio development, interviewing, philosophies, and application processes.

T ED 452-3. Educational Psychology. Provides teachers with the knowledge of psychology most relevant to teaching. The focus is on areas of child development and major learning theories and their application in the classroom. Meets with T ED 552.

T ED 453-1. Social Foundations of Educational Issues. Addresses the relationship of schooling to society by focusing whether the schools can significantly reduce the environmentally related inequalities in achievement which exist in America on relationships between the state and federal government and education. Includes an overview of multicultural education and an outline of recent legislative changes enacted at the state and federal level.

T ED 454-2. Education of Exceptional Children. Includes an overview of the major current issues in special education as well as a description of the most commonly encountered handicapping conditions. Students gain an understanding of different learning styles and adapting instruction to meet individual needs. Information regarding the general legal requirements for handicapped students and due process is also provided. Requires volunteer work with special populations.

T ED 457-3. Elementary Literacy Methods. Elementary literacy strategies to successfully implement reading and writing teaching and assessment with emphasis on Colorado Model Content Standards. Prer., Acceptance into TEP. Meets with T ED 557.

T ED 458-2. Elementary Curriculum Instruction and Classroom Management. Principles of curriculum design, instructional models and practice, standards-based curriculum and assessment, planning, organization, and classroom management and discipline. Prer., Acceptance into TEP. Meets with T ED 558.

T ED 459-1. Elementary Physical and Wellness Education Methods. Examines the contribution physical and wellness education makes to the curriculum. The components of the curriculum will be explained and students will have direct experience with most activities. Emphasis will be on low-organized games, rhythm, perpetual motor activities, conflict resolution, class management, and the importance of individual skill development. Prer., Accepted TEP students only.

T ED 460-1 to 4. School Experience-Elementary. Pre-student teaching field experience. Summer involves participating in organizing, planning, conducting and evaluating a reading clinic experience in a public school. Fall involves observing a variety of schools and classrooms and serving as a teaching associate at assigned Professional Development School. Meets with T ED 560.

T ED 462-3. Elementary Reading Methods. An introduction to reading literacy instructional practices. Includes a critical overview of current approaches, methods and materials, supported by a basic understanding about the reading and literacy learning process. Meets with T ED 562 and CURR 5403.

T ED 463-3 to 14. Student Teaching-Elementary. Elementary education students, in consultation with members of the school of education faculty, will be assigned to an elementary professional development school for full-day teaching for a period of sixteen weeks. During this time students will demonstrate, through direct site development experience, competence and understanding of teaching-learning process. Prer., TEP students only. Meets with T ED 563.

T ED 464-3. Elementary Mathematics Methods. Provides teachers with a laboratory approach for teaching mathematics and acquaints them with a variety of materials and methods. Emphasis is on fostering skills in problem-solving; creative/critical thinking; and inductive/deductive processes and addressing the Colorado content standards for math. Meets with T ED 564.

T ED 465-2. Elementary Science Methods. Designed to acquaint teachers with materials and methods for teaching science to elementary school children. Consideration will be given to various programs and textbook series as well as the Colorado content standards in science. Teachers will complete a number of laboratory activities. Meets with T ED 565.

T ED 466-1. Elementary Social Studies Methods. Elementary social studies disciplines of history, civics, economics, and geography, writing standards- based instructional units, and characteristics of high quality social studies programs and instruction. Meets with T ED 566.

T ED 468-1. Expressive Arts Methods. Introduces prospective teachers to methods for teaching the expressive arts within the regular classroom. Students will learn how to meaningfully integrate the expressive arts into all subject areas. Visual arts, music drama, puppetry, dance, expressive literature, creative story telling and writing will all be explored. Prer., Accept TEP students only.

T ED 470-1 to 5. School Experience-Secondary. Pre-student teaching field experience. Summer: Teaching in a summer program for area secondary schools. Fall: 8 weeks in a PDS middle school site and 8 weeks in a PDS high school site observing, assisting, teaching. Prer., Acceptance in TEP. Meets with T ED 570.

T ED 471-1 to 3. Methods for Secondary Education. Introduces the fundamentals of teaching methods. Focus is on the decision-making model of teaching including planning, implementing, assessment, and modifying teaching. Skill in developing instructional objectives and planning and presenting lessons are emphasized. Meets with T ED 571.

T ED 472-3. Teaching Reading and Writing in the Content Area. Designed to help secondary teachers become aware of the reading and writing process and how they apply to subject matter material. A framework for functionally teaching reading and writing within a particular content area is developed and strategies for increasing student independence with print are emphasized. Meets with T ED 572.

T ED 473-3 to 14. Student Teaching-Secondary. Secondary education students, in consultation with members of the school of education faculty, will be assigned to a secondary professional development school for full-day teaching for a period of sixteen weeks. During this time students will demonstrate, through direct experience, competency and understanding of the teaching-learning process. Prer., TEP students only. Meets with T ED 573.

T ED 479-3 to 4. Secondary Curriculum, Instruction and Evaluation. Students develop an understanding of the context in which instruction takes place in today's middle and high schools, as well as principles of curriculum design, including standards-based lesson and unit planning. Methods of assessment, interpretation of results, and diagnostic teaching will be addressed. Meets with T ED 579.

T ED 482-1 to 4. Workshop in Educational Development. Current trends and issues in education. In-depth study of selected topics. Advanced-level work but counts toward a graduate degree only as a minor.

T ED 483-1 to 4. Instructional Workshop. Current instructional approaches are considered. Focus is upon classroom applications with in-depth study of selected topics.

T ED 491-3. Secondary English Methods. Secondary English Methods gives an overview of instructional theory, methods, and materials in English and helps the students develop teaching strategies and address the Colorado model content standards. Prer., Only those admitted to and participating in TEP. Meets with T ED 591 and CURR 5491.

T ED 492-3. Secondary Math Methods. Secondary Math Methods gives an overview of instructional theory, methods, and materials in math and helps students develop teaching strategies and address the Colorado model content standards. Prer., Only those admitted to and participating in TEP. Meets with T ED 592 and CURR 5492.

T ED 493-3. Secondary Science Methods. Secondary Science Methods gives an overview of instructional theory, methods, and materials in science and helps students develop teaching strategies and address the Colorado model content standards. Prer., Only those students admitted to and participating in TEP. Meets with T ED 593 and CURR 5493.

T ED 494-3. Secondary Social Studies Methods. Secondary Social Studies Methods gives an overview of instructional theory, methods, and materials in social studies and helps students develop teaching strategies and address the Colorado model content standard. Prer., Only those admitted to and participating in TEP. Meets with T ED 594 and CURR 5494.

T ED 495-3. Secondary Spanish Methods. Secondary Spanish Methods gives an overview of instructional theory, methods, and materials in Spanish and helps students develop teaching strategies and address the Colorado model content standards. Prer., Only those admitted to participating in TEP. Meets with T ED 595 and CURR 5495.

T ED 500-3. Contemporary American Education. Provides an introduction to American education today for anyone interested in today's schools as well as for potential teachers. Meets with T ED 300.

T ED 501-1 to 3. Early School Experience Practicum. Provides early school experience for potential teachers in public school classrooms. This experience focuses on the roles, responsibilities and qualities of the professional teacher through practical experience.

T ED 541-1. Children's Literature Methods. Surveys historical and contemporary literature for children to promote literacy growth. Author studies, technology connections in children's literature, and genre such as picture books, biography, nonfiction, and mystery and adventure are among the critical topics covered, as well as the Colorado content standards for reading and writing. Additional requirements for T ED 551 students. Prer., Acceptance in TEP. Meets with T ED 441.

T ED 552-3. Educational Psychology. Provides teachers with the knowledge of psychology most relevant to teaching. The focus is on areas of child development and major learning theories and their application in the classroom. Additional requirements for T ED 552 Students. Meets with T ED 452.

T ED 557-3. Elementary Literacy Methods. Elementary literacy strategies to successfully implement reading and writing teaching and assessment with emphasis on Colorado Model Content Standards. Additional requirements for T ED 557 students. Prer., Acceptance into TEP. Meets with T ED 457.

T ED 558-2. Elementary Curriculum, Instruction, and Classroom Management. Principles of curriculum design, instructional models and practice, standards-based curriculum and assessment, planning, organization, and classroom management and discipline. Additional requirements for T ED 558 students. Prer., Acceptance into TEP. Meets with T ED 458.

T ED 560-1 to 4. School Experience - Elementary. Pre-student teaching field experience. Summer involves participating in organizing, planning, conducting and evaluating a reading clinic experience in a public school. Fall involves observing a variety of schools and classrooms and serving as a teaching associate at assigned Professional Development School. Additional requirements for T ED 560 students. Prer., Acceptance in TEP. Meets with T ED 460.

T ED 562-3. Elementary Reading Methods. An introduction to reading literacy instructional practices. Includes a critical overview of current approaches, methods and materials, supported by a basic understanding about the reading and literacy learning process. Additional requirements for T ED 562 students. Prer., Acceptance into TEP. Meets with T ED 462 and CURR 5403.

T ED 563-3 to 14. Student Teaching - Elementary. Elementary education students, in consultation with members of the school of education faculty, will be assigned to an elementary professional development school for full-day teaching for a period of sixteen weeks. During this time students will demonstrate, through direct site development experience, competency and understanding of teaching-learning process. Additional requirements for T ED 563 students. Prer., TEP students only. Meets with T ED 463.

T ED 564-3. Elementary Mathematics Methods. Provides teachers with a laboratory approach for teaching mathematics and acquaints them with a variety of materials and methods. Emphasis is on fostering skills in problem-solving; creative/critical thinking; and inductive/deductive processes and addressing the Colorado content standards for math. Prer., Acceptance into TEP. Meets with T ED 464.

T ED 565-2. Elementary Science Methods. Designed to acquaint teachers with materials and methods for teaching science to elementary school children. Consideration will be given to various programs and textbook series as well as the Colorado content standards in science. Teachers will complete a number of laboratory activities. Prer., Acceptance into TEP. Meets with T ED 465.

T ED 566-1. Elementary Social Studies Methods. Elementary social studies disciplines of history, civics, economics, and geography, writing standards- based instructional units, and characteristics of high quality social studies programs and instruction. Additional requirements for T ED 566 students. Prer., Acceptance into TEP. Meets with T ED 466.

T ED 570-1 to 5. School Experience - Secondary. Pre-student teaching field experience. Summer: Teaching in a summer program for area secondary schools. Fall: 8 weeks in a PDS middle school site and 8 weeks in a PDS high school site observing, assisting, teaching. Additional requirements for T ED 570 students. Prer., Acceptance in TEP. Meets with T ED 470.

T ED 571-1 to 3. Methods for Secondary Education. Introduces the fundamentals of teaching methods. Focus is on the decision-making model of teaching including planning, implementing, assessment, and modifying teaching. Skill in developing instructional objectives and planning and presenting lessons are emphasized. Additional requirements for T ED 571 students. Prer., Acceptance into TEP. Meets with T ED 471 and CURR 5014.

T ED 572-3. Teaching Reading and Writing in the Content Area. Designed to help secondary teachers become aware of the reading and writing process and how they apply to subject matter material. A framework for functionally teaching reading and writing within a particular content area is developed and strategies for increasing student independence with print are emphasized. Additional requirements for T ED 572 students. Prer., Acceptance into TEP. Meets with T ED 472.

T ED 573-3 to 14. Student Teaching - Secondary. Secondary education students, in consultation with members of the school of education faculty, will be assigned to a secondary professional development school for full-day teaching for a period of sixteen weeks. During this time students will demonstrate, through direct experience, competency and understanding of the teaching-learning process. Additional requirements for T ED 573 students. Prer., TEP students only. Meets with T ED 473.

T ED 579-3 to 4. Secondary Curriculum, Instruction and Evaluation. Students develop an understanding of the context in which instruction takes place in today's middle and high schools, as well as principles of curriculum design, including standards-based lesson and unit planning. Methods of assessment, interpretation of results, and diagnostic teaching will be addressed. Additional requirements for T ED 579 students. Prer., Acceptance into TEP. Meets with T ED 479.

T ED 583-1. PDS Workshop. Provides experiences and principles that address the roles, structures, and expectations of Professional Development School sites for new sites. Designed for site coordinators and clinical teachers at sites.

T ED 591-3. Secondary English Methods. Secondary English Methods gives an overview of instructional theory, methods, and materials in English and helps students develop teaching strategies and address the Colorado model content standards. Prer., Acceptance into TEP. Meets with T ED 491 and CURR 5491.

T ED 592-3. Secondary Math Methods. Secondary Math Methods gives an overview of instructional theory, methods, and materials in math and helps students develop teaching strategies and address the Colorado model content standards. Prer., Acceptance into TEP. Meets with T ED 492 and CURR 5492.

T ED 593-3. Secondary Science Methods. Secondary Science Methods gives an overview of instructional theory, methods, and materials in science and helps students develop teaching strategies and address the Colorado model content standards. Prer., Acceptance into TEP. Meets with T ED 493 and CURR 5493.

T ED 594-3. Secondary Social Studies Methods. Secondary Social Studies Methods gives an overview of instructional theory, methods, and materials in social studies and helps students develop teaching strategies and address the Colorado model content standard. Prer., Acceptance into TEP. Meets with T ED 494 and CURR 5494.

T ED 595-3. Secondary Spanish Methods. Secondary Spanish Methods gives an overview of instructional theory, methods, and materials in Spanish and helps students develop teaching strategies and address the Colorado model content standards. Prer., Acceptance into TEP. Meets with T ED 495 and CURR 5495.

T ED 940-1 to 6. Independent Study. Independent investigation of topics of specific interest to the individual student and completed under the direction of a faculty member. The specifics of the investigation and the topic are a joint decision by the student and faculty member. The meeting times, expectations, and evaluation are arranged with the faculty member. Students must have written consent of the instructor.

College of Engineering and Applied Science

COMPUTER SCIENCE

C S 100-3. Computer Literacy. The role of computers in society with an introduction to programming in basic. The student is introduced to the concepts and operations of a microcomputer including several typical software environments such as word processing, spread sheet accounting, and database systems. The history and impact of computing in society is covered. This is the most elementary course offered by the computer science department. This course is not for CS or engineering majors. Prer., High school algebra.

C S 101-1 to 3. Topics in Computer Science. Content will vary to reflect areas of current interest in computer science. As the course continually changes, students may take the course several times for elective credit. Prer., instructor consent.

C S 103-1. Introduction to Microsoft Word. Introduction to word processing and the specifics of using the Microsoft Word for Windows system. Students will learn to create, format, and edit documents using Word.

C S 104-1. Introduction to Microsoft Excel. Introduction to spreadsheets and the specifics of using the Microsoft Excel for Windows system. Students will learn to create, edit, and print spreadsheets using Excel.

C S 105-1 to 3. Topics in Computer Science. Content will vary to reflect areas of current interest in computer science. As the course continually changes, students may take the course several times for elective credit. Prer., Instructor consent.

C S 106-1 to 3. Topics in Computer Science. Content will vary to reflect areas of current interest in computer science. As the course continually changes, students may take the course several times for elective credit. Prer., Instructor consent.

C S 107-3. Introduction to Programming in Visual BASIC for Non-Majors. Introduction to using visual basic to design and implement programs that interface with their users through Microsoft Windows. Prer., High school algebra.

C S 115-3. Principles of Computer Science. Introduction to programming

with emphasis on computer science concepts. Develops methods for computer problem solving. Develops proficiency for programming in a modern programming language, and introduces the concepts of abstraction in problem solving. Includes basic concepts of computer systems and environments including debuggers, editors, and file systems. Prer., High school algebra and familiarity with computer concepts including file operations and text editing.

C S 145-3. Data Structures and Algorithms. Concepts of data type, data abstraction, and data structure. Internal representations of fundamental data types. Linear data structures: stack, queue. Linked data structures and dynamic data types. Search table data abstraction, linear search in arrays and lists, binary search in arrays and trees. Binary trees, non-binary trees, binary search trees. Prer., C S 115 or equivalent.

C S 201-1 to 3. Topics in Computer Science. Content will vary to reflect the areas of current interest in computer science. As the courses continually change, students may take the course several times for elective credit. Prer., Consent of instructor.

C S 202-2. Programming with UNIX. An introduction to the UNIX operating system with an emphasis on the development of C and command shell programs. Prer., C S 145 and proficiency in C.

C S 203-1 to 3. Topics in Computer Science. Content will vary to reflect the areas of current interest in computer science. As the courses continually change, students may take the course several times for elective credit. Prer., Consent of instructor.

C S 205-1 to 3. Topics in Computer Science. Content will vary to reflect the areas of current interest in computer science. As the courses continually change, students may take the course several times for elective credit. Prer., Consent of instructor.

C S 206-2. Programming with C. A first course in the C programming language for those who are proficient in some other high level language. Prer., C S 115.

C S 207-1 to 3. Topics in Computer Science. Content will vary to reflect the areas of current interest in computer science. As the courses continually change, students may take the course several times for elective credit. Prer., Consent of instructor

C S 212-1 to 3. Topics in Computer Science. Content will vary to reflect the areas of current interest in computer science. As the courses continually change, students may take the course several times for elective credit. Prer., Consent of instructor

C S 216-3. Computer Organization and Assembly Language Programming. Provides an introduction to the concepts of computer architecture, functional logic, design and computer arithmetic. It presents material on the mechanics of information transfer and control within a computer system. Also included are symbolic programming techniques, implementing high level control structures, addressing modes and their relation to arrays, subprograms, parameters, linkage to high level languages and the assembly process. Prer., C S 145 and knowledge of C programming including pointers.

C S 301-3. Web Programming. An introduction to the programming languages and technologies associated with the Web. Included are XHTML, cascading style sheets, JavaScript, dynamic XHTML documents, applets, XML, Perl and its use in CGI programming, Java Servlets and web access to databases. Prer., C S 316.

C S 302-1 to 3. Selected Topics in Computer Science. The content of these courses will vary from time to time and reflect the areas of current interest in Computer Science. As the courses continually change, students may take the course several times for technical elective credit. Prer., Instructor consent.

C S 303-1 to 3. Selected Topics in Computer Science. The content of these courses will vary from time to time and reflect the areas of current interest in Computer Science. As the courses continually change, students may take the course several times for technical elective credit. Prer., Instructor consent.

C S 304-1 to 3. Selected Topics in Computer Science. The content of these courses will vary from time to time and reflect the areas of current interest in Computer Science. As the courses continually change, students may take the course several times for technical elective credit. Prer., Instructor consent.

C S 305-1. Social and Ethical Implications of Computing. This class will discuss selected topics in ethical, social, political, legal and economic aspects of the application of computers. Each student is expected to research one or more topics, actively participate in discussions, and give a presentation. Written papers may be required. Prer., C S 202 or instructor consent.

C S 306-3. Object-Oriented Programming Using C++. The principal goals of this course are: 1) to learn the fundamentals of object-oriented programming, 2) to gain skill and proficiency in using the C++ programming language, 3) to exercise the C++ language in implementing a moderate sized software system designed with objects. Prer., C S 202 and ECE 1011 or instructor consent.

C S 316-3. Concepts of Programming Languages. Evolution of the central concepts of programming languages, describing syntax and semantics, data types, abstract data types, control structures, subprograms, concurrency and exception handling. Prer., C S 216 and C S 306.

C S 330-3. Software Engineering. Software engineering methodologies. The software lifecycle. Emphasis on the design, development and implementation of a software system. A course project provides the student teams practical application of the software engineering techniques. Prer., C S 145 and C S 206.

C S 401-1 to 3. Selected Topics in Computer Science. The content of these courses will vary from time to time and reflect the areas of current interest in Computer Science. As the courses continually change, students may take the course several times for elective credit. Prer., Instructors consent.

C S 402-1 to 3. Selected Topics in Computer Science. The content of these courses will vary from time to time and reflect the areas of current interest in Computer Science. As the courses continually change, students may take the course several times for elective credit. Preq., Instructor consent.

C S 403-1 to 3. Selected Topics in Computer Science. The content of these courses will vary from time to time and reflect the areas of current interest in Computer Science. As the courses continually change, students may take the course several times for elective credit. Preq., Instructor consent.

C S 404-1 to 3. Selected Topics in Computer Science. Selected topics in computer science. The content of these courses will vary from time to time and reflect the areas of current interest in computer science. As the courses continually change, students may take the course several times for elective credit. Prer., Instructor consent.

C S 405-1 to 3. Selected Topics in Computer Science. The content of

these courses will vary from time to time and reflect the areas of current interest in Computer Science. As the courses continually change, students may take the course several times for elective credit. Preq., Instructor consent.

C S 406-1 to 3. Selected Topics in Computer Science. The content of these courses will vary from time to time and reflect the areas of current interest in Computer Science. As the courses continually change, students may take the course several times for - elective credit. Preq., Instructor consent.

C S 407-1 to 3. Selected Topics in Computer Science. The content of these courses will vary from time to time and reflect the areas of current interest in Computer Science. As the courses continually change, students may take the course several times for elective credit. Preq., Instructor consent.

C S 408-1 to 3. Selected Topics in Computer Science. The content of these courses will vary from time to time and reflect the areas of current interest in Computer Science. As the courses continually change, students may take the course several times for elective credit. Preq., Instructor consent.

C S 409-1 to 3. Selected Topics in Computer Science. The content of these courses will vary from time to time and reflect the areas of current interest in Computer Science. As the courses continually change, students may take the course several times for elective credit. Preq., Instructor consent.

C S 410-3. Compiler Design I. Underlying theory and design techniques for compilers. Lexical analysis, top-down and bottom-up parsing algorithms, runtime storage management, syntax directed translation schemes, intermediate code generation. Prer., C S 216, C S 316 and C S 470/570. Meets with C S 510.

C S 420-3. Computer Architecture I. Course covers fundamentals of computer design, instruction set principles and examples, pipelining, advanced pipelining and instruction-level parallelism, memory-hierarchy design and survey of design issues in storage, interconnection network and multiprocessor systems. Prer., C S 216 or both ECE 3420 and ECE 3430. Meets with C S 520.

C S 442-3. Database Systems I. Course introduces general database concepts as well as database system technology. The course covers ER and R data models, R-algebra, SQL, data storage and indexing, query optimization, database design and security. Prer., C S 145. Meets with C S 542.

C S 450-2. Operating Systems I. Introduces concepts, terminology, and algorithms of operating systems. Describes semaphores, processes, virtual mappings, interrupts, resource allocation and management, protection, synchronization, scheduling, queueing and communication as applied to operating system design and implementation. Prer., C S 145, C S 202, and C S 420. Meets with C S 550.

C S 460-3. Numerical Computing. Algorithms for the solution of nonlinear equations, interpolation and approximation, differentiation, integration, systems of linear equations, ordinary differential equations and least squares. Prer., C S 145, MATH 235 and MATH 313. Meets with C S 560.

C S 470-3. Computability, Automata and Formal Languages. Finite automata and regular expressions, context-free grammars, context-free languages, and pushdown automata, Turning machines, undecidability, the Chomsky hierarchy of formal languages, computational complexity and intractable problems. Prer., C S 145, C S 202, MATH 215, & MATH 313. Meets with C S 570.

C S 472-3. Design and Analysis of Algorithms. Design methodologies; divide-and-conquer, exhaustive search, dynamic programming. Time and space complexity measures, analysis of algorithms. Survey of important algorithms for searching, sorting, graph manipulation. Tractability: class P and NP, NP complete problems. Prer., C S 145, C S 206 and MATH 215. Meets with C S 572.

C S 480-3. Computer Graphics. Fundamental areas of modern raster computer graphics: hardware, software, data structures, mathematical modeling, user interface and manipulation of graphical objects. A subset of the two dimensional GKS is examined and implemented with emphasis placed upon segmented display files and instance modeling. Basic to all graphic programs written are the ergonomic requirements of the user. Required programs are in the areas of animation, paint systems, polygon filling and clipping, and curve generation. Prer., C S 145, C S 202, and MATH 313. Meets with C S 580

C S 482-3. Functional and Logical Programming for Artificial Intelligence. Course focuses on functional programming using LISP and logical programming using Prolog. Programming projects are geared towards various aspects of artificial intelligence. Prer., C S 316 or consent of instructor.

C S 501-3. Intensive Computer Science for Graduate Students. Intended for prospective graduate students with extensive programming experience. Covers concepts in C S 115 and C S 145. Can substitute for these courses in satisfying entrance requirements for M.S. in Computer Science. Does not count towards M.S. or B.S. degrees. Not open to undergraduate. Prer., Knowledge of high-level programming language.

C S 502-1 to 3. Selected Topics in Computer Science. Topics vary.

C S 503-1 to 3. Selected Topics in Computer Science. Topics vary.

C S 505-1 to 3. Selected Topics in Computer Science. Topics vary.

C S 506-1 to 3. Selected Topics in Computer Science. Topics vary.

C S 507-1 to 3. Selected Topics in Computer Science. Topics vary.

C S 508-1 to 3. Selected Topics in Computer Science. Topics vary.

C S 509-1 to 3. Selected Topics in Computer Science. Topics vary.

C S 510-3. Compiler Design. Underlying theory and design techniques for compilers. Lexical analysis, top-down and bottom-up parsing algorithms, runtime storage management, syntax directed translation schemes, and intermediate code generation. Prer., C S 216, C S 316 and C S 470/570. Meets with C S 410.

C S 520-3. Computer Architecture I. Course covers fundamentals of computer design, instruction set principles and examples, pipelining, advanced pipelining and instruction-level parallelism, memory-hierarchy design and survey of design issues in storage, interconnection network and multiprocessor systems. Prer., C S 216 or both ECE 3420 and ECE 3430. Meets with C S 420.

C S 522-3. Computer Communication. The subject of transmitting information between processors is described in detail. The student is expected to have maturity with hardware and/or realtime concepts. Communication systems, from simple to asynchronous point-to-point links, to those based on complex network architectures will be studied. Material will be oriented toward the computer scientist as a user, designer and evaluator of such systems. Terminology and concepts will be emphasized rather than detailed electronic or physical theory. Prer., C S 420/520, C S 450/550.

C S 525-3. Multimedia Computing and Communications. Design principles of multimedia authoring and communication systems. It covers the interface and characteristics of voice and video processing equipment, multimedia document architectures, media encoding/ compression schemes, real-time scheduling of time critical multimedia documents, multimedia editors, multimedia communication standards and communication software. Prer., Graduate standing or instructor permission.

C S 526-3. Advanced Internet and Web Systems. Advanced topics in Internet and WWW systems, TCP/IP network modules in kernel, content switching, web server technologies, web system management, load balancing, web security, and electronic commerce. Prer., C S 301, C S 522, or permission of instructor.

C S 531-3. Software Requirements Analysis and Specification. Techniques and tools for requirements analysis and requirements specification. Requirements languages and notations. Specification completeness and consistency. Team project in the analysis and specification of a major software system. Prer., C S 145 or equivalent, knowledge of a modern programming language and discrete structures.

C S 532-3. Software Design. Covers a variety of methodologies and tools for design of sequential, parallel and distributed software systems. Design language; graphical design representations. Data abstraction, data dictionaries. Data flow design and diagrams. Object-oriented design. Documentation. Team project in the design of a major software system. Prer., C S 531.

C S 533-3. Formal Methods of Software Systems Engineering. Elements of discrete mathematics. Formal mechanisms for specifying and verifying the correctness, reliability, and efficiency of software systems. State transition, regular expression, context free, and applicative models. Assertions, hoare axioms, and weakest preconditions. State machine, algebraic, and operational specification techniques. Prer., C S 145 or equivalent, knowledge of a modern programming language, and discrete structures.

C S 534-3. Software Maintenance. Discussion and application of corrective, adaptive, perfective and preventive software maintenance techniques and tools. Related topics such as software systems analysis, reverse-engineering, re-engineering, regression testing and configuration management are examined. As a project, student teams maintain an existing software system. Prer., Knowledge of modern programming language, discrete structures, C S 145 or equivalent.

C S 535-3. Software Project Management. Planning, scheduling, costing of projects. Measuring progress, predicting success, controlling failure. Management tools and their use. Effectiveness and efficiency of software engineering environments. Distributed software development. Quality control standards and practices. Prer., Knowledge of modern programming, NG language, data structures and algorithms, and discrete structures.

C S 536-3. Software Product Assurance. Principles, techniques and tools for producing quality software systems. The first half of this course focuses on software product assurance processes. The second half covers a variety of software testing techniques. Prer., C S 531.

C S 537-3. Human-Computer Interfaces. Techniques and tools for the analysis, design, implementation and testing of human-computer interfaces. Special topics such as human factors, rapid prototyping and usability testing will be studied. Term project. Prer., C S 330 and C S 531.

C S 538-3. Object-Oriented Software Development. Principles of object-oriented problem-solving, object- oriented analysis and object-oriented design. Development of class hierarchies, use of polymorphism and inheritance, criteria for good design, semester project. Prer., C S 330 or consent of instructor.

C S 539-3. Software Systems Engineering Project Laboratory. Students participate in a project involving the development or maintenance of a software system intended for external distribution and use. Duties include requirements analysis, specification, design, implementation, testing, quality assurance, configuration management and documentation. Projects come from the university and from outside sources. Students are evaluated based on their project work and an oral presentation describing their work and critiquing their results. Prer., CS 531, CS 532, CS 534, CS 535, and CS 536.

C S 542-3. Database Systems I. Course introduces general database concepts as well as database system technology. The course covers ER and R data models, R-algebra, SQL, data storage and indexing, query optimization, database design and security. Prer., C S 145. Meets with C S 442.

C S 543-3. Database Systems II. Course covers advanced database topics including transaction management, parallel and distributed databases, internet databases, decision support, data mining, object and object-relational database systems, spatial data management and other current research issues. Prer., C S 442/C S 542.

C S 550-3. Operating Systems I. Introduces concepts, terminology, and algorithms of operating systems. Describes semaphores, processes, virtual mappings, interrupts, resource allocation and management, protection, synchronization, scheduling, queueing and communication as applied to operating system design and implementation. Prer., C S 145, C S 202, C S 420/520. Meets with C S 450.

C S 551-3. Operating Systems II. Examines and compares algorithms for deadlock, mutual exclusion, synchronization, maximal parallelism, paging, queueing, buffer allocation, interprocess communication, and scheduling as they relate to operating systems performance. Examines mechanisms and primitives for both loosely and tightly coupled networks of systems. Considers system reliability. Prer., C S 450/550.

C S 555-3. Computer Systems Performance Evaluation. Perspectives of performance evaluation, measurement techniques; hardware, software, and firmware tools, simulation techniques, analytical techniques; workload characterization, system selection; system tuning; performance tracking, performance prediction in the design phase and cost-benefit analysis. Prer., C S 450/550.

C S 560-3. Numerical Computing. Algorithms for the solution of nonlinear equations, interpolation and approximation, differentiation, integration, systems of linear equations, ordinary differential equations and least squares. Prer., C S 145, MATH 235 and MATH 313. Meets with C S 460.

C S 567-3. Discrete Simulation I. Examines concepts and methods of discrete event simulation. Compares major modeling methods. Discusses statistical issues including random number generation, arrival processes, analysis of simulation output, verification and validation of models and simulation

programs. Describes in detail the use of a major discrete event simulation language. Discusses simulation level of detail and simplifying assumptions. Prer., C S 202 and MATH 381.

C S 570-3. Computability, Automata, and Formal Languages. Finite automata and regular expressions; context-free grammars, context-free languages, and pushdown automata; Turing machines; undecidability; the Chomsky Hierarchy of Formal Languages; computational complexity, and intractable problems. Prer., C S 145, C S 202, MATH 215 & MATH 313. Meets with C S 470.

C S 571-3. Evolutionary Computation. Introduction to evolutionary computation with emphasis on genetic algorithms. Includes evolution strategies, evolutionary programming, schemata fitness functions and classifiers, current research topics, messy algorithms, adaptive landscapes. Prer., C S 202 and MATH 381.

C S 572-3. Design and Analysis of Algorithms. Design methodologies: divide-and-conquer, exhaustive search, dynamic programming. Time and space complexity measures, analysis of algorithms. Survey of important algorithms for searching, sorting, graph manipulation. Tractability: class P and NP, NP-complete problems. Prer., C S 145, C S 206 and MATH 215. Meets with C S 472.

C S 575-3. Computational Geometry. Computational complexity of geometric problems within the framework of analysis of algorithms. Stress on geometric searching, intersection problems, particularly of rectangles, and fundamental algorithms. Practical applications of concepts developed can be found in computer graphics, analysis of algorithms, spatial data structures and VLSI system design. Prer., C S 472/572, C S 480/580 or instructor's consent.

C S 577-3. Computer Graphics Animation & Scientific Visualization Techniques. Animation: basic principle, physically based modeling, algorithms for animation, constraint optimization, use of dynamics in animation, teleological modeling. Scientific visualization: overview, foundation and techniques, applications. Prer., C S 480/580.

C S 578-3. Advanced 3D Games and Digital Content Creation. Populating virtual worlds with characters and objects, this course will concentrate on current technology and advance topics using graphics and VR technology. Typical topics included are graphics engines, landscape specializations, wrapping techniques, complex scenes, highting, shadows, motion control, collision, dynamics, image based rendering, multi-player games, etc. plus advanced features from SIGGRAPH and others. Prer., C S 480/580 or instructor's consent.

C S 579-3. Wearable Computing and Complex Systems. Wearable computing with an emphasis on complex systems research is an important area of research. This course will cover concepts and related techniques, and and state of the art issues. This course will provide an excellent basis for students who are interested in computer graphics and virtual reality research. Prer., C S 480/580 or consent of instructor.

C S 580-3. Computer Graphics. Fundamental areas of modern raster computer graphics; hardware, software, data structures, mathematical modeling, user interface and manipulation of graphical objects. A subset of the two dimensional GKS is examined and implemented with emphasis placed upon segmented display files and instance modeling. Basic to all graphic programs written are the ergonomic requirements of the user. Required programs are in the areas of animation, paint systems, polygon filling and clipping, and curve generation. Prer., C S 145, C S 202 and MATH 313. Meets with C S 480.

C S 581-3. Topics in Computer Graphics. Examines the mathematical and physical models used to produce realistic three dimensional images. Topics include perspective viewing, hidden surface removal, shading, fractals, and rag tracing. Prer., C S 480/580.

C S 582-3. Artificial Intelligence. Course covers the foundation of artificial intelligence: search techniques, first-order predicate calculus and knowledge representation. Also covers advanced topics such as speech and natural language processing and learning. Prer., C S 316, C S 482, or instructor consent for graduate students.

C S 583-3. Artificial Intelligence II. Covers in detail a selection of AI topics: planning, natural language processing, computer vision, robotics, expert systems, and learning. Current research topics may be covered. Students may use a programming language of their choice. Prer., C S 482/582 or instructor's consent.

C S 584-3. Computer Vision. Representation and manipulation of digital images, Fourier analysis of images, enhancement techniques in spatial and frequency domain, segmentation procedures, digital geometry, region and boundary representation, texture processing, pattern recognition and application to robotics. Prer., MATH 235 or consent of instructor. Meets with MATH 584.

C S 587-3. Introduction to Artificial Neural Networks. The course will cover basic neural network architecture and learning algorithms. Practical applications will be surveyed. Students will learn to implement their own simulator and implement various architectures. Prer., MATH 235.

C S 589-3. Computational Linguistics. Approaches to syntactic processing of natural language: issues in semantic interpretation, pragmatics or the impact of context and world knowledge of natural language understanding and generation of natural language responses. Prer., C S 582 or consent of instructor.

C S 591-3. Fundamentals of Computer/ Network Security. Introduction to the study of computer and network security from the view of information warfare. Topics include information system threats, vulnerabilities and defensive mechanisms (cryptography, authentication digital signatures, PKI, etc.). Prer., C S 202 and MATH 215.

C S 592-3. Applied Cryptography for Secure Communication. Basic security issues in computer communication, classical cryptographic algorithms, symmetric-key cryptography, public-key cryptography, authentication, and digital signatures. Prer., MATH 215, MATH 381, C S 316, C S 522, or instructor consent.

C S 622-3. Distributed Networks. Deals with complex communications systems in depth. Packet switching networks, local area networks, satellite systems, the open systems interconnect (OSI) reference model, and the development of communications software. Prer., C S 522.

C S 630-3. Topics in Software Systems Engineering. Advanced topics and current research issues in software engineering. Possible topics include software engineering environments, requirements, design, testing, software metrics, configuration management, maintenance, software cost analysis, and distributed software. Prer., C S 531 or C S 535.

C S 638-3. The Design and Modeling of Class Interfaces and Contracts. Past and present work related to specifying the semantics of a class using assertions are examined. The BON method is presented. Prer., C S 538.

C S 643-3. Data Mining. This course covers data warehousing, OLAP, association rules, cluster analysis, classification and prediction, complex data mining applications and trends in data mining. Prer., C S 442/542.

C S 677-3. Virtual Reality and Computer-Human Interaction. The course will focus on the so-called ultimate form of interaction between human and machine, creating virtual or artificial world. The basic idea and various input devices will be discussed. Several advanced papers in this area will be covered. Some of these ideas will be implemented through a term project. Prer., C S 580 or C S 577 or consent of instructor.

C S 687-3. Advanced Studies in Artificial Neural Networks. A research seminar treating contemporary results in the theory and applications of artificial neural networks. Prer., C S 587.

C S 691-3. Advanced System Security Design. Advanced topics in network and system security, including firewall design, network intrusion detection, tracking and prevention, virus detection, programming language and OS support for security and wireless network security. Prer., C S 591, C S 592, or instructor permission.

C S 692-3. Advanced Topics in Network Security. Covers advanced topics in network security such as Kerberos, PGP, IPSec, VPNs, SSL, SET, Smart cards, Steganography, Watermarking and Biometric Encryption. Research papers may be discussed. Prer., C S 592.

C S 700-1 to 6. Masters Thesis.

C S 701-3. Masters Project.

C S 800-1 to 10. PhD Dissertation. Prer., Acceptance into program.

C S 920-1 to 3. Independent Study in Computer Science Undergraduate.

C S 999-0. Candidate for Degree.

ELECTRICAL AND COMPUTER ENGINEERING

ECE 1001-3. Introduction to Robotics. An introductory course presenting foundational material in the design of robots. Topics include basic properties of sensors, motors, gears, drive mechanisms, control schemes and processors to guide and control robots. LEGO kits will be used to implement student designs. Meets with ENGR 1001.

ECE 1021-3. Computer-Based Modeling and Methods of Engineering. Methodology for solving engineering problems is introduced. Fundamental features of the C programming language are presented and integrated with a variety of engineering examples and applications. Pointer variables and structures will be used in the applications. Prer., MATH 135 and ECE 1001.

ECE 1411-2. Logic Circuits I. Fundamentals of Digital Electronics, Number Systems, Logic Gates, Boolean Algebra, Combinational Circuit Design, Binary Addition, Flip-flops, Shift Registers and Counters, Logic Families and Specifications, Introduction to microprocessors. Meets with ENGR 1411.

ECE 2050-3. Introduction to Physical Electronics. An introductory course on the fundamental properties of materials and semiconductors in preparation for a background in modern device physics and technology. Topics include: Crystal Structure, Quantum Theory of Solids, and Transport and Excess Carriers in Semiconductors. Coreq., MATH 340 and PES 213.

ECE 2210-3. Circuit Analysis I. Modeling and analysis of electrical devices and circuits, including operational amplifiers. Transient and steady state response using classical differential equation methods. Impulse and step responses. Prer., MATH 136 and ECE 1021. Coreq., MATH 235 and PES 112.

ECE 2220-3. Circuit Analysis II. Continuation of ECE 2210, with frequency response, filter design, Fourier series, Fourier transforms and Laplace transforms. Prer., ECE 2210, PES 112, and MATH 235. Coreq., MATH 340.

ECE 2230-1. Circuits Laboratory. Experimental work dealing with fundamental electrical circuits and measurement techniques. An introduction to computer-aided design (CAD). Prer., ECE 2210. Coreq., ECE 2220.

ECE 2411-2. Logic Circuits II. Covers sequential circuits design and implementation. Topics include Mealy/Moore machine design, State encoding, states minimization, Verilog HDL modeling of logic circuits, Register Transfer Level Modeling of digital systems, and memory. Prer., ECE 1411.

ECE 3020-3. Semiconductor Devices I. An introduction to semiconductor devices used in modern microelectronic technologies. The course objective is to provide an understanding of the fundamental physical principles and concepts underlying the operation and use of the most important semiconductor devices. Prer., ECE 2050 and ECE 2210. Coreq., ECE 3110

ECE 3110-3. Electromagnetic Fields I. Static electric and magnetic field analysis, Poisson's and Laplace's equations, steady electric current, fields of steady electric currents, ferromagnetic materials, boundary-value problems for static fields, time-varying electric and magnetic fields, and Maxwell's equations and wave equations. Relationship between field and circuit theory. Prer., ECE 2220, MATH 235 and PES 213.

ECE 3120-3. Electromagnetic Fields II. Electromagnetic wave propagation in dielectric and conducting media: solutions to the wave equations, transmission lines, waveguides and resonators, antennas and radiation, uniform and non-uniform plane waves. Design involving considerations of electromagnetic fields. Prer., ECE 3110 and MATH 340.

ECE 3210-3. Electronics I. The application of semiconductor devices to the design of electronic circuits. Topics include diode circuits and applications, low frequency transistor amplifier design and switching theory. Prer., ECE 2210. Coreq., ECE 3230.

ECE 3220-3. Electronics II. Transistor models used in circuit design at high frequencies: multistage amplifier design, frequency response of amplifiers, feedback, operational amplifiers, and distortion. Prer., ECE 2220 and ECE 3210. Coreq., ECE 3240.

ECE 3230-1. Electronics Laboratory I. Design and implementation of power supplies, amplifiers with bipolar junction transistors, junction field effect transistors and MOSFETS. In addition, basic circuit design with operational amplifiers will also be performed. Coreq., ECE 3210.

ECE 3240-1. Electronics Laboratory II. Continuation of ECE 3230. Design of differential amplifier with discrete components, analysis of frequency response, frequency compensation techniques, feedback amplifier design, power amplifiers, oscillator and simple subsystem design. Prer., ECE 3230. Coreq., ECE 3220.

ECE 3420-1. Microprocessor Systems Laboratory. Introduction to microprocessor development systems and foundations of system design. Assembly language will be used in the development. Use of high-level languages will also be discussed. Prer., ECE 2411. Coreq., ECE 3430.

ECE 3430-3. Introduction to Microcomputer Systems. Design of microcomputer systems including assembly language programming and interfacing techniques. Emphasis is on the practical application of microcomputers as solutions to engineering problems. Prer., ECE 2411. Coreq., ECE 3420.

ECE 3440-1. Microcomputer Systems Laboratory. Experiments are performed to program and interface microcomputer systems to design and implement microcomputer-based systems. Emphasis is on the application of the microcomputer as a tool to solve control and data acquisition problems. Prer., ECE 3430.

ECE 3510-3. Linear System Theory. Characterization of linear systems by impulse response, convolution, transfer function. Linear differential equations and linear difference equations as models. Applications to circuits, electromechanical systems, etc. Transform methods include: Fourier series, Fourier transforms, and Laplace transforms. Introduction to state variables, and the state transition matrix. Use of a variety of models in design. Prer., ECE 2220 and MATH 340. Coreq., ECE 3520.

ECE 3520-1. MATLAB Systems Analysis Laboratory. Fundamental constructs in MATLAB - scalars, vectors, and matrices; scalar and array operations; input and output capabilities; functions; matrix computations; interpolation and curve fitting; numerical integration; random number generation; FFT. Several laboratory projects are used to illustrate applications to system analysis. Coreq., ECE 3510.

ECE 3610-3. Engineering Probability & Statistics. An introduction to probability and statistics with application to solving engineering problems. Includes the axioms of probability, random variables, density functions, distributions functions, expectations. Gaussian random variables, bivariate random variables, sums of independent random variables. Estimation of sample mean and variance. Monte Carlo simulation, binomial, hypergeometric, Poisson counting processes, confidence intervals, reliability, failure rates, the Weibull model, the log-normal model, estimation using regression. Introduction to random processes. Involves a project making use of simulation of random variables on a computer. Prer., MATH 235.

ECE 4020-3. Semiconductor Devices II. Advanced study of the electrical and transport properties of semiconducting and solid state devices and integrated device structures. Topics include: pn junction device structures, non-ideal effects in small geometry Mosfets, compound semiconducting devices, CCDs, negative conductance microwave devices. Prer., ECE 3050 or equivalent. Meets with ECE 5020.

ECE 4040-1. Introductory VLSI Fabrication Laboratory. Various types of VLSI fabrication processes such as thermal oxidation, rapid thermal annealing, diffusion, physical vapor deposition, ion implantation, photolithography and etching. In addition, students will use a variety of device characterization techniques available in the laboratory. Prer., ECE 3050, ECE 4020, and ECE 4080 or consent of instructor.

ECE 4050-3. Microelectronics IC Fabrication Laboratory. Independent experimental project in which students are expected to acquire the theoretical understanding of modern IC fabrication process, perform the IC processing and supporting measurements, and write detailed laboratory reports. Students should take ECE 4050 before ECE 4896. Prer., ECE 4080 and ECE 4020 or consent of instructor. Meets with ECE 5050.

ECE 4070-3. Electronic Properties of Materials. Principles and applications of the electrical, optical, magnetic, and thermal properties of engineering electronic materials. The treatment is designed for students specializing in the areas of microelectronics, solid state, and electromagnetics. Prer., ECE 3050. Meets with ECE 5070.

ECE 4080-3. VLSI Processing. Introductory study of the various processes such as oxidation, diffusion, epitaxy, ion-implantation, photolithography, CVD, plasma processing, etc., used in contemporary fabrication of modern microelectronic technologies; use and understanding of process modeling programs used in design, fabrication, and simulation of MOSFET and bipolar microelectronics technologies. Prer., ECE 3050 or consent of instructor. Meets with ECE 5080.

ECE 4110-3. Electromagnetic Theory and Applications. An intermediate level fields course beginning with the classical development of Maxwell's equations and the Wave equation. Included are electrostatics, the steady magnetic field, plane-wave propagation, Poynting's vector, guided waves, transmission lines, wave guides, the interaction of fields and matter, and concluding with an introduction to the subject of radiation. Dirac-delta and Dyadic Green's function method of problem solution are treated. Prer., ECE 3120 or equivalent. Meets with ECE 5110.

ECE 4150-1. Microwave Measurements Laboratory. Experiments with transmission lines and waveguide systems. Infrared imaging of electromagnetic fields. Measurement of antenna fields. Exposure to equipment and techniques used in microwave measurements. Design of microwave circuits. Prer., ECE 3120 or equivalent. Meets with ECE 5150.

ECE 4200-1. Advanced Digital Design Laboratory. A design laboratory focusing on the design of digital systems using modern programmable devices (PLDs and FPGAs). Contemporary design tools and hardware description languages (e.g., Verilog) will be used. Prer., ECE 4242.

ECE 4211-3. Rapid Prototyping with FGPAs. Field programmable gate arrays (FPGAs) are an important part of the overall design flow for application specific integrated circuits (ASICs) because they offer the potential of allowing cheap hardware prototypes to be built to meet a narrow window of opportunity. They also offer novel, programmable architectures. This course will focus on the combined use of FPGAs and modern synthesis tools to develop rapid prototypes of ASICs. Architectural and performance tradeoffs and characteristics of both commercial anti-fuse and dynamically programmable FPGAs will be considered. Includes a team project. Prer., ECE 4242. Meets with ECE 5211.

ECE 4220-3. Analog IC Design. A fundamental analog circuit design course that establishes relationships between semiconductor device theory, semiconductor processing technologies and the electrical and functional performance requirements of modern analog integrated circuits. Includes design project. Prer., ECE 3050, ECE 3220, and ECE 3240. Meets with ECE 5220.

ECE 4230-3. Analog Filter Design. Theory, specification, design, and simulation of active and passive analog filters based on modern integrated circuit technology and VLSI Design I design philosophy. Prer., ECE 3220. Meets with ECE 5230.

ECE 4242-3. Advanced Digital Design Methodology. This course focuses on modern digital design practice using computer-based design tools and then considers key steps in a modern design flow, with particular attention to the use of behavioral models in hardware description languages as a stepping stone to combinational and

sequential logic synthesis. The Verilog language will be presented, along with ancillary topics of functional verification, testbench generation, timing analysis, fault simulation, and design for testability. Design examples will include microcontrollers, RISC-CPUs, pipelined processors, digital filters, finite state machines for datapath control, UARTs, and typical architectures of synchronous computational units. Prer., ECE 3210. Meets with ECE 5242.

ECE 4250-3. Microwave Circuit Design. An introduction to the design and analysis of microwave circuits both passive and active. Topics include microwave circuit analysis, measurement methods, transmission line structures, material properties, lumped elements, discontinuities, terminations, attenuators, directional couplers, hybrids, power dividers, impedance transformers, filters, mixers, switches, phase shifters, and amplifiers. Prer., ECE 3120 or equivalent. Meets with ECE 5250.

ECE 4260-3. Mixed Signal IC Design. Design of data converters, switch capacitor filters, high performance opamps, phase locked loops, oscillators. Prer., ECE 4220/5220 or consent of instructor. Meets with ECE 5260.

ECE 4270-3. CMOS Radio Frequency Integrated Circuit Design. CMOS based high Frequency amplifier design, s-parameters, voltage references, noise, low noise amplifier (LNA), mixers, RF power amplifiers, phase locked loops, oscillators and synthesizers, transmitter and receiver architectures and RFID systems. Prer., ECE 3110, ECE 3210, ECE 3220. Meets with ECE 5270.

ECE 4320-3. Fault Detection & Design for Testability. Stuck-at fault modeling. Test generation for combinational circuits-Boolean difference, D algorithm, PODEM, FAN, critical path. Fault dominance and equivalence. Test generation for synchronous sequential circuits. Cost functions used in test generation. Fault simulation. Basics of design for testability. Prer., ECE 3430 or equivalent. Meets with ECE 5320.

ECE 4330-3. Embedded Systems Design. Introduction to embedded systems including real time fault-tolerant significance. Study the hardware and software techniques to designing embedded system, including study of various embedded operating systems, embedded controllers and digital signal processing hardware. Study existing embedded systems. Prer., ECE 3430, C S 145, or consent of instructor. Meets with ECE 5330.

ECE 4340-3. VLSI Circuit Design I. Design considerations for MOS integrated circuits with an emphasis on CMOS technology and the relationships between semiconductor device theory, semiconductor processing technologies, and the electrical and functional performance requirements of modern digital IC circuits. Physical behavior of CMOS transistors and integrated circuits, CMOS processing technology, CMOS circuit and logic design, design rules, and structured design methodology. Prer., ECE 3050 and ECE 3210. Meets with ECE 5340.

ECE 4362-3. Synthesis with Verilog HDL. Logic synthesis with the Verilog hardware description language and commercial EDA tools. Includes an introduction to System Verilog. Project is required. Prer., ECE 4242/5242. Meets with ECE 5362.

ECE 4480-3. Computer Architecture and Design. The design of large digital systems with emphasis on the computer. Architectural alternatives, instruction set design, implementations including microprogramming, and actual examples are discussed. Performance tradeoffs. Prer., ECE 3430 and ECE 4242. Note ECE 4200 is the lab of ECE 4242. Meets with ECE 5480.

ECE 4510-3. Feedback Control Systems. Linear analysis and analog simulation of electrical, chemical, hydraulic, and mechanical systems using block diagrams and signal flow graphs. Comparison of open and closed loop configurations. Feedback control system design using Nyquist, Bode, and root locus methods. Effects of simple networks on system response. Introduction of state variable techniques and digital computer solutions. Prer., ECE 3510.

ECE 4520-3. Multivariable Control Systems I. Fundamental aspects of modern control theory are covered, including solutions to systems modeled in state variable format, controllability, observability, pole placement, and linear transformation. Computer- based tools for control system design are used. Prer., ECE 4510 and MATH 313, or equivalent. Meets with ECE 5520.

ECE 4530-3. Control Systems Laboratory. Introductory experiments on response of control system components. Open-loop and closed-loop (feedback) response of servo systems. Simulation of systems on an analog computer. Design of compensator systems. Coreq., ECE 4510.

ECE 4540-3. Digital Control Systems. Theory and application of classical and modern discrete-time control systems. Analysis and design of discrete-time and hybrid control using Z-transforms, root locus, frequency domain and state variable compensation techniques. On-line implementation by digital computers will be studied. Prer., ECE 4510. Meets with ECE 5540.

ECE 4560-1. Digital Control Laboratory. Discrete-time control systems will be designed and tested using microcomputers, compensators, A/D and D/A converters, and analog computers. Experiments in the control of discrete and analog systems will be performed. Coreq., ECE 4540.

ECE 4610-3. Analysis of Random Signals. Probability and random variables. Practical aspects and methods for analyzing and interpreting random signals. Statistical and parametric descriptions, estimators and errors for measurement data. Prer., ECE 3510 and ECE 3610 or equivalent. Meets with ECE 5610.

ECE 4625-3. Communication Systems I. Introduction to principles of modern communication theory and signal processing: AM, FM, PAM, PCM, and delta modulation. Noise analysis, filtering, threshold effects, phase-locked loops, and introduction to digital modulation. Prer., ECE 3510. Meets with ECE 5625.

ECE 4630-3. Communications Systems II. Continuation of ECE 4625. Digital modulation and demodulation; equalization and diversity; error correcting code performance in noise; introduction to spread spectrum and space communications; simulation of communication systems. Prer., ECE 3610 & ECE 4625/5625 or equivalent. Meets with ECE 5630.

ECE 4650-3. Modern Digital Signal Processing. Study of linear discrete-time systems, linear difference equations, Z-transforms, discrete Fourier transform, fast Fourier transform, sensitivity, discrete random processes, quantization effects, and design-related concepts. Prer., ECE 3510 and ECE 3610 or equivalent. Meets with ECE 5650.

ECE 4655-3. Real-Time Digital Signal Processing. An introduction into the design, development, and implementation of signal processing algorithms on real-time hardware targets. The emphasis will be on high-level language, but assembly language will also be discussed. Prer., ECE 4650/5650 or ECE 4640. Meets with ECE 5655.

ECE 4660-3. Introduction to Digital Image Processing. Methods for coding,

storing, and processing images by digital computers. Image models, sampling theorem, Fourier representation. Methods for image enhancement, restoration, registration and image understanding. Introduction to pattern recognition, computer vision and robotics with industrial applications. Prer., ECE 3510 and ECE 3610. Meets with ECE 5660.

ECE 4670-1. Communications Laboratory. Laboratory experiments demonstrating material taught in ECE 4625/5625. Use is made of Spectrum analysis to study baseband signals and signal processors. Topics include noise, AM, FM, PM, sampling, TDM, digital modulation, errors, and complete communication systems. Prer., ECE 3230. Coreq., ECE 4625.

ECE 4675-3. Phase-Locked Loops and Frequency Synthesis. A study of phase-locked loops and frequency synthesizers. Both analysis and design aspects are addressed. Linear and nonlinear models are considered. Prer., ECE 3610 and ECE 4625. Meets with ECE 5675.

ECE 4680-1. Signal Processing Laboratory. Analog filter design, design and simulation of digital processors including filters and FFT algorithms. Prer., ECE 3230 and Prer. or Coreq. ECE 4650.

ECE 4890-1. Senior Seminar. Design principles and a variety of realistic constraints such as economic factors, safety, reliability, aesthetics, ethics, and social impact; design project organization and design goals; techniques for making oral presentations and organizing written reports; interviewing and resume writing skills along with the art of making a favorable first impression. Prer., This course must be taken the semester before ECE 4899.

ECE 4899-3. Design Project. A project lab taken during the last semester of the senior year for the design of system components and systems in the areas of communications, computer engineering, controls, digital signal processing, electromagnetics, microelectronic fabrication processes, or CMOS integrated circuits. Students will identify, select, and complete a design project. Design specification, analysis, design, simulation and/or construction of a successful project is required for completion of the course. Prer., ECE 4890 and last semester of degree. Meets with ECE 4892.

ECE 4910-3. Selected Topics. Current topics in ECE. See current course schedule for title of specific topic. Prer., Senior standing. Meets with ECE 5910.

ECE 4990-1 to 3. Selected Topics. Credit and subject matter to be arranged. Consult current course schedule of classes for offering of topics. Prer., Consent of instructor.

ECE 5010-3. Electronic Ceramics. Course covers physical theory of each type of electronic ceramic used in applications such as insulators, resistors, capacitors, fast ion conductors, magnetic ceramic, optical and electro-optical materials, waveguides, lasers, high Tc ceramic superconductors, high dielectric constant materials, and sensors. Course is biased toward thin-films in integrated circuit applications. However, many examples in the current literature of basic materials synthesis techniques, deposition processes and properties will also be an integral part of the course. Prer., ECE 4070/5070.

ECE 5020-3. Semiconductor Devices II. Advanced study of the electrical and transport properties of semiconducting and solid state devices and integrated device structures. Topics include: pn junction device structures, non-ideal effects in small geometry Mosfets, compound semiconducting devices, CCDs, negative conductance microwave devices. Prer., ECE 3050 or equivalent. Meets with ECE 4020.

ECE 5030-3. Advanced Semiconductor Device Modeling. Introduce advanced students and graduate engineers to the methodology of numerical device modeling. The course is designed to take the student from the classical analytical models to finite difference and finite element schemes common in existing device modeling programs. Technologically worthy models (as opposed to simple phenomenological models) have a high degree of sensitivity to the fabrication technology and regions of operating voltages, currents and frequencies. This course sets the foundations for state-of-the-art modeling analysis and simulation employed by most semiconductor companies. Prer., ECE 4020/5020.

ECE 5050-3. Microelectronics IC Fabrication Laboratory. independent experimental project in which students are expected to acquire the theoretical understanding of modern IC fabrication process, perform the IC processing and supporting measurements, and write detailed laboratory reports. Students should take ECE 4050/5050 before ECE 4896. Prer., ECE 4080/5080 and ECE 4020/5020 or consent of instructor. Meets with ECE 4050.

ECE 5060-3. Processing and Device Physics of Advanced MOSFET Microelectronic Structures. Development of basic and up-to-date understanding of the fabrication, processing, and device physics of advanced MOSFET structures used in contemporary microelectronic circuits. Topics covered include MOS theory and characterization, MOSFET process/ device physics, advanced MOSFET process/ device topics, review and study of current literature. Prer., ECE 4020/5020 or consent of instructor.

ECE 5070-3. Electronic Property of Materials. Principles and applications of the electrical, optical, magnetic, and thermal properties of engineering electronic materials. The treatment is designed for students specializing in the areas of microelectronics, solid state, and electromagnetics. Prer., ECE 3050. Meets with ECE 4070.

ECE 5080-3. VLSI Processing. Introductory study of the various processes such as oxidation, diffusion, epitaxy, ion-implantation, photolithography, CVD, plasma processing, etc., used in contemporary fabrication of modern microelectronic technologies; use and understanding of process modeling programs used in fabrication simulation of MOSFET and bipolar microelectronic technologies. Prer., ECE 3050 or consent of instructor. Meets with ECE 4080.

ECE 5090-3. Semiconductor Device Characterization. Characterization of semiconductor devices for application in signal amplification. Topics include models for integrated-circuit active devices, bipolar and MOS integrated-circuit technology, single- transistor and two-transistor amplifiers, transistor current sources and active loads, output stages, operational amplifiers, and frequency response, and integrated circuits. Prer., ECE 4020/5020 or equivalent.

ECE 5100-3. Technology of Gallium Arsenide Devices. Topics pertinent to GaAs processing technology and devices. Topics include materials characterization, GaAs physics, MOCVD, MOSFETS and HEMTS, digital GaAs circuits, and analog applications. Prer., ECE 4020/5020.

ECE 5110-3. Electromagnetic Theory and Applications. An intermediate-level fields course beginning with the classical development of Maxwell's equations and the wave equation. Included are electrostatics, the steady magnetic fields, plane-wave propagation, Poynting's vector, guided waves, transmission lines, wave guides, the interaction of fields and matter, and concluding with an introduction to the subject of radiation. Dirac-delta and Dyadic Green's-function methods of prob-

lem solution are treated. Prer., ECE 3120 or equivalent. Meets with ECE 4110.

ECE 5120-3. Antenna Engineering. A continuation of ECE 5110 at an intermediate level. Includes a polynomial development of linear antenna array patterns and synthesis, radiation from horn and reflector aperture antennas, transform theory of aperture field patterns including optical sources, wave modes in spherical coordinates, the antenna boundary-value problem. Green's functions, ray theory in electromagnetics. Prer., ECE 4110/5110 or equivalent.

ECE 5130-3. Waveguiding Structures. Application of electromagnetic theory starting from basic wave and ray optics principles. Topics include transmission lines, transmission line modes, microwave networks, multiterminal structures, waveguides, resonant cavities and various aspects of dielectric waveguides used in optical fibers. Prer., ECE 4110/5110 or equivalent.

ECE 5150-1. Microwave Measurements Laboratory. Experiments with transmission lines and waveguide systems. Infrared imaging of electromagnetic fields. Measurement of antenna fields. Exposure to equipment and techniques used in microwave measurements. Design of microwave circuits. Prer., ECE 3120 or equivalent. Meets with ECE 4150.

ECE 5160-3. Electromagnetic Effects in IC Design. System electromagnetic considerations in IC system design. Includes RF component behavior, EM material properties, impedance and resonance, transmission lines, differential circuits, ground bounce, crosstalk-radiated emissions, and EM measurements. Prer., ECE 3110 and ECE 3210.

ECE 5170-3. Electromagnetic Compatibility Engineering. Fundamentals of EMC design, analysis and measurement. Sinusoidal, nonsinusoidal and transient responses will be treated. Topics include filters, shielding, FCC rules and regulations, cables and connectors, coupling and interference effects. Approaches for EMC testing will also be covered. Prer., ECE 4110/5110 or equivalent.

ECE 5190-3. Remote Sensing. Covers fundamental technology for various remote sensing techniques. These techniques cover optical, infrared, microwave, and nuclear sensors and imaging systems as appropriate. Background effects and effects of propagation through the atmosphere are included as well as tradeoffs of systems and platform capabilities. Prer., ECE 3120 and PES 213 or equivalent. Meets with MAE 5092.

ECE 5211-3. Rapid Prototyping with FPGAs. Field programmable gate arrays (FPGAs) are an important part of the overall design flow for application specific integrated circuits (ASICS) because they offer the potential of allowing cheap hardware prototypes to be built to meet a narrow window of opportunity. They also offer novel, programmable architectures. This course will focus on the combined use of FPGAs and modern synthesis tools to develop rapid prototypes of ASICs. Architectural and performance tradeoffs and characteristics of both commercial anti-fuse and dynamically programmable FPGAs will be considered. Includes a team project. Prer., ECE 4242/5242. Meets with ECE 4211.

ECE 5220-3. Analog IC Design. A fundamental analog circuit design course that establishes relationships between semiconductor device theory, semiconductor processing technologies, and the electrical and functional performance requirements of modern analog integrated circuits. Includes design project. Prer., ECE 3050, ECE 3220 and ECE 3240. Meets with ECE 4220.

ECE 5230-3. Analog Filter Design. Theory, specification, design and simulation of active and passive analog filters based on modern integrated circuit technology and VLSI Design I design philosophy. Prer., ECE 3220. Meets with ECE 4230.

ECE 5242-3. Advanced Digital Design Methodology. Modern digital design with computer-based design tools: Verilog behavioral models, combinational and sequential logic synthesis. Functional verification, testbench generation, timing analysis, fault simulation and design for testability. Microcontrollers, signal processors, state machines, and datapath control. Prer., ECE 3210. Meets with ECE 4242.

ECE 5250-3. Microwave Circuit Design. An introduction to the design and analysis of microwave circuits both passive and active. Topics include microwave circuit analysis, measurement methods, transmission line structures, material properties, lumped elements, discontinuities, terminations, attenuators, directional couplers, hybrids, power dividers, impedance transformers, filters, mixers, switches, phase shifters and amplifiers. Prer., ECE 3120 or equivalent. Meets with ECE 4250.

ECE 5260-3. Mixed Signal IC Design. Design of data converters, switch capacitor filters, high performance opamps, phase locked loops, oscillators. Prer., ECE 4220/5220 or consent of instructor. Meets with ECE 4260.

ECE 5270-3. CMOS Radio Frequency Integrated Circuit Design. CMOS based high Frequency amplifier design, s-parameters, voltage references, noise, low noise amplifier (LNA), mixers, RF power amplifiers, phase locked loops, oscillators and synthesizers, transmitter and receiver architectures, and RFID systems. Prer., ECE 3110, ECE 3210, ECE 3220. Meets with ECE 4270.

ECE 5320-3. Fault Detection & Design for Testability. Stuck-at fault modeling. Test generation for combinational circuits-Boolean difference, D-algorithm, PODEM, FAN, critical path. Fault dominance and equivalence. Test generation for synchronous sequential circuits. Cost functions used in test generation. Fault simulation. Basics for design for testability. Prer., ECE 3430 or equivalent. Meets with ECE 4320.

ECE 5330-3. Embedded Systems Design. Introduction to embedded systems including real time fault-tolerant significance. Study the hardware and software techniques to designing embedded system, including study of various embedded operating systems, embedded controllers and digital signal processing hardware. Study existing embedded systems. Prer., ECE 3430 and C S 145. Meets with ECE 4330.

ECE 5340-3. VLSI Circuit Design I. Design considerations for MOS integrated circuits with an emphasis on CMOS technology and the relationships between semiconductor device theory, semiconductor processing technologies and the electrical and functional performance requirements of modern digital IC circuits. Physical behavior of CMOS transistors and integrated circuits, CMOS processing technology, CMOS circuit and logic design, design rules and structured design methodology. Prer., ECE 3050 and ECE 3210. Meets with ECE 4340.

ECE 5362-3. Synthesis with Verilog HDL. Logic synthesis with the Verilog hardware description language and commercial EDA tools. Includes an introduction to System Verilog. Project is required. Prer., ECE 4242/5242. Meets with ECE 4362.

ECE 5370-3. Artificial Neural Networks. A research seminar treating fundamental models and contemporary results in the theory, implementation, and application of artificial neural networks. Prer., Graduate standing. Meets with ECE 6370.

ECE 5410-3. Advanced Topics in Testing. Bridging faults and quiescent-current testing. BIST PLAs, RAMs, ROMs. Delay-faults and gate-delay/ path-delay models. Logic-level and system-level fault diagnosis. Prer., ECE 4320/5320. Meets with ECE 6410.

ECE 5450-3. Advanced Computer Architecture. This is a second course in computer architecture. Topics covered will include proposed novel architectures, arithmetic system design, multi-processor and multicomputer interconnection schemes and their performance evaluation, and application-directed architecture. Prer., ECE 4210/5210 and ECE 4480/5480.

ECE 5480-3. Computer Architecture and Design. The design of large digital systems with emphasis on the computer. Architectural alternatives, instruction set design, implementations including microprogramming, and actual examples are discussed. Performance tradeoffs. Prer., ECE 3430, ECE 4200, and ECE 4242. Note ECE 4200 is the lab of ECE 4242. Meets with ECE 4480.

ECE 5520-3. Multivariable Control Systems I. Fundamental aspects of modern control theory are covered, including solutions to systems modeled in state variable format, controllability, observability, pole placement, and linear transformations. Computer-based tools for control system design are used. Prer., ECE 4510, and MATH 313, or equivalent. Meets with ECE 4520.

ECE 5530-3. Multivariable Control Systems II. Design of systems in state variable format are covered including linear quadratic regulators, state estimators, model reference compensators, and H infinity control. Computer tools are used. Prer., ECE 4520/5520.

ECE 5540-3. Digital Control Systems. Theory and application of classical and modern discrete-time control systems. Analysis and design of discrete-time and hybrid control using Z-transforms, root locus, frequency domain, and state variable compensation techniques. On-line implementation by digital computers will be studied. Prer., ECE 4510. Meets with ECE 4540.

ECE 5570-3. Optimal Control Theory. Formulation of optimal control problems, performance index, the variational approach to optimal control problems, Pontryagin's maximum principle, the principle of optimality, the Hamilton-Jacobi equation, computational methods, the steepest descent method, variation of extremals, quasilinearization, and gradient projection. Prer., ECE 4520/5520 or equivalent.

ECE 5610-3. Analysis of Random Signals. Probability and random variables. Practical aspects and methods for analyzing and interpreting random signals. Statistical and parametric descriptions, estimators and errors for measurement data. Prer., ECE 3510 and ECE 3610 or equivalent. Meets with ECE 4610.

ECE 5620-3. Detection and Extraction of Signals from Noise. Detection and extraction methods used in signal processing and includes such subjects as decision theory, detection of known random signals, optimum receiver design and evaluation, estimation theory, estimation of parameters, Wiener filtering, Kalman-Bucy filtering, applications to problems in communication theory. Prer., ECE 4625/5625 and ECE 4610/5610 or equivalent. Meets with ECE 6620.

ECE 5625-3. Communication Systems I. Introduction to principles of modern communication theory and signal processing: AM, FM, PAM, PCM, and delta modulation. Noise analysis, filtering, threshold effects, phase-locked loops, and introduction to digital modulation. Prer., ECE 3510. Meets with ECE 4625.

ECE 5630-3. Communication Systems II. Continuation of ECE 4625/5625. Digital modulation and demodulation; equalization and diversity; error correcting code performance in noise; introduction to spread spectrum and space communications; simulation of communication systems. Prer., ECE 3610 and ECE 4625/5625 or equivalent. Meets with ECE 4630.

ECE 5635-3. Wireless Communication Systems. Types of wireless communication systems; channel models; cellular characteristics; handoff; modulation techniques; first, second, and third generation systems; wireless networks. Prer., ECE 4625/5625.

ECE 5640-3. Spread Spectrum Communications Systems. An in-depth study of spread spectrum systems including implementation and performance. This will include effects of hostile interference on spread spectrum system performance, acquisition and tracking of the spread spectrum signal and an introduction to coding techniques used to mitigate the effect of jamming. Prospective students should have previous course background in signal analysis, probability and digital communications. Prer., ECE 4630/5630 or equivalent. Meets with ECE 6640.

ECE 5650-3. Modern Digital Signal Processing. Study of linear discrete-time systems, linear difference equations, Z-transforms, discrete Fourier transform, fast Fourier transform, sensitivity, discrete random processes, quantization effects, and design-related concepts. Prer., ECE 3510 and ECE 3610 or equivalent. Meets with ECE 4650.

ECE 5655-3. Real-Time Digital Signal Processing. An introduction into the design, development, and implementation of signal processing algorithms on real-time hardware targets. The emphasis will be on high-level language, but assembly language will also be discussed. Prer., ECE 4650/5650 or ECE 4640. Meets with ECE 4655.

ECE 5660-3. Introduction to Digital Image Processing. Methods for coding, storing and processing images by digital computers, image models, sampling theorem, Fourier representation, methods for image enhancement, restoration, registration and image understanding. Introduction to pattern recognition, computer vision and robotics with industrial applications. Prer., ECE 3510 and ECE 3610. Meets with ECE 4660.

ECE 5675-3. Phase-Locked Loops and Frequency Synthesis. A study of phase-locked loops and frequency synthesizers. Both analysis and design aspects are addressed. Linear and nonlinear models are considered. Prer., ECE 3610 and ECE 4625/5625. Meets with ECE 4675.

ECE 5680-3. Computer Communications Networks. Modern communications networks provide a means for messages and data to be exchanged between high speed digital computers. Central to this technology are many design problems dealing with network layout, capacity assignment, user delay, routing, cost and queue management. This course will address the problems in the context of different contemporary communications network designs. Prer., ECE 3610 or equivalent.

ECE 5900-3. Graduate Seminar. Meetings of faculty, students and guests from industry to participate in discussions of recent advances in research or other topics of interest. Seminar schedule will be announced at the beginning of the Fall and Spring semesters. Topics will be presented by faculty, graduate students and invited lecturers from other universities, government agencies and industry. Prer., Consent of instructor.

ECE 5910-3. Selected Topics. Current topics in ECE. See current course

schedule for title of specific topic. Prer., Graduate standing. Meets with ECE 4910.

ECE 5970-1 to 3. Selected Topics. Current topics in ECE. See current course schedule for title of specific topic. Prer., Consent of instructor.

ECE 5990-3. Advanced Topics Seminar. Current topics in microelectronics, materials, devices, and processes. Prer., Consent of instructor. Meets with ECE 6990.

ECE 6020-3. Solid State Electronics II. This course is designed for advanced students looking for a formal treatment of solid state phenomena with special emphasis on semiconductors. Topics include energy band theory, impurities and imperfections in semiconductors, carrier concentration in thermal equilibrium, Boltzmann's transport equation, thermal effects in semiconductors, diffusion of electrons and holes, scattering of electrons and holes, recombination phenomena, strong field effects, high frequency and amorphous semiconductors. Prer., ECE 4020/5020, ECE 4070/5070 and PHYS 690 or equivalent.

ECE 6040-3. Quantum Electronics. Introduction to the theory of lasers, optical resonators and nonlinear optics, with the emphasis on applications to devices. Prer., ECE 3120 and PES 313 or equivalent.

ECE 6111-3. Math Methods for EM Field Theory: Part I. Develop a mathematical model of EM fields, based on Maxwell's Equations. Derive the Helmoltz (Wave) Equations for the auxiliary potentials and the fields. Develop the integral equation solutions for radiation and scattering based on Green's Functions. Applications include electric and magnetic properties of materials, wave propagation and polarization, reflection and transmission. Prer., ECE 4110/5110.

ECE 6112-3. Math Methods for EM Field Theory: Part II. Apply the mathematical methods developed in ECE 6111 to advanced EM problems. Applications include wave propagation and scattering, waveguides, cavities and resonators, striplines and microstrip lines, fiber optics, introductory numerical techniques (Moment Methods & GTD), and Green's Functions. Prer., ECE 6111.

ECE 6120-3. Numerical Methods of Field Theory. Continuation of ECE 6112. Prer., ECE 5110 or equivalent.

ECE 6370-3. Artificial Neural Networks. A research seminar treating fundamental models and contemporary results in the theory, implementation and application of artificial neural networks. Prer., Graduate status. Meets with ECE 5370.

ECE 6410-3. Advanced Topics in Testing. Bridging faults and quiescent-current testing. BIST PLAs, RAMs, ROMs. Delay-faults including gate-delay/ path-delay models. Logic level and system-level fault diagnosis. Prer., ECE 4320/5320. Meets with ECE 5410.

ECE 6550-3. Nonlinear and Adaptive Systems. Analyses of nonlinear control systems including phase plane, singular points, describing functions, and stability via Lyapunov are covered. System identification and design of adaptive systems are included. Prer., ECE 4520/5520.

ECE 6620-3. Detection and Extraction of Signals from Noise. Detection and extraction methods used in signal processing and includes such subjects as decision theory, detection of known random signals, optimum receiver design and evaluation, estimation theory, estimation of parameters, Wiener filtering, Kalman-Bucy filtering, applications to problems in communication theory. Prer., ECE 4625/5625 and ECE 4610/5610 or equivalent. Meets with ECE 5620.

ECE 6630-3. Information Theory and Coding. Information and entropy, Markov chains, combined systems, continuous systems, coding theory, channel capacity, modulation and applications to communications engineering. Prer., ECE 4610/5610 or equivalent.

ECE 6640-3. Spread Spectrum Communications Systems. An in-depth study of spread spectrum systems including implementation and performance. This includes effects of hostile interference on spread spectrum system performance, acquisition and tracking of the spread spectrum signal, and an introduction to coding techniques used to mitigate the effect of jamming. Prospective students should have previous course background in signal analysis, probability and communications. Prer., ECE 4630/5630 or equivalent. Meets with ECE 5640.

ECE 6650-3. Estimation Theory and Adaptive Filtering. Presents the application of digital filtering theory to problems in communications and signal processing. Topics include discrete spectral analysis of random signals, discrete time signal detection, estimation and filtering algorithms including the Kalman filter and effects of discrete noise sources in digital signal processing. Prer., ECE 4610/5610 and ECE 4650/5650 or equivalent.

ECE 6980-3. Ferroelectric Materials and Applications. Phenomenon of ferroelectricity in bulk and thin-film materials with emphasis on applications to integrated circuit devices. Devonshire's treatment and its variation to include surface phenomena are studied in some detail. Switching analysis and device modeling are discussed with emphasis to memory applications. Prer., ECE 6020.

ECE 6990-3. Advanced Topics Seminar. Current topics in microelectronics, materials, devices, and processes. Prer., Consent of instructor. Meets with ECE 5990.

ECE 7000-1 to 6. Masters Thesis.

ECE 8000-1 to 10. Ph D Dissertation.

ECE 9200-1 to 3. Independent Study in ECE - Undergraduate. An opportunity for sophomore students to do independent, creative work in electrical and computer engineering, possibly including industrial co-op (see co-op policy for details). Prer., Prior agreement on study program with faculty advisor.

ECE 9300-1 to 3. Independent Study in ECE - Undergraduate. An opportunity for juniors to do independent, creative work in electrical and computer engineering, possibly including industrial co-op (see co-op policy for details). Prer., Prior agreement on study program with faculty advisor.

ECE 9400-1 to 3. Independent Study in ECE - Undergraduate. An opportunity for seniors to do independent, creative work in electrical and computer engineering, possibly including co-op (see co-op policy for details). Prer., Prior agreement on study program with faculty advisor.

ECE 9500-1 to 3. Independent Study in ECE - Graduate. An opportunity for graduate students to do independent, creative work in electrical and computer engineering. Prer., Prior agreement on study program with faculty advisor.

ECE 9990-0. Candidate for Degree. For students who have completed all course work and thesis hours, but have yet to defend thesis.

ENGINEERING

ENGR 501-3. Engineering and Applied Science Education: Principles of Engineering. Development of theoretical and classroom skills to teach pre-engineering skills to high school students. The course will cover the engineering

skills required for Project Lead The Way's Principles of Engineering. Pedagogical delivery approaches for technical material will also be presented. Laboratory work and a culminating course project are required. This course may not be used towards a graduate degree offered by the College of Engineering and Applied Science.

ENGR 501-3. Engineering and Applied Science Education: Digital Electronics. Development of theoretical and classroom skills to teach pre-engineering skills to high school students. The course will cover the engineering skills required for Project Lead The Way's Digital Electronics. Pedagogical delivery approaches for technical material will also be presented. Laboratory work and a culminating course project are required. This course may not be used towards a graduate degree offered by the College of Engineering and Applied Science.

ENGR 503-3. Engineering and Applied Science Education: Introduction to Engineering Design. Development of theoretical and classroom skills to teach pre-engineering skills to high school students. The course will cover the engineering skills required for Project Lead The Way's Introduction to Engineering Design. Pedagogical delivery approaches for technical material will also be presented. Laboratory work and a culminating course project are required. This course may not be used towards a graduate degree offered by the College of Engineering and Applied Science.

ENGR 505-3. Engineering and Applied Science Education: Special Topics. Offered by guest lecturers to the university or by regular faculty where special topics or special needs arise regarding engineering education. Laboratory work and a culminating course project are required. This course may not be used towards a graduate degree offered by the College of Engineering and Applied Science.

ENGR 1001-3. Introduction to Robotics. An introductory course presenting foundational material in the design of robots. Topics include basic properties of sensors, motors, gears, drive mechanisms, control schemes, and processors to guide and control robots. LEGO kits will be used to implement student designs. Meets with ECE 1001.

ENGR 1411-2. Digital Electronics. Fundamentals of Digital Electronics, Number Systems, Logic Gates, Boolean Algrebra, Combinational Circuit Design, Binary Addition, Flip-flops, Shif Registers and Counters, Logic Families and Specifications, Introduction to microprocessors. Meets with ECE 1411.

ENGR 1501-2. Introduction to Engineering Design. Problem-solving skills using a design development process. Models of product solutions are created, analyzed and communicated using computer-aided design software, including 2D orthographic projections and 3D isometric views, pictorial drawings, technical sketching, dimensioning, sectioning, working drawings, wireframe, and solid modeling. Meets with MAE 1501.

ENGR 1502-3. Principles of Engineering. Introduces the field of engineering. Explores various technology systems and manufacturing processes to demonstrate how engineers use math, science and technology in an engineering problem solving process. The course also includes an examination of social and political implications of technology. Meets with MAE 1502.

MECHANICAL ENGINEERING

MAE 1501-2. Introduction to Engineering Design. Problem-solving skills using a design development process. Models of product solutions are created, analyzed and communicated using computer-aided design software, including 2D orthographic projections and 3D isometric views, pictorial drawings, technical sketching, dimensioning, sectioning, working drawings, wireframe, and solid modeling. Meets with ENGR 1501.

MAE 1502-3. Principles of Engineering. Introduces the field of engineering. Explores various technology systems and manufacturing processes to demonstrate how engineers use math, science and technology in an engineering problem solving process. The course also includes an examination of social and political implications of technology. Meets with ENGR 1502.

MAE 2101-3. Statics. Force vectors, moments of force, equilibrium of a particle and rigid bodies, structural analysis and trusses, internal forces and shear, friction, center of gravity and mass, moments of inertia, and virtual work. Prer., MATH 135 and PES 111.

MAE 2102-3. Dynamics. Dynamics of a particle. Kinetics of a system of particles. Kinematics of rigid bodies in two and three dimensions. Free and forced vibrations with and without viscous damping. Prer., MAE 2101. Coreq., MATH 340.

MAE 2301-3. Thermodynamics. First and second laws of thermodynamics. Properties, states, thermodynamic functions, entropy, and probability. Prer., MATH 135 and PES 111.

MAE 3001-3. Technology and Change. Geared toward non-technical majors - removes mystery from technology. Students increase understanding of technology's impact on society, familiarization with today's systems (e.g., space, cellular phones, internet, etc.), and appreciation of the acceleration of change and possible alternative futures. National technology leaders will share experiences and perspectives. Prer., Should have at least sophomore status.

MAE 3005-3. Engineering Measurement Laboratory. Fundamental technical measurement techniques, measurement processes, analog and digital measurements, system response, sensors, signal conditioning, readout data processing. Measurement standards and treatment of uncertainties. Applied mechanical measurements: counters, displacement, stress and strain, force and torque, temperature, and pressure. Prer., MATH 340, ECE 3210 and ENGL 309.

MAE 3010-2. Mechanical Engineering Laboratory. Laboratory experiments in thermodynamics, fluid mechanics, strength of materials, heat transfer, controls, dynamics, machining, manufacturing, and/or robotics. Requires preparation of laboratory reports and presentation of results. Prer., MAE 3005.

MAE 3110-3. Fundamentals of Flight. Introduction to the engineering science of flight, its history, and fundamental engineering concepts. Basic understanding of aerodynamic lift and drag, equations static force and moment equilibrium spacecraft orbital equations aircraft performance, stability, and control. Introduction to the development of aircraft/ spacecraft design requirements based on missions objectives. Prer., Admission to the College of Engineering and Apllied Science.

MAE 3130-3. Fluid Mechanics. An introduction to fluid mechanics. Continuums, velocity and stress fields. Viscous and inviscid flows, laminar and turbulent flows, compressible and incompressible flows, internal and external flows. Hydraulic systems, buoyancy and stability. Stream functions, Navier-Stokes Equations. Prer., MAE 2301 and ENGL 309.

MAE 3135-3. Aerodynamics. Airfoil and wing aerodynamics, thin airfoils, finite-span wings, compressible and incompressible flow, nozzle theory. Intro to

numerical methods in aerodynamics. Prer., MAE 3110 and MAE 3130.

MAE 3201-3. Strength of Materials. The theory and application of the fundamental principles of mechanics of materials, including stress, strain, mechanical properties of materials, axial load, torsion, bending, transverse shear, combined loadings, stress transformation, strain transformation, design of beams and shafts, deflections of beams and shafts, buckling of columns, and energy methods. Prer., MATH 340 and ENGL 309.

MAE 3302-3. Thermodynamics II. Applications of classical thermodynamics including analysis of gas and vapor cycles for power production and refrigeration, thermodynamic property relationships, psychrometrics and combustion. Prer., MAE 2301.

MAE 3310-3. Heat and Mass Transfer. The principles of heat transfer: conduction, convection, and radiation. Steady-state and transient conduction, thermal contact resistance, insulation, heat capacity. Forced and natural convection, velocity and thermal boundary layers, fluid flow. Radiation from blackbodies, surfaces and the sun. Prer., MATH 313, MATH 340, MAE 2301 and ENGL 309.

MAE 3342-3. Engineering Economy. Economic decision-making, professional ethics, business records, net worth and profit and loss calculation, engineering law and contract agreements. Prer., Junior standing or instructor consent.

MAE 3401-3. Modeling and Simulation of Dynamic Systems. Course presents basic concepts of dynamic behavior, and the analytic and computational techniques for predicting and assessing dynamic behavior. Modeling a basic system, compound system, dynamic stability and natural behavior and response to continuing and abrupt inputs are presented. Prer., MATH 340, MAE 2102 and (MATH 381 or ECE 3610), knowledge of MATLAB.

MAE 3420-3. Automatic Control of Aerospace and Mechanical Systems. Introduction to the automatic control of aerospace and mechanical systems. Aero/Mech systems modeling, aircraft/spacecraft; computational analysis via MATLAB; frequency-domain techniques for analysis and synthesis; root-locus, bode, nyquist. Time-and- frequency-domain relationships. Mech/Aero System simulation. Prer., MAE 3401, MATH 313, and MATH 340.

MAE 3501-3. Machine Design. Applied stress analysis and material strength for sizing and selecting materials of machine elements. Failure and reliability. Selection of fasteners, bearings, gears, springs. Prer., MAE 3201.

MAE 3560-3. Design for Manufacture. Theories and practice for achieving manufacturable designs. Topics include: introduction to manufacturing processes, creativity and design, DFM concepts, design philosophy, company DFM programs, group technology, cost and value analysis, life-cycle engineering, assembly strategies, and human factors. Prer., ENGR 342 and MAE 2501. Meets with MAE 5570.

MAE 4001-1 to 3. Engineering Analysis. Purpose of this course is to assist a student who is deficient in a prerequisite or who is looking for a refresher course in engineering analysis prior to entering the Master of Engineering program. Each module is 1 hour credit. Module I: Differential Equations and Series. Module II: Linear Systems. Module III: Probability and Applications. Prer., Senior or graduate standing.

MAE 4120-3. Kinematics. Kinematic theory of planar mechanisms. Position, velocity and acceleration analysis, coupler curves, centrodes, analysis and synthesis of 4 bar linkage, engine dynamics. Prer., MAE 2102, MAE 3501, and MATH 313.

MAE 4150-3. Vibrations. Free and forced single-degree of freedom systems. Damping: Rayleigh, Coulomb, hysteretic, and viscous. Harmonic motion, frequency-domain representation, harmonic forcing. General forcing, convolution, and response spectra. Computational techniques for solving simple vibration problems. Prer., MATH 340, MAE 2102, C S 115 or equivalent.

MAE 4155-3. Introduction to Composite Materials. Polymer, metal and ceramic matrix composites. Anisotropic and orthotropic elasticity, rotation and layering of laminas, properties of laminate structures. Failure theories: Tsai-Hill and Tsai-Wu. Hygrothermal and piezoelectric strains/stresses in composites. Computation of composite behavior. Prer., MAE 2102, MAE 3201 and MATH 340.

MAE 4210-3. Fracture Mechanics. Fundamental concepts of structure failure. Stress intensity, energy criterion, cracking, and damage tolerance. Linear Elastic Fracture Mechanics: stress concentrations, Griffith energy, energy release rates, K/G and J-integrals, crack trip plasticity. Plane stress/strain, and mixed-mode failure. Prer., MATH 313, MATH 340 and MAE 2102. Meets with MAE 5205.

MAE 4316-3. Rocket Propulsion. Basic theory of rocket propulsion, nozzle performance, propellant characteristics. Primary emphasis on the engine system design process, based on mission requirements. Chemical, as well as nuclear, electric, and advanced propulsion concepts are treated. Prer., MATH 340 and MAE 2301. Meets with MAE 5391.

MAE 4318-3. Air-Breathing Propulsion. Thermodynamics applied to quasi-one-dimensional fluid flows. Ideal cycle analysis of turbojets, turbofans with separate and mixed exhaust streams, and turboprops, with a study of propulsive efficiency. Inlet, compressor, burner, turbine, and nozzle performance. Non-ideal and off-design performance analysis. Elementary blade aerodynamics with throughflow and cascade flow theory. Prer., MATH 340 and MAE 2301.

MAE 4402-3. Intermediate Dynamics. Kinematics, relative motion, and rotation of particles and rigid bodies, including inertia tensors, Euler's angles and equations. Variational principles, work, energy expressions, and Lagrange's equations. Electrical circuits and electromechanical systems. Prer., MAE 2102 or equivalent, MATH 340 and MATH 313.

MAE 4410-3. Fundamentals of Astrodynamics. Development and application of the fundamental principles of astrodynamics to satellite motion. Study of coordinate systems, time keeping, computation of orbits, and introduction to perturbation theory. Prer., MAE 2102, MAE 3110, MATH 313, and MATH 340.

MAE 4415-3. Flight Dynamics. Advanced treatment of the flight dynamics of atmospheric flight vehicles and spacecraft. Rigorous development of non-linear equations of motion, including environmental and propulsive forces. Linearization via small-perturbation methods - limitations. Transient response, stability, natural modes. Intro to simulation techniques. Prer., MAE 3110, MAE 3401, and MAE 4402. Meets with MAE 5415.

MAE 4420-3. Space Communications. Fundamentals of digital data transmissions; noise characterizations and calculations; communications link calculations; error probabilities for basic digital modulation schemes - BPSK, QPSK, OQPSK, MSK, serial MSK; system degradations, carrier and clock recovery; multiple access techniques - FDMA, TDMA, CDMA; packet satellite networks; orbital parameters; comparison of satellite comm systems with fiber optic links. Prer., ECE 3510 or

MAE 3401, MAE 4410, and ECE 3610 or MATH 381. Meets with MAE 5594.

MAE 4425-3. Space Environment. Introduction to properties and effects of the environment in which spacecraft and astronauts must operate. Intensive coverage given to earth-sun-lunar system. Topics include earth's environment, ionosphere, atmosphere chemistry, radiation belts, magnetosphere, aurora, geomagnetic storms, celestial background, and recent bioastronautic effects. Prer., PES 112 or equivalent and MATH 340. Meets with MAE 5091.

MAE 4450-3. Robotics. Dynamics, kinematics, and automatic control of robotic devices. Force and position control, path planning. Prer., MATH 313, MATH 340, MAE 3401, and MAE 3420. Meets with MAE 5450.

MAE 4455-3. Flight Mechanics. A fundamental study of the trajectory dynamics of aerospace vehicles operating in the atmosphere (aircraft and missiles). Rigid-body equations of motion; vehicle-carried coordinate systems; aerodynamic and propulsive forces; maneuvering flight; introduction to trajectory simulation. Prer., MAE 4402/MAE 5493, MATH 313 and MATH 340. Meets with MAE 5455.

MAE 4456-3. Launch, On-Orbit, and Entry Dynamics. This course details the application of orbital dynamics to orbital flight, ascent flight, and atmospheric entry. The course covers trajectory specific factors that must be considered for a complete mission plan, such as time and lighting constraints, placement requirements, coverage requirements. Prer., MAE 4410. Meets with MAE 5495.

MAE 4506-3. Engineering Simulation. Introduction to the essential elements of stochastic simulation including discrete, continuous and hybrid simulations models. A practical hands-on course illustrating concepts and principles through use of a flexible, advanced, higher-order simulation software package (SLAM II). Illustrates cost-saving techniques resulting from simulation studies of manufacturing systems. Prer., MATH 313 and MATH 340. Senior or graduate standing. Meets with MAE 5596.

MAE 4510-1. Engineering Design I. Design principles with the realistic constraints of economy, safety, reliability, aesthetics, ethics and social impact. Project and team organization to meet design goals. Professional oral and written communication of the design through presentations, memos, reports, and e-mail. Prer., Senior standing. Meets with MAE 5510.

MAE 4511-3. Engineering Device Design II. Project laboratory for the senior or graduate student for the design of a mechanical or electromechanical component, with emphasis on the identification, selection, design, and simulation or fabrication of the component. A successful project is required for completion of the course. Prer., MAE 4510 and instructor's consent. Meets with MAE 5511.

MAE 4512-2. Engineering System Design II. A senior or graduate-level design course on a complex system. Examples of potential projects include spacecraft, high-altitude balloon payloads, aircraft, automobiles, trains, and bicycles. A feasible design that considers the economy, safety, reliability, aesthetics, and social impact of the system is the central goal of this course and is a requirement for its completion. Prer., MAE 4510. Meets with MAE 5512.

MAE 4541-3. Cellular Manufacturing. Cellular manufacturing has become an essential part of most world-class strategies. Investigation of analysis design and implementation of high-performance manufacturing cells. Topics include: key cell design issues, simulation in cell design, techniques for economic evaluation, group technology, just-in-time strategies, and team building in cellular manufacturing. Prer., MAE 3560, MAE 4561, and MAE 4506. Meets with MAE 5574.

MAE 4542-3. Contemporary Issues in Manufacturing. Introduction to world class manufacturing including interaction with customers and suppliers, integrated and concurrent manufacturing, and just-in-time production meeting customer requirements, using case analysis, field study, and experiential learning. Prer., MAE 3560, MAE 4561, and MAE 4506. Meets with MAE 5575.

MAE 4550-3. Space Mission Analysis. Survey of various spacecraft bus systems, and tradeoffs needed to satisfy the space-mission requirements. Spacecraft subsystems considered include communications, data handling, power, thermal, structures, sensors, and mechanisms. Prer., MAE 4410/5410, MAE 4425 or MAE 5091.

MAE 4561-3. Analysis and Design of Experiments. Statistical methods to design experiments for the design of effective manufacturing systems. Balanced treatment of traditional and modern techniques in experiment design, with emphasis on real-world applications. Processes of planning, collecting data, and analyzing the data are covered. Prer., Senior or graduate standing and either ECE 3610 or MATH 381. Meets with MAE 5571.

MAE 5090-3. Space Mission Operations. This course describes the relationship between the operations concept and the other elements of a space mission and covers the various functions associated with a space mission. These functions include mission planning, trajectory analysis, navigation, payload operations, spacecraft operations, data processing, communications, training, and management. Students learn how to translate mission objectives and requirements into a viable operations concept. The course covers key cost, technical, and schedule drivers and develops methods for determining key space mission operations design parameters (data flow diagrams, orbit maneuvers, communication links, and spacecraft and payload commanding). Prer., MAE 4410/5410.

MAE 5091-3. Space Environment. Introduction to properties and effects of the environment in which spacecraft and astronauts must operate. Intensive coverage given to earth-sun-lunar system. Topics include earth's environment, ionosphere, atmospheric chemistry, radiation belts, magnetosphere, aurora, geomagnetic storms, celestial background and recent bioastronautic effects. Prer., PES 112 or equivalent and MATH 340. Meets with MAE 4425.

MAE 5092-3. Remote Sensing in Space. Covers fundamental technology for various remote sensing techniques. These techniques cover optical, infrared, microwave and nuclear sensors and imaging systems as appropriate. Background effects and effects of propagation through the atmosphere are included as well as trade-offs of systems and platform capabilities. Prer., ECE 3120 and PES 213 or consent of instructor. Meets with ECE 5190.

MAE 5093-3. Systems Engineering. Focus on the Systems Engineering life-cycle process and the derivation of engineering/technical requirements from customer/operational requirements. Analytical tools which support fielding of effective systems consistent with developed requirements will be covered. Major emphasis will be placed on systems reliability and life-cycle costing. Prer., MATH 381 and MATH 313 or equivalent.

MAE 5095-3. Engineering Simulation. Course will introduce the cost saving technique of simulation. The statistical tools needed to model and simulate events and equipment will be presented. A major course project simulating either a space, information or manufacturing

system will cover the last quarter of the course and replace the final. Prer., MATH 313 and MATH 340; senior or graduate standing.

MAE 5110-3. Solid Mechanics. Fundamental applied elasticity. Theory of stress and strain and stress-strain-temperature relationships. Inelastic materials. Energy methods: stationary PE, Castigliano's theorem. Classical problems in elasticity. Flat plates, stress concentrations, fracture, contact mechanics, and creep. Prer., MATH 447 and MAE 4402/MAE 5493.

MAE 5115-3. Plates and Shells. Static and dynamic analysis of beams, arches, rings, plates, and shell structures. Development of coordinates, strain, stress-strain relationships, forces and moments, boundary conditions, and equations of motion using Hamilton's theorem. Solutions by exact and computational techniques. Prer., MATH 447, MAE 4150/MAE 5190 and MAE 4402/MAE 5493.

MAE 5125-3. Advanced Dynamics. Analytical dynamics: Lagrange's equations, Hamilton's principle and variational calculus, Routh's method, Hamilton's equations. Applications in rigid bodies and continuous, nonautonomous, and nonlinear systems. Stability of nonlinear systems with Liapunov's direct method. Prer., MATH 447 and MAE 4402/MAE 5493.

MAE 5130-3. Advanced Fluid Dynamics. Mechanics of fluids. Governing equations: conversation laws, flow kinematics, and basic theorems. Ideal fluid flow: 2D and 3D potential flows and surface waves. Viscous flows of incompressible fluids: exact solutions, low-Reynolds number approximations, and boundary layer theory. Compressible flow of inviscid fluids: shock waves, 1-D and multi-dimensional flows. Prer., MATH 447 and MAE 3130.

MAE 5150-3. Advanced Vibrations. A second course in vibrations covering the following topics: multiple-degree of freedom systems, undamped and damped, harmonic and forced, numerical solutions, continuous systems, and the finite-element method. Prer., MATH 313 and MATH 340; MAE 4150/5190.

MAE 5155-3. Mechanics of Composite Materials. Polymer, metal, and ceramic matrix composites. Anisotropic and orthotropic elasticity, rotation and layering of laminas, properties of laminate structures. Failure theories: Tsai-Hill and Tsai-Wu. Hygrothermal and piezoelectric strains/stresses in composites. Computation of composite behavior. Prer., MAE 4150 or MAE 5190 and MATH 447.

MAE 5160-3. Finite Element Analysis for Mechanics. An introduction to finite element analysis (FEA) procedures in mechanics, beginning with vectors, matrices and tensors, and continuing with formulation and calculation of FEA for solid mechanics, static and dynamic structural mechanics, heat transfer, electric fields, and incompressible fluid flow analysis. Students will do a significant amount of programming in the language of their choice. Prer., MATH 447, MAE 4150/MAE 5190, and programming competency.

MAE 5165-3. MicroElectroMechanical Systems (MEMS). Integration of electrical and mechanical processes to design micromachines. Properties of materials. Structural design: fundamental mechanics, systems, and vibrations. Transducer and actuator principles. Sensor design integration and applications. Prer., MATH 313, MATH 340, MAE 4402 or MAE 5493, ECE 2220 or equivalent.

MAE 5167-3. MEMS Design and Fabrication Laboratory. Integration of electrical and mechanical design processes to build micro machines. Process design: wet chemical etching, wafer bonding, RIE and CMP. Surface micro machining. Sensor design integration and application. Prer., MAE 5165.

MAE 5205-3. Fracture Mechanics. Fundamental concepts of structural failure. Stress intensity, energy criterion, cracking, and damage tolerance. Linear Elastic Fracture Mechanics: stress concentrations, Griffith energy, energy release rates, K/G and J-integrals, crack tip plasticity. Plane stress/strain, and mixed-mode failure. Graduate credit requires the solution and presentation of a class project. Prer., MATH 313, MATH 340 and MAE 2102. Meets with MAE 4210.

MAE 5210-3. Advanced Fracture Mechanics. Review of linear elastic fracture mechanics. Dynamic fracture mechanics: arrest and branching, energy release rates, contour integrals, and examples. Elastic-plastic fracture mechanics, including Dugdale's model, J-integrals, CTOD, and mixed-mode failure. Introduction to computational technique. Prer., MAE 4210 and MATH 447.

MAE 5402-3. System Dynamics. Kinematics, relative motion, and rotation of particles and rigid bodies, including inertia tensors, Euler's angles and equations. Variational principles, work, energy expressions, and Lagrange's equations. Electrical circuits and electromechanical systems. Prer., MAE 4402.

MAE 5410-3. Astrodynamics. Rigorous development and application of the fundamental principles of astrodynamics to satellite motion. Study of coordinate systems, time keeping, computation of orbits, introduction to perturbation theory, Kepler's and Lambert's problems, linear orbit theory, patched conics method. Prer., MAE 4402, 4410, or consent of instructor.

MAE 5411-3. Space Operations Analysis. An advanced class in astrodynamics and space mission operations. The primary goal is to present numerical methods useful in evaluating spacecraft trajectories. This will include methods of orbit determination, numerical vehicle targeting, and statistical estimation theory. Prer., MAE 4410/5410.

MAE 5412-3. Atmospheric Flight Control. Feedback control of aerospace vehicles operating in the atmosphere (aircraft and missiles). Aircraft and missile stability augmentation and autopilots. Frequency-domain analysis and synthesis, Bode/Nyquist, loop shaping. Prer., MAE 3420 and MAE 4415/MAE 5415.

MAE 5415-3. Flight Dynamics. Advanced treatment of the flight dynamics of atmospheric flight vehicles and spacecraft. Rigorous development of non-linear equations of motion, including environmental and propulsive forces. Linearization via small-perturbation methods - limitations. Transient response, stability, natural modes. Intro to simulation techniques. Prer., MAE 3401, MAE 4402 recommended by the instructor. Meets with MAE 4415.

MAE 5417-3. Analysis of Mechanical and Aerospace Dynamic Systems. Unified approach to dynamic systems analysis; method for development of lumped-parameter analytical models for mechanical and electromechanical systems, vehicles, robots, power systems; energy-based state-space formulations; simulation of linear and non-linear systems; perturbation techniques and neighboring trajectories; controllability concepts; modal analysis. Prer., MAE 3401, MAE 3420, and MATH 413/513.

MAE 5419-3. Trajectory Optimization. Optimization of the non-linear dynamics governing trajectories of aerospace vehicles or robots. Calculus of variations and numerical algorithms. Optimal orbit transfer, launch, re-entry, and interplanetary trajectories; robot path planning. Treatment of equality and inequality constraints (e.g., heating,

loads). Projects in numerical optimization. Prer., MATH 313, MATH 340, MAE 2102, and Graduate level linear algebra and astrodynamics recommended.

MAE 5421-3. Digital Flight Control. A laboratory-based course addressing the feedback control of aerospace vehicles, with special focus on the fact that the control systems will be implemented digitally. Z-domain systems analysis, discrete loop- shaping synthesis techniques; sample-rate selection; quantization effects. Real-time code generation and implementation. Hardware-in-the-loop testing and validation. Aircraft and missile stability augmentation and autopilots, spacecraft attitude control, and control of flexible systems. Prer., MAE 3420 or ECE 4510.

MAE 5424-3. Spacecraft Attitude Dynamics and Determination. Graduate-level treatment of spacecraft attitude dynamics and attitude determination techniques. Vector treatment of 3-D rigid-body rotational spacecraft dynamics, kinematics, Euler angles, quaternions, angular momentum. Attitude matrix, algebraic attitude determination algorithms, intro to dynamic determination techniques. Prer., MAE 4402, ECE 3610, and MATH 313.

MAE 5425-3. Spacecraft Attitude Determination and Control. Graduate-level treatment of attitude feedback-control techniques. Review of attitude dynamics and conventional control analysis and synthesis methods. Loop-shaping design techniques; control-system requirements. Safe-hold algorithms, tracking, regulation control and maneuvering. Prer., MAE 3420, MAE 5424.

MAE 5430-3. Orbit Perturbation Theory. Perturbation Methods including Lagrange and Hamiltonian mechanics, and the generalized method of averaging. Gravitational and atmospheric modeling. Prer., MAE 4410/5410. Meets with MATH 552.

MAE 5440-3. Attitude Control of Aerospace Vehicles. Introduction to attitude-determination algorithms for spacecraft. Attitude feedback-control analysis and synthesis techniques for spacecraft, missiles, and aircraft. Review of attitude dynamics and conventional control analysis and synthesis methods. Loop shaping design techniques; control-system requirements. Prer., MAE 3420 and MAE 4415/5415.

MAE 5450-3. Robotics. Dynamics, kinematics, and automatic control of robotic devices. Force and position control, path planning. Prer., MATH 313, MATH 340, MAE 3401, and MAE 3420. Meets with MAE 4450.

MAE 5455-3. Flight Mechanics. A fundamental study of the trajectory dynamics of aerospace vehicles operating in the atmosphere (aircraft and missiles). Rigid-body equations of motion; vehicle-carried coordinate systems; aerodynamic and propulsive forces; maneuvering flight; introduction to trajectory simulation. Prer., MAE 4402/MAE 5493, MATH 313 and MATH 340. Meets with MAE 4455.

MAE 5456-3. Spacecraft Actuators and Sensors. Modeling of spacecraft actuators, including momentum wheels, reaction wheels, gas jets, and magnetic torque bars. Modeling of spacecraft sensors, including sun sensors, star sensors, earth sensors, magnetometers, gyros, and GPS. Prer., MAE 5402 and MATH 340.

MAE 5460-3. GPS Principles and Applications. Course will focus primarily on GPS (Global Positioning Satellite) navigation system and its limits and applications in navigation on earth and near-space. Effects of atmospheric propagation will be included. Surveys of usage for such navigational systems to the military and civilian sectors will be given. Prer., MAE 4410/5410 and MATH 381 or ECE 3610.

MAE 5495-3. Launch Vehicle Analysis. Theory of rocket performance, nozzle performance, propellant characteristics, staging, throw-weight analysis, launch trajectory analysis, orbit injection. Development of launch-vehicle requirements based on mission requirements. Prer., MAE 2301, MAE 3130. Prer. or Co-req., MAE 5410.

MAE 5510-1. Engineering Design I. Design principles with the realistic constraints of economy, safety, reliability, aesthetics, ethics and social impact. Project and team organization to meet design goals. Professional oral and written communication of the design through presentations, memos, reports, and e-mail. Prer., Senior/Graduate standing. Meets with MAE 4510.

MAE 5511-3. Engineering Device Design II. Project laboratory for the senior or graduate student for the design of a mechanical or electromechanical component, with emphasis on the identification, selection, design, and simulation or fabrication of the component. A successful project is required for completion of the course. Prer., MAE 4510/MAE 5510. Meets with MAE 4511.

MAE 5512-2. Engineering System Design II. A senior or graduate-level design course on a complex system. Examples of potential projects include spacecraft, high-altitude balloon payloads, aircraft, automobiles, trains, and bicycles. A feasible design that considers the economy, safety, reliability, aesthetics, and social impact of the system is the central goal of this course and is a requirement for its completion. Prer., MAE 4510/MAE 5510. Meets with MAE 4512.

MAE 5559-3. Manufacturing Technology and the Factory of the Future. Engineering and technology issues are integrated with management methods and international interaction to examine future developments in manufacturing. Topics include: computer-integrated manufacturing, robotics, flexible automation, expert systems, integration of design and production through databases and telecommunications, the human-machine interface, and manufacturing management information systems. Prer., MAE 4541/MAE 5574 and MAE 4542/ MAE 5575.

MAE 5560-3. Engineering Project Management. Capstone course involving all components of the manufacturing systems engineering curriculum. Focus on mathematical programming, networks, dynamic programming and tools such as PERT/CPM to model projects, systems and timelines. A major portion of the course is a hands-on project. Written and oral reports are required that meet publication standards for completeness, clarity and technical integrity. Prer., Graduate status.

MAE 5570-3. Design for Manufacture. Theories and practice for achieving manufacturable designs. Topics include: introduction to manufacturing processes, creativity and design, DFM concepts, design philosophy, company DFM programs, group technology, cost and value analysis, life-cycle engineering, assembly strategies, and human factors. Prer., ENGR 342 and MAE 2501. Meets with MAE 3560.

MAE 5571-3. Analysis and Design of Experiments. Statistical methods to design experiments for the design of effective manufacturing systems. Balanced treatment of traditional and modern techniques in experiment design, with emphasis on real-world applications. Processes of planning, collecting data, and analyzing the data are covered. Prer., Senior/Graduate standing and either ECE 3610 or MATH 381. Meets with MAE 4561.

MAE 5574-3. Cellular Manufacturing. Cellular manufacturing has become an essential part of most world-class strategies. Investigation of analysis design and implementation of high-performance manufacturing cells. Topics include:

key cell design issues, simulation in cell design, techniques for economic evaluation, group technology, just-in-time strategies, and team building in cellular manufacturing. Prer., MAE 3560/MAE 5570, MAE 4561/MAE 5571 and MAE 4506/MAE 5596. Meets with MAE 4541.

MAE 5575-3. Contemporary Issues in Manufacturing. Introduction to world class manufacturing including interaction with customers and suppliers, integrated and concurrent manufacturing, and just-in-time production meeting customer requirements, using case analysis, field study, and experiential learning. Prer., MAE 3560/MAE 5570, MAE 3561/MAE 5571 and MAE 4506/MAE 5596. Meets with MAE 4542.

MAE 5593-3. Space Sensor Systems. Introduction to airborne and space based sensor systems and data fusion techniques. The sensor design and performance characteristics of microwave and millimeter wave radar systems, infrared (IR) thermal imagers, and electro-optical (EO) devices will be covered. Additionally, multiple sensor systems, data fusion, and tracking will be discussed. Prer., MATH 340, PES 112 and MAE 5092.

MAE 5594-3. Space Communications System Design. Fundamentals of digital data transmission; noise characterizations and calculations; communications link calculations; error probabilities for basic digital modulation schemes - BPSK, QPSK, OQPSK, MSK, serial MSK; system degradations, carrier and clock recovery; multiple access techniques - FDMA, TDMA, CDMA; packet satellite networks; "orbital" parameters; comparison of satellite communication systems with fiber optic links. Prer., ECE 3510, ECE 3610, and MAE 4410/5410 equivalent. Meets with MAE 4420.

MAE 5595-3. Space Mission Analysis. Space environment, spacecraft communication constraints. Orbit selection, launch requirements, communication requirements. Development of spacecraft design requirements, as driven by the mission requirements. Prer., MAE 5410, MAE 5424, MAE 5425, and MAE 5495.

MAE 5596-3. Space Mission Design. A capstone course which includes some review of engineering subsystem technology. Students will be asked to configure and design a spacecraft bus to fulfill missions specified. Prer., MAE 5090, MAE 5594 and MAE 5595.

MAE 6415-3. Robust Multivariable Control. Theory and application for multivariable feedback control systems, limitations of achievable performance and stability robustness in the face of uncertainty in the dynamics of the controlled system. Characterization of uncertainty, and robustness analysis. Multivariable synthesis techniques, applications to control of electromechanical systems and spacecraft. Prer., ECE 5520.

MAE 6430-3. Optimal Estimation Theory. Theory of optimal estimation, with applications to aerospace navigation. Kalman filtering, and complementary filters, continuous and discrete formulations. Observability issues, sensor selection, numerical methods. Prer., ECE 4610 or ECE 5610.

MAE 6432-3. Space Navigation and Guidance. Further development of astrodynamic theory, and extension to interplanetary orbit analysis. Non-Keplerian motion, Three-body problems; patched conics, Lagrange's and Gauss' Equations. Interplanetary orbit transfer, introduction to trajectory optimization. Prer., MAE 5410 or equivalent.

MAE 7000-1 to 12. Master's Thesis. For master's thesis in mechanical and aerospace engineering. Prer., Prior agreement with faculty advisor.

MAE 7500-1 to 12. Master's Research. Research credit for master's program in mechanical and aerospace engineering. Prer., Prior agreement with faculty advisor.

MAE 9110-1 to 3. Special Topics: Undergraduate. An opportunity for students to study special subjects in mechanical and aerospace engineering, undergraduate level. Prer., Prior agreement with faculty advisor.

MAE 9400-1 to 3. Independent Study: Undergraduate. Provides opportunity for independent study in mechanical and aerospace engineering by one or more students on topics determined by a faculty member. Prer., Prior agreement with faculty advisor.

MAE 9500-1 to 6. Independent Study: Graduate. Provides opportunity for independent study in mechanical and aerospace engineering by one or more graduate students on topics determined by a faculty member. Prer., Prior agreement with faculty advisor.

MAE 9510-1 to 3. Special Topics: Graduate. An opportunity for students to study special subjects in mechanical and aerospace engineering, graduate level. Prer., Prior agreement with faculty advisor.

MAE 9520-1 to 3. Graduate Seminar. Allows graduate students credit for attending department seminars and workshops. Prer., Prior agreement with faculty advisor.

MAE 9999-0. Candidate for Degree. Candidate for degree. Prer., Prior agreement with faculty advisor.

MATHEMATICS

MATH 090-1. Fundamentals of Algebra. A review of basic algebra and arithmetic, including algebra of polynomials, factorization of simple polynomials, arithmetic operations on fractions and rational expressions, laws of exponents, linear equations and inequalities in one variable, quadratic equations using factoring. Administered through Department of Mathematics. Pass/fail grading only. Does not count toward BA or BS degree.

MATH 104-3. College Algebra. An in-depth study of algebraic equations and inequalities. Comprehension of the underlying algebraic structure will be stressed as well as appropriate algebraic skills. The study will include polynomials, rational, exponential, and logarithmic functions as well as systems of equations/inequalities. Prer., Score 9 or more on algebra diagnostic exam. *** See Mathematics Department prerequisite policy. ***

MATH 105-4. Elementary Functions of Calculus. An intensive study of the elementary functions required for calculus. These functions will include polynomial, rational, exponential, logarithmic, and trigonometric functions. Emphasis is on their algebraic structure and graphs. Analysis of conic sections and analytic geometry will be included. Prer., MATH 104 or score 17 or more on algebra diagnostic exam. **See Mathematics Department prerequisite policy. ***

MATH 111-3. Topics in Linear Algebra. For business and economics students. Systems of linear equations, matrix algebra, linear programming, probability, statistics. Prer., MATH 104 or score 17 or more on algebra diagnostic exam. **See Mathematics Department prerequisite policy**

MATH 112-3. Calculus for Business and Economics. Calculus for business and economics students. Prer., MATH 104 or score 17 or more on algebra diagnostic exam. **See Mathematics Department prerequisite policy**

MATH 135-4. Calculus I. Selected topics in analytical geometry and calculus. Rates

of change of functions, limits, derivatives of algebraic and transcendental functions, applications of derivatives, and integration. Prer., MATH 105 or score 10 or more on the Calculus Readiness Exam. *** See Mathematics Department prerequisite policy. ***

MATH 136-4. Calculus II. Continuation of MATH 135. Transcendental functions, techniques and applications of integration, Taylor's theorem, improper integrals, infinite series, analytic geometry, polar coordinates. Prer., MATH 135.

MATH 215-3. Discrete Math. Introduction to most of the important topics of discrete mathematics, including set theory, logic, number theory, recursion, combinatorics, and graph theory. Much emphasis will be focused on the ideas and methods of mathematical proofs, including induction and contradiction. Prer., MATH 135.

MATH 235-4. Calculus III. Continuation of MATH 136. Parametric curves, vector functions, partial differentiation, multiple integrals, Green's Theorem and Stoke's Theorem. Prer., MATH 136.

MATH 301-3. Mathematics for Elementary Teachers I. Covers the whole number, integer, and rational number systems that are of prime importance to the elementary teacher. For students planning on elementary teacher certification.

MATH 302-3. Mathematics for Elementary Teachers II. Intuitive and logical development of the fundamental ideas of geometry such as parallelism, congruence, and measurement. Includes study of plane analytical geometry. For students planning on elementary teacher certification.

MATH 310-3. Statistics for the Sciences. Descriptive probability, hypothesis testing, nonparametric methods. Discrete and continuous random variables, mean and variance, confidence limits, correlation and regression. Prer., MATH 135.

MATH 311-3. Theory of Numbers. A careful study, with emphasis on proofs, of the following topics associated with the set of integers: divisibility, congruences, arithmetic functions, sums of squares, quadratic residues and reciprocity, and elementary results on distributions of primes. Prer., MATH 136 and MATH 215.

MATH 313-3. Introduction to Linear Algebra. Systems of linear equations, matrices, vector spaces, linear independence, basis, dimension, determinants, linear transformations and matrices, eigenvalues and eigenvectors. Prer., MATH 135.

MATH 340-3. Introduction to Differential Equations. First order differential equations, linear differential equations, the Laplace transform method, power series solutions, numerical solutions, linear systems. Prer., MATH 235.

MATH 341-3. Estimation, Convergence and Approximation. Sequences, numerical series, and power series. Integrals and the analysis of functions defined by integrals. This course provides a thorough introduction to proofs in analysis, and is strongly recommended for students planning to take Math 431. Prer., MATH 235.

MATH 350-3. Graph Theory. Standard material on the theory of both directed and undirected graphs, including the concepts of isomorphism, connectivity, trees, traversability, planar graphs, coloring problems, relations and matrices. Prer., MATH 215.

MATH 351-3. Topics in Combinatorial Analysis. A survey of important areas of combinatorics. Topics may include enumeration techniques, recurrence relations, combinatorial designs, graph theory, machining and optimization. Prer., MATH 215.

MATH 381-3. Introduction to Probability and Statistics. The axioms of probability and conditional probability will be studied as well as the development, applications and simulation of discrete and continuous probability distributions. Also, expectation, variance, correlation, sum and joint distributions of random variables will be studied. The Law of Large Numbers and the Central Limit Theorem will be developed. Applications to statistics will include regression, confidence intervals, and hypothesis testing. Prer., MATH 235.

MATH 405-1 to 3. Topics in Mathematics Secondary Classroom. The topics covered will vary from one offering to the next. Topics will be chosen to meet the needs of secondary mathematics teachers for additional training to teach to the Colorado Model Content Standards. Prer., One semester of calculus, or instructor approval. Meets with MATH 505.

MATH 410-3. Technology in Mathematics Teaching and Curriculum. Methodology for using technology as a teaching/ learning tool for high school and college math courses. Use of graphing calculators, computer algebra systems, computer geometry systems and the internet will be emphasized. Students are required to develop and present a portfolio of in-depth projects. Prer., MATH 136. Meets with MATH 510.

MATH 413-3. Linear Algebra I. Vector spaces, linear transformations and matrices, determinants, eigenvalues, similarity transformations, orthogonal and unitary transformations, normal matrices and quadratic forms. Prer., MATH 313. Meets with MATH 513.

MATH 414-3. Modern Algebra I. A careful study of the elementary theory of groups, rings, and fields. Mappings such as homomorphisms and isomorphisms are considered. The student will be expected to prove theorems. Prer., MATH 215 and MATH 313. One of MATH 311, MATH 350, or MATH 351 (preferably MATH 311) is strongly recommended.

MATH 415-3. Modern Algebra II. Continuation of MATH 414 through Galois theory. Prer., MATH 414. Meets with MATH 515.

MATH 421-3. Higher Geometry. Axiomatic systems. The foundations of Euclidean and Lobachevskian geometries. Prer., MATH 311 or 313. Meets with MATH 521.

MATH 423-3. Fractal Geometry. Introduction to iterated function systems and mathematical aspects of fractal sets. Includes metric spaces and the space fractals live in, transformations, contraction mapping and Collage Theorem, chaotic dynamics, shadowing theorem, fractal dimension, fractal interpolation, and measures on fractals. Prer., MATH 235 and MATH 313. Meets with MATH 523.

MATH 425-3. Introduction to Chaotic Dynamical Systems. Introduction to dynamical systems or processes in motion, that are defined in discrete time by iteration of simple functions, or in continuous time by differential equations. Emphasis on understanding chaotic behavior that occurs when a simple nonlinear function is iterated. Topics include orbits, graphical analysis, fixed and periodic points, bifurcations, symbolic dynamics, chaos, fractals, and Julia sets. Prer., MATH 235. Meets with MATH 525.

MATH 431-3. Modern Analysis I. Calculus of one variable, the real number system, continuity, differentiation, integration. Prer., MATH 235 and MATH 215, MATH 341 is strongly recommended.

MATH 432-3. Modern Analysis II. Sequence and series, convergence, uniform convergence; Taylor's theorem; calculus of several variables including continuity, differentiation, and integration. Prer., MATH 431. Meets with MATH 532.

MATH 442-3. Optimization. Linear and nonlinear programming, the simplex algorithm and other approaches to linear optimization, minimax theorems, convex functions, introduction to calculus of variations. Prer., MATH 313 and MATH 340. Meets with MATH 542.

MATH 443-3. Ordinary Differential Equations. Linear systems of differential equations, existence and uniqueness theorems, stability, periodic solutions, eigenvalue problems, and analysis of equations important for applications. Prer., MATH 313 and MATH 340. Meets with MATH 543.

MATH 445-3. Complex Variables. Theory of functions of one complex variable including integrals, power series, residues, conformal mapping and special functions. Prer., MATH 235. Meets with MATH 545.

MATH 447-3. Methods of Applied Mathematics. Boundary value problems for the wave, heat, and Laplace equations, separation of variables methods, eigenvalue problems, Fourier series, orthogonal systems. Prer., MATH 235, MATH 313 and MATH 340. Meets with MATH 547.

MATH 448-3. Mathematical Modeling. The use of diverse mathematical techniques to analyze and solve problems from science and engineering, particular problems likely to arise in nonacademic settings such as industry or government. Converting a problem to a mathematical model. Commonly encountered classes of mathematical models, including optimization problems, dynamical systems, probability models and computer simulations. Communication of results of mathematical analysis. Prer., MATH 313, MATH 340, and MATH 310 or MATH 381 or ECE 3610. Meets with MATH 548.

MATH 465-3. Numerical Analysis. Error analysis, root finding, numerical integration and differentiation, numerical methods for ordinary differential equations, numerical linear algebra and eigenvalue problems. Prer., C S 115, MATH 313, and MATH 340. Meets with MATH 565.

MATH 467-3. Scientific Computation. Description and analysis of algorithms used for numerical solutions of partial differential equations of importance in science and engineering. The main emphasis is on theoretical analysis, but some practical computations are included. Prer., MATH 235, MATH 313, MATH 340, and C S 115 or equivalent. Meets with MATH 567.

MATH 482-3. Introduction to Mathematical Statistics. Point and confidence interval estimation, principles of maximum likelihood, sufficiency and completeness; tests of simple and composite hypotheses. Linear models and multiple regression analysis. Other topics will be included. Prer., MATH 381 or MATH 310. Meets with MATH 582.

MATH 483-3. Linear Statistical Models. Methods and results of linear algebra are developed to formulate and study a fundamental and widely applied area of statistics. Topics include generalized inverses, multivariate normal distribution and the general linear model. Applications focus on model building, design models and computing methods. The "Statistical Analysis System" (software) is introduced as a tool for doing computation. Prer., MATH 381 or ECE 3610, or MATH 310 and MATH 313. Meets with MATH 583.

MATH 485-3. Stochastic Modeling. Mathematical development of continuous and discrete time Markov chains, queuing theory, reliability theory, and Brownian motion with applications to engineering and computer science. Prer., MATH 381 or ECE 3610. Meets with MATH 585.

MATH 495-1. Senior Seminar. This is the capstone course for the students in the mathematics program (with MATH 448, Mathematical Modelling). Students will give oral and written presentations on mathematical topics. Prer., MATH 448 or concurrent enrollment.

MATH 505-3. Topics in Mathematics for the Secondary Classroom. The topics covered will vary from one offering to the next. Topics will be chosen to meet the needs of secondary mathematics teachers for additional training to teach to the Colorado Model Content Standards. Prer., One semester of calculus, or instructor approval. Meets with MATH 405.

MATH 510-3. Technology in Mathematics Teaching and Curriculum. Methodology for using technology as a teaching/ learning tool for high school and college math courses. Use of graphing calculators, computer algebra systems, computer geometry systems and the internet will be emphasized. Students are required to develop and present a portfolio of in-depth projects. Prer., MATH 136. Meets with MATH 410.

MATH 511-1 to 3. Technology in Math Education Seminar. A follow-up to MATH 410/510. Students will present demonstrations, projects and/or laboratories they have developed for use in their math courses. Extended in-depth coverage of computer algebra or geometry systems and/or graphing calculators and internet. Basic familiarity with computer algebra or geometry systems and/or graphing calculators is required. Prer., MATH 510 or consent of instructor.

MATH 513-3. Linear Algebra I. Vector spaces, linear transformation and matrices, determinants, eigenvalues, similarity transformations, orthogonal and unitary transformations, normal matrices and quadratic forms. Prer., MATH 313. Meets with MATH 413.

MATH 515-3. Modern Algebra II. Continuation of MATH 414 through Galois theory. Prer., MATH 414. Meets with MATH 415.

MATH 517-3. Graduate Modern Algebra I. Groups, rings, modules, fields, algebraic systems and Galois theory. Prer., MATH 414.

MATH 521-3. Higher Geometry. Axiomatic systems. The foundations of Euclidean and Lobachevskian geometries. Prer., MATH 311 or MATH 313. Meets with MATH 421.

MATH 523-3. Fractal Geometry. Introduction to iterated function systems and mathematical aspects of fractal sets. Includes metric spaces and the space fractals live in, transformations, contraction mapping and collage theorem, chaotic dynamics, shadowing theorem, fractal dimension, fractal interpolation, and measures on fractals. Prer., MATH 235 and MATH 313. Meets with MATH 423.

MATH 525-3. Introduction to Chaotic Dynamical Systems. Introduction to dynamical systems or processes in motion, defined in discrete time by iteration of simple functions, or in continuous time by differential equations. Emphasis on chaotic behavior of an iterated simple nonlinear function. Orbits, graphical analysis, fixed and periodic points, bifurcations, symbolic dynamics, chaos, fractals, and Julia sets. Prer., MATH 235. Meets with MATH 425.

MATH 527-3. Algebraic Coding Theory. The basic ideas of the theory of error-correcting codes are presented. We will study some important examples and give applications. These codes are important for the digital transmission of data. Prer., MATH 414.

MATH 532-3. Modern Analysis II. Sequence and series, convergence, uniform convergence; Taylor's theorem; calculus of several variables including continuity, differentiation, and integration. Prer., MATH 431. Meets with MATH 432.

MATH 533-3. Real Analysis I. Measure theory, metric and normed linear spaces, completions, continuous functions, Riemann-Stieltjes and Lebesgue integration. Prer., MATH 432/532.

MATH 535-3. Applied Functional Analysis. An introduction to the basic concepts, methods and applications of functional analysis. Topics covered will include metric spaces, normed spaces, Hilbert spaces, linear operators, spectral theory, fixed point theorems and approximation theorems. Prer., MATH 431.

MATH 542-3. Optimization. Linear and nonlinear programming, the simplex algorithm and other approaches to linear optimization, minimax theorems, convex functions, introduction to calculus of variations. Meets with MATH 442.

MATH 543-3. Ordinary Differential Equations. Linear systems of differential equations, existence and uniqueness theorems, stability, Lyapunov functions, periodic solutions, applications. Prer., MATH 313 and MATH 340. Meets with MATH 443.

MATH 545-3. Complex Variables. Theory of functions of one complex variable, including integrals, powering series, residues, conformal mapping and special functions. Meets with MATH 445.

MATH 547-3. Methods of Applied Mathematics. Boundary value problems for the wave, heat, and Laplace equations, separation of variables methods, eigenvalue problems, Fourier series, orthogonal systems. Prer., MATH 235, MATH 313 and MATH 340. Meets with MATH 447.

MATH 548-3. Mathematical Modeling. The use of diverse mathematical techniques to analyze and solve problems from science and engineering, particularly problems likely to arise in a nonacademic setting such as industry or government. Converting a problem to a mathematical model. Commonly encountered classes of mathematical models, including optimization problems, dynamical systems, probability models, and computer simulations. Communication of results of mathematical analysis. Prer., MATH 313, 340, and MATH 310 or MATH 381. Meets with MATH 448.

MATH 552-3. Perturbation Theory in Astrodynamics. Perturbation methods including Lagrange and Hamiltonian mechanics and the generalized method of averaging. Gravitational and atmosphere modeling. Prer., MAE 4410/5410 or PHYS 551. Meets with MAE 5430.

MATH 562-3. Complex Variables II. Homotopy, Global Cauchy Theorem, Residue Theory, conformal mapping, infinite products, analytic continuation, special functions, selected topics. Prer., MATH 445/545 and MATH 431.

MATH 565-3. Numerical Analysis. Error analysis, root finding, numerical integration and differentiation, numerical methods for ordinary differential equations, numerical linear algebra and eigenvalue problems. Meets with MATH 465.

MATH 567-3. Scientific Computation. Description and analysis of algorithms used for numerical solutions of partial differential equations of importance in science and engineering. The main emphasis is on theoretical analysis, but some practical computations are included. Prer., MATH 235, MATH 313, MATH 340, and C S 115 or equivalent. Meets with MATH 467.

MATH 582-3. Introduction to Mathematical Statistics. Point and confidence interval estimation, principles of maximum likelihood, sufficiency and completeness; tests of simple and composite hypotheses. Linear models, and multiple regression analysis. Other topics will be included. Prer., MATH 310 or MATH 381. Meets with MATH 482.

MATH 583-3. Linear Statistical Models. Methods and results of linear algebra are developed to formulate and study a fundamental and widely applied area of statistics. Topics include generalized inverses, multivariate normal distribution and the general linear model. Applications focus on model building, design models and computing methods. The "Statistical Analysis System" (software) is introduced as a tool for doing computations. Prer., MATH 381 or ECE 3610, or MATH 310 and MATH 313. Meets with MATH 483.

MATH 584-3. Computer Vision. Representation and manipulation of digital images; Fourier analysis of images; enhancement techniques in spatial and frequency domain; segmentation procedures; digital geometry, region and boundary representation; texture processing; pattern recognition and application to robotics. Prer., Graduate standing in mathematics, engineering or computer science. Meets with C S 584.

MATH 585-3. Stochastic Modeling. Mathematical development of continuous and discrete time Markov chains, queuing theory, reliability theory and Brownian motion with applications to engineering and computer science. Prer., MATH 381 OR ECE 3610. Meets with MATH 485.

MATH 590-1 to 3. Graduate Seminar. Various topics in mathematics at the graduate level. Prer., Consent of instructor.

MATH 591-3. Theory of Probability. Theoretical approach to probability. Measure theory is given form within a large body of probabilistic examples, ideas and applications. Weak and strong laws of large numbers, central limit theory, recurrence, Martingales. Prer., MATH 431.

MATH 700-1 to 6. Masters Thesis.

MATH 800-1 to 10. PhD Dissertation. Enrollment is limited to those students who are in the PhD program in Engineering, and have primary thesis advisor in the Department of Mathematics. Prer., Consent of instructor.

MATH 920-1 to 4. Independent Study Math Undergraduate.

MATH 940-1 to 3. Independent Study Math Undergraduate.

MATH 950-1 to 3. Independent Study Math, Graduate.

MATH 999-0. Candidate for Degree.

GRADUATE SCHOOL OF PUBLIC AFFAIRS

CRIMINAL JUSTICE

C J 5000-3. Law and Social Control. Provides an overview of the theory and application of criminal law in the context of social control. The course reviews various theoretical perspectives on law and society, focusing on the relationship between law and the structure and function of other social institutions. The course also examines aspects of the criminal law in action, assessing how legal definitions and sanctions are differentially interpreted and applied.

C J 5100-3. Administration of Criminal Justice. Analyzes the policies and practices of agencies involved in the criminal justice process from detection of crime and arrest of suspects through prosecution, adjudication, sentencing, and imprisonment to release. The patterns of decisions and practices are reviewed in the context of a systems approach.

C J 5110-3. Criminal Justice Planning and Evaluation. Provides an overview of planning and evaluation processes in the criminal justice system. Designs for monitoring and assessing program effects are reviewed. Key assumptions underlying various criminal justice operations are explored via specialized evaluative research studies. Special attention is

given to the implications of process evaluation in modifying criminal justice policy making and decision making.

C J 5120-3. Nature and Causes of Crime. Analyzes the social origins of criminal behavior and the impact of crime on society. Various categories of deviant, delinquent, and criminal behavior are examined, and attempts to control such behavior are assessed. Connections between social institutions, social problems, and illegal activities, and the response of the public to the threat of crime are examined.

C J 5320-3. Police Administration. This course considers the major issues confronting police executives, such as professionalism, recruitment, selection, training, deployment, innovation, evaluation, and charges of brutality, inefficiency, and corruption.

C J 5321-3. Research Methods in Criminal Justice. Provides an assessment of research strategies in criminal justice through an examination of applied research designs and analytical models. The logic and rationale of these various strategies are contrasted, and their relative merits are critiqued. Selected research problems in the criminal justice system are utilized to illustrate the application and interpretation of alternative strategies.

C J 5361-3. Advanced Seminar in Criminal Justice. Designed to assist students in synthesizing what they have learned in the program by applying their knowledge and skills to a particular problem of interest. Students conduct an independent project, enabling them to explore an issue in depth. This course is taken in the final semester of the student's program. Meets with P AD 5361.

C J 5510-3. Contemporary Issues in Law Enforcement. Examines current thinking and experience with respect to changing and reforming police programs and practices. The course focuses primarily on the American police experience, reviewing major innovations, exploring their rationale, and examining organizational impediments to their implementation.

C J 5520-3. Corrections. Provides a critical examination of the development and implementation of correctional systems in America. The course presents the origins of correctional efforts and the evolution of the prison; reviews punishment and rehabilitation rationales in the context of sentencing models; examines the social organization of the prison, including inmate subcultures and staff work strategies; and assesses the inmates' rights movement and the impact of judicial intervention in correctional settings.

C J 5530-3. Administration of Community-Based Corrections. Analyzes the theories and practices of probation and parole, responses of paroling authorities to public pressures and court controls, and their implications for rehabilitation. Efforts to bridge institutional settings and community life, as well as the feasibility and effectiveness of treating individuals under sentence in the community, are reviewed.

C J 5540-3. Juvenile Justice Administration. Examines the policies and practices of agencies in processing youthful offenders through the juvenile court system, reviews trends in juvenile justice policymaking, and assesses changes in response to juvenile crime by both the juvenile justice and criminal justice systems.

C J 5550-3. Criminal Justice Policy Analysis. Provides a survey of conceptual and design strategies in criminal justice policy analysis. The logic and rationale of these various strategies are contrasted, and their relative merits are critiqued. Selected policy issues in the criminal justice system are utilized to illustrate the application and interpretation of alternative strategies.

C J 5551-3. Judicial Administration. Analyzes the judicial organization, court administration, and criminal court judicial decision- making practices within the context of the broader operation of the criminal justice system. Special attention is paid to the social organization of the courtroom, examining the special roles of judges, prosecutors, and defense attorneys.

C J 5552-3. Criminal Justice Ethics. This seminar offers a normative framework within which to explore ways to increase sensitivity to the demands of ethical behavior among criminal justice personnel. The application of a normative perspective enhances the possibility that moral problems will be better understood, more carefully analyzed and rendered more tractable. Applied ethics forces a reflection not just on ethics, but also on the nature and operation of the criminal justice system itself.

C J 5553-3. Women and Criminal Justice. This seminar explores issues surrounding women as offenders, victims, and criminal justice professionals. Investigates explanations for the involvement of women in illegal activities. Analyzes the plight of battered women, rape victims and other female victims. Examines the participation of women in law enforcement, judicial processes, corrections and lawmaking.

C J 5554-3. Criminal Justice Reform. This seminar provides an overview of reform efforts in the criminal justice system. Selected theoretical approaches and policies are examined and assessed in light of their assumptions and programmatic applications. The rationales and processes underlying selected reform strategies are explored. The implications of the effects of reform in criminal justice policymaking and decision-making are analyzed.

C J 5560-3. Comparative Criminal Justice. Seminar on the different criminal justice systems in the world. Emphasis on the British and continental systems; analysis of other systems such as Scandinavia, U.S.S.R., China, and the African nations.

C J 5571-3. Social Organization of Crime. This seminar explores the relationship of neighborhood social disorganization to the dynamics of crime from a social ecology perspective. The course examines the underlying social causes of phenomena such as criminal victimization, violent and property crime, neighborhood fear, neighborhood deterioration, and recidivism. The course will examine social, structural and ecological characteristics of neighborhoods and communities in affecting crime.

C J 5572-3. Race, Crime and Justice. This seminar examines the role of race in criminal justice processing. The class examines the research findings, interpretations, issues and implications in assessing the impact of race in the administration of criminal justice. Explores the policy implications concerning the nature and extent of racial disparities in the criminal justice system and lays out a research agenda to more strategically address these issues within criminal justice policy making.

C J 5573-3. Organized Crime. This seminar examines the issues involved in understanding those economic activities by which persons involved in "organized crime" make money. Major topics include: the structure of drug trafficking; the operations of illegal gambling activities; the culture and function of loansharking; the economics of labor racketeering; and the role of criminal groups in fencing stolen goods and providing other services to hijackers and burglars.

C J 5574-3. White Collar Crime. This seminar employs both the social science and legal approaches to examine crime committed by corporations as well as by individuals in white collar occupations. The course covers how such crimes are socially defined, who commits them, who is victimized by them, which social contexts promote them, and how society and the criminal justice system respond to them.

C J 5575-3. The Mentally Disordered Offender. This seminar examines the offender who may be mentally disordered. A survey is made of the various phases of the criminal justice system where psychiatrists are involved, e.g., diversion, fitness, insanity, and sentencing. Dangerous sex offender legislation, "not guilty by reason of insanity" and "guilty but mentally ill" statutes, and issues concerning confidentiality, informed consent, and treatment are addressed.

C J 6600-3. Special Topics in Criminal Justice. This highly specialized seminar addresses cutting-edge and emerging developments in the field of criminal justice and provides students and faculty with the opportunity to explore significant themes, issues, and problems from a broad interdisciplinary perspective. Topics vary from semester to semester. Course may be taken for credit more than once provided subject matter is not repeated.

C J 6910-3. Field Study in Criminal Justice. For students who have not had practitioner experience, a full or part-time internship is required. Consent of the instructor. Prer., 12-15 hours of criminal justice coursework.

C J 9500-1 to 3. Independent Study in Criminal Justice. Affords the student the opportunity to pursue creative research activities under the individual supervision of a full-time faculty member. No more than six hours of credit for independent study may be applied toward the MCJ degree. Prer., Twelve hours of criminal justice course work.

C J 9990-0. Candidate for Degree.

PUBLIC ADMINISTRATION

P AD 5001-3. Governance and Institutions. It is a time of rapid change, resource limitations, and questioning of the roles of public service organizations and professionals in American society. In such a time, it is essential for practitioners and citizens to understand the history, nature, and scope of public service. This course explores the creation of American public and nonprofit institutions, the ways organizations are structured and managed, and the role of the public service practitioner in the challenging contemporary setting.

P AD 5002-3. Organizational Management and Change. Under the pressures to increase productivity with ever diminishing resources and the constant watch of the public eye, public administrators face constant dilemmas over issues of leading and motivating subordinates, of making decisions in what are often highly political environments, of communicating effectively, and of managing the constant flow of change. This course examines these issues.

P AD 5003-3. Information and Analytic Methods. Administrators in public, nonprofit, and criminal justice settings make use of research and data to make important decisions regarding the management of their organization. This course enables students to be informed consumers of that information and to initiate and take part in research projects in their organization as appropriate. The course covers the sequence of a research project: identification of questions/ hypotheses, review of existing research, selection of designs and sampling strategies, and data collection. Data collection includes surveys, interviews, and existing data. Students are introduced to basic statistical methods, and user-friendly software is used to analyze data sets and answer questions of interest.

P AD 5004-3. Economics and Public Finance. Uses economics to explore public and private sector roles, and the allocation of resources in the public sector. Introduces the concepts of public goods, market failure, and externalities. The effects of taxation and subsidies on consumer and firm behavior are analyzed. Also covers cost benefit analysis and national, state, and local budgeting methods.

P AD 5005-3. The Policy Process and Democracy. This course offers a theoretical approach to understanding the public policy process in the context of a democratic system. Presents theoretical models of the policy process, and issues in public affairs will be discussed.

P AD 5006-3. Ethics and Leadership. Placed as they are in the public fishbowl and surrounded by a renewed interest in right and wrong, public administrators are constantly faced with ethical questions and dilemmas. This course looks both at age old ethical problems as well as issues facing administrators in the public setting today. It builds on the ethical framework of the founding fathers to consider issues relevant to the practice of public administration today.

P AD 5007-3. Qualitative Research Methods. This seminar focuses on qualitative research methods that incorporate field work techniques such as observation, interviews and content analysis. The main objective is to discover practicalities and limitations of ethnographic methods with a comparative methodology perspective. Students are required to conduct a research project. Prer., P AD 5003.

P AD 5110-3. Seminar in Nonprofit Management. This course provides students with an overview of the principles and concepts that are unique to nonprofit management. Topics include funding diversity, human resource management, program planning and evaluation, marketing, volunteer management, and ethics. Students are also given an introduction to the history and the importance of the nonprofit sector.

P AD 5120-3. Social Change and Public Policy. The objective of this course is to examine the political dynamics of social movements and key techniques utilized in the struggle for social, political, and economic change. Students will have the opportunity to examine factors that shape social movements, such as leadership, institutions and strategies and familiarize themselves with the relationship of social movements to organizational actors, particularly nonprofit organizations. Possible topics for discussion include the Women's Movement, the Domestic Violence Movement, the Civil Rights Movement, the Disabilities Movement, and the Environmental Justice Movement.

P AD 5130-3. Collaboration Across Sectors. The blurring of the three economic sectors continues to increase as more organizations partner with each other and/or contract out for the delivery of services. This course focuses on collaboration and partnerships involving public, nonprofit, and for-profit organizations as they strive to achieve public goals. Particular variables in administration and regulatory policies for each sector and how they affect procurement, contracting, grants administration, and expectations of accountability, efficiency, and effectiveness will be examined.

P AD 5140-3. Nonprofit Financial Management. Financial management is one of the core competencies of effective nonprofit managers. Every nonprofit

organization needs money to sustain or advance its mission. This course provides a grounding in financial management for the "non-accountant" by focusing on an array of knowledge and management skill areas necessary for allocating and controlling resources, and for analyzing, reporting and protecting the fiscal health of the organization. Topics include key accounting principles, understanding and using financial statements, the budget development process, cash flow analysis, banking relationships, using the audit report, maximizing investment policy and strategy, and understanding the boundaries of tax exemption.

P AD 5150-3. Understanding and Achieving Funding Diversity. This class is designed to provide a comprehensive overview of the range of funding sources available to nonprofit organizations (e.g. foundation and governmental grants, individual and corporate donations, entrepreneurial sources of revenue, events, etc.), as well as detailed information on how to secure support of the various sources presented. Additionally, students are expected to gain both theoretical and practical knowledge relevant to fundraising and why it is important to diversify an organization's revenue streams.

P AD 5160-3. Nonprofit Boards and Executive Leadership. The important roles and responsibilities of a voluntary board of directors and the process of governing are often misunderstood. This course explores the special powers of a nonprofit board of directors as framed by and responsive to public policy. From the perspective of organizational behavior and theory, the course examines the leadership role and interplay between board members and the executive director. The examination includes a comparative analysis of different governing models and explores fundamental questions of board composition, the role of advisory boards, achieving effective board meetings, the realm of liability, using committees, and the board's role in fundraising, among other special subject matter.

P AD 5170-3. Strategic Management for Nonprofit and Public Managers. This survey course is designed to train public and nonprofit managers in the effective use of strategic management tools and techniques traditionally used by corporations. Strategic management tools and skills, although traditionally used by business, should not be seen as the exclusive domain of corporations. The course teaches students how to adapt traditional strategic management capabilities to the particular conditions of public and nonprofit organizations.

P AD 5180-3. Social Entrepreneurship. The utilization of for-profit and entrepreneurial skills within the nonprofit sector has become increasingly important as organizations strive toward greater efficiency, effectiveness, and accountability. This course is designed to show how business and entrepreneurial skills can be crafted into innovative responses to social problems. Students will be exposed to entrepreneurial behaviors such as opportunity recognition, innovation, resource mobilization, and risk-reward-tradeoff in the course of building viable social enterprises.

P AD 5220-3. Human Resources Management. The technical knowledge and interpersonal skills involved in managing public and nonprofit sector personnel have become extremely complex and challenging. This course probes the underlying values and techniques associated with employee recruitment, selection, motivation, training, affirmative action, compensation, benefits, performance appraisal, and related topics.

P AD 5260-3. Managing in a Multicultural Society. Using a systems approach, diversity within organizations is examined through the construction and review of theories in private, public and nonprofit organizations. Existing modes of managing diversity are examined and analyzed.

P AD 5262-3. Leadership Workshop. This skill building workshop focuses on issues of effective leadership in the organizational setting and enables participants to examine their own leadership style(s) and how those styles influence others. Models of effective leadership are examined and applied to the specific work settings of those participating, with distinctions between leadership and management being developed.

P AD 5270-3. Management Development. With a focus on the balance between one's personal and professional life, this course seeks to identify and apply principles out of which public managers can increase their effectiveness. Considering such issues as stress management, creative problem solving, time management, cooperative work strategies, effective listening, decision-making, and mechanisms for increasing power, this course has a strong focus on enabling students to personally apply the concepts considered.

P AD 5271-3. Managing Conflict and Change. Explores the process of change in organizations, communities and society and the conflicts that arise within those organizations. Through the use of relevant case studies and role playing exercises, students are provided a practical framework for looking at change and managing conflict associated with change.

P AD 5320-3. Public Policy Analysis. Provides training in the systematic analysis of policy and program initiatives. The course also covers benefit cost analysis, cost-effectiveness analysis and present values. Prer., ECON 101 or P AD 5004.

P AD 5350-3. Program Evaluation. Program evaluation is an important part of improving the performance of public and nonprofit organizations. This course introduces models and theories of program evaluation including decision-making models, utilization-focused evaluation, theory-based approaches, participatory and empowerment evaluation, and others. Students will also gain skills in program evaluation and will plan an evaluation for an organization or agency. Emphasis is placed on exercises and simulations to build skills for conducting evaluations.

P AD 5361-3. Advanced Seminar in Public Policy and Management. Designed to assist students in synthesizing what they have learned in the program, applying their knowledge and skills to a particular problem of interest. Students conduct an independent project, enabling them to explore an issue in depth. This course is taken in the final semester of the student's program. Meets with C J 5361.

P AD 5370-3. Media and Public Policy. Explores the conventions and practices of the print and electronic media in the United States. Students will better understand the place of the media in society, the way the media look at themselves, and how journalists confront conflicting values in the performance of their roles.

P AD 5380-3. Citizen Participation: Theory and Practice. Tackles the issues of citizen participation and community involvement in theory and practice. Students will work in class on understanding the theoretical foundations that are relevant to citizen participation. Students will also engage in significant out-of-class projects to ground them in the practice of public involvement.

P AD 5410-3. Administrative Law. This course examines the legal aspects

of policy implementation, particularly the relationship between courts and administrative agencies. Students will cover standards of judicial review and agency action; administrative procedure and due process; selected special topics such as rights, liabilities, and immunities of public employees; and administrative discretion and scientific uncertainty.

P AD 5440-3. Negotiation and Conflict Resolution. Focuses on the concepts and skills necessary to negotiate policy and management decisions and manage internal conflicts. It is designed to help students understand the dynamics that affect negotiations and to apply the principles and strategies of negotiations in a variety of decision-making and dispute resolution contexts.

P AD 5502-3. Public Financial Management and Policy. The use of financial resources is at the heart of governing; policy decisions are meaningful only when resources are provided to implement them. This course examines American public sector finance in relation to other nations; the national government and fiscal well-being; types of budgeting systems and their uses; creation of the national budget; structure of the local government budget; and selected topics such as debt and cash management, accounting for resource use, and forecasting financial condition.

P AD 5540-3. Organization Development. A study of the dynamics involved in managing and facilitating change in organizations by application of behavioral science knowledge. Emphasis is placed on both cognitive and experiential learning. A background in organization theory and administrative behavior is recommended.

P AD 5615-3. Health Policy. Health is one of the more important policy issues facing America today. This course examines the nature of health policy and how it is impacted by politics, with a focus on the federal government's major programs for purchasing health care, Medicare and Medicaid, and their evolution over time. The course also reviews the impact of sociocultural context and federalism on program structure, the effects of managed care on the health care system and the state's role in providing health care. Attention is also given to health care issues in Colorado.

P AD 5625-3. Local Government Management. Relates the systems, processes, and principles of public management to the local government environment. Public management concepts such as strategic planning, bureaucracy, formal and informal organizational structures, human resource planning, management control, systems theory, and administrative behavior are explored within the context of local government.

P AD 5626-3. Local Government Politics and Policy. The perspective of politics and public policy making is essential to understanding local governance. This course focuses on local government political structures, policy analysis and formulation, political forces in administrative decision making, and relationships between professional administrations and elected officials.

P AD 5710-3. Public Sector Technology. Introduces participants to innovative and cutting- edge technology in the public sector. Emphasizes current information technology concepts, issues and practices, systems, self-service kiosks, groupware, simulations, imaging systems, data warehousing, and the Internet/World Wide Web.

P AD 6115-3. Grant Writing. Designed to provide students with the knowledge and skills to perform one of the most critical functions for any public or nonprofit sector agency today: gaining funds through proposals. Students learn how to find a funding source among various public and private sources and how to plan and write a proposal.

P AD 6910-3. Field Study in Public Administration. For students who have not had substantial professional experience in public or nonprofit organizations. Prer., Completion of the core courses and relevant electives.

P AD 9500-1 to 3. Independent Study. Independent study in Public Administration. Prer., Consent of Instructor.

COLLEGE OF LETTERS, ARTS AND SCIENCES

AMERICAN SIGN LANGUAGE

ASL 101-4. American Sign Language I. Basics of American Sign Language with applied usage of signs and finger spelling. Introduction to oral methodology.

ASL 102-4. American Sign Language II. American Sign Language with continued applied usage of finger spelling. Additional oral methodology. Prer., ASL 101 or equivalent.

ASL 211-3. American Sign Language Intermediate I. American Sign Language at the intermediate level with additional study of the culture on the hearing impaired. Prer., ASL 102 or equivalent.

ASL 359-3. Deaf Culture. Examines the culture of deaf people. The course will explore the customs, values, norms and heritage of the deaf community in America. Prer., ASL 101 and ASL 102. Meets with F CS 359.

ANTHROPOLOGY

ANTH 103-3. Introduction to Human Origins. Evolution of humanity and its cultures from their beginnings through the early metal ages. Covers human evolution, race, prehistory, and the rise of early civilization.

ANTH 104-3. Introduction to Cultural Anthropology. Introduction to the major aspects of culture, such as social organization, law, religion, and language. Juniors and seniors should begin their study of cultural anthropology with ANTH 240.

ANTH 132-3. Evolution/Creationism Conflict. Course will determine the realms in which conflict exists between evolution and creationism (as explanations for the origin and development of life on earth). Scientific evidence supporting the explanations will be stressed. Special emphasis will be placed on evidence for/against human evolution.

ANTH 220-4. Survey of Prehistory. The basic concepts and techniques of archaeology and a survey of the major developments in world prehistory.

ANTH 230-4. Survey of Biological Anthropology. Basic concepts in the study of human evolution, human physical variation, and social behavior of nonhuman primates.

ANTH 240-3. Survey of Cultural Anthropology. Basic concepts in the study of cultures. Prer., ANTH 104 or sophomore status.

ANTH 241-3. Cultural Diversity in the United States. Examines prejudice and discrimination in the United States from a variety of anthropological perspectives. It addresses such topics as racism, sexism, homophobia and religious intolerance.

ANTH 280-3. The Nature of Language. Introduction to the anthropological study of language. Prer., ANTH 104 or sophomore standing.

ANTH 300-3. Quantitative Methods in Anthropology. A survey of quantitative

methods emphasizing the nature of hypothesis testing. Attention is given to special problems of bioanthropological, archaeological, and ethnographic data. Prer., 9 Completed hours in anthropology or consent of instructor.

ANTH 303-3. Introduction to Human Sociobiology. Introduction to basic principles of sociobiology: natural selection, kin selection, sexual selection, evolutionary psychology, reciprocal altruism. Prer., ANTH 103 or ANTH 104 or instructor permission.

ANTH 304-3. Women Around The World. Provides a global, cross-cultural perspective on women, using an anthropological framework to examine women's status, issues, and general cultural experience in the context of gender systems of different types of societies. Prer., ANTH 104, ANTH 240 or WMST 200, or permission of instructor. Meets with WMST 304.

ANTH 307-3. Darwinism. A critical examination of Charles Darwin's Origin of Species and The Descent of Man and their contemporary critics, considered in historical perspective. Prer., Sophomore standing.

ANTH 309-3. God, Darwin, and Morality. Explores the moral implications of Darwin's Theory of Evolution by natural selection. Offered only through Extended Studies.

ANTH 320-5. Field Techniques in Archaeology. While working on a local prehistoric site, students will learn basic archaeological field techniques such as stratigraphy, mapping, excavating, recording, and artifact storage. Students will play an active role in planning the field project and, if necessary, in adjusting techniques to the problems presented by the site. Prer., ANTH 220.

ANTH 321-3. Lab Techniques in Archaeology. Provides hands-on experience cataloging and analyzing m aterials from archaeological sites. Topics will include analysis, computer applications, materials conservation, and artifact illustration, and also the methodological decision-making that affects how we describe, analyze, and interpret data. Prer., ANTH 220 or consent of instructor.

ANTH 322-3. Prehistory of North America. The prehistory of North America, emphasizing the peopling of the new world, earliest American cultures, and later regional developments. Prer., Either ANTH 103, ANTH 104, ANTH 220 or consent of instructor.

ANTH 323-3. High Civilizations of the Americas. Prehistoric, protohistoric, and historic cultural analysis of the Aztecs, the Mayans, and the Incas. Includes discussion of their archaeological developments, cultural attainments, and influence on other peoples. Prer., ANTH 103 or consent of instructor.

ANTH 324-3. Paleolithic Archaeology. The cultural evidence for human development from the earliest stone tool assemblages of the Plio- Pleistocene to the Mesolithic and Archaic cultures of the old and new worlds. Prer., ANTH 220 or consent of instructor.

ANTH 325-3. The Prehistory and History of Native American Cultures of the Southwest. The prehistory and ethnography of the Indian cultures of the Southwest.

ANTH 326-3. Agricultural Origins and the Emergence of Urban Society. The evidence for the origins of agricultural economies and the emergence of complex social and political institutions in both the old and new worlds. Prer., ANTH 220 or ANTH 103 and consent of instructor.

ANTH 327-3. Historical Archaeology. History and practice of the sub-discipline of historical archaeology. Covers archaeological method and theory, some of which is unique to this subfield. Students will explore diverse perspectives brought to historical archaeology by its practitioners, and critically examine individual case studies. This is an area requirement (Soc Sci) course and fulfills the cultural diversity requirement. Prer., ANTH 220 or consent of instructor.

ANTH 328-3. Archaeological Approaches to Gender and Sexuality. Course covers archaeological approaches to studying gender and sexuality in past societies. Students will discuss the theoretical and methodological implications of these archaeological approaches and analyze various case studies, spanning periods from the Paleolithic to the recent past. Prer., ANTH 220 or permission of instructor.

ANTH 332-3. Primatology. Behavior, ecology, and evolution of nonhuman primates. Emphasis on field studies, and on evolutionary explanations of social groups, mating systems, and behavior toward kin. Prer., ANTH 103 or ANTH 230 or consent of instructor.

ANTH 334-3. Human Evolution. A detailed examination of the fossil evidence for human evolution, emphasizing functional analysis of human structure and the process of natural selection. Prer., ANTH 230 or 103 or consent of instructor.

ANTH 337-3. Human Biology and Ecology. The study of variation and adaptations of human populations in an ecological framework. Includes interactions between cultural and biological factors in health and in reproduction, and anthropological aspects of demography. Prer., ANTH 103 or ANTH 230 or consent of instructor.

ANTH 340-3. Evolutionary Explanations of Altruism. Evolutionary explanations of altruism and human kindness are examined. These include group selection, kin selection, and reciprocal altruism. Prer., ANTH 303 or instructor permission.

ANTH 341-3. Ecological Anthropology. Examines the relationship between culture and the natural environment in varied settings around the world. It focuses on the role of cultural anthropology in averting ecological disasters and creating methods of sustainable natural resource management. Prer. ANTH 104 or ANTH 240.

ANTH 342-3. North American Indians. A survey of the native cultures of America north of Mexico. Examines major institutions by culture area and type of social organization. Prer., ANTH 240 or 104 or consent of instructor. Meets with EST 342.

ANTH 345-3. Social Organization. Analysis of social organization among native peoples with an emphasis on kinship forms and functions. Prer., ANTH 104 or ANTH 240.

ANTH 347-3. Human Sexuality in Evolutionary Perspective. Recent advances in evolutionary theory are applied to human sexual behavior in a wide variety of cultures. Topics include mate selection, sexual jealousy, and parental investment theory. Prer., ANTH 303 or instructor permission. Meets with WMST 347.

ANTH 348-3. Culture and Personality. Surveys the field of psychological anthropology and examines cross-cultural studies of personality development, mental health issues, and forms of ethnotherapy or native healing methods. The course covers methods in the study of behavior and personality in a cross-cultural perspective. Prer., ANTH 104 or PSY 100 or instructor consent.

ANTH 349-3. Culture Theory. Analysis of significant theories of culture. Prer., ANTH 104 or ANTH 240 or consent of instructor.

ANTH 351-3. The Ethnology of Death. A cross-cultural consideration of a universal

human experience. Prer., ANTH 104 or ANTH 240.

ANTH 381-3. Language, Culture, and Society. An examination of the social and cultural functions of language, emphasizing the use of linguistic methods and theories in anthropology and sociology. Prer., Sophomore standing.

ANTH 397-3. History of Anthropology. History of the growth of anthropology from the earliest times, various schools of thought, outstanding contributors and their work, to the mid-20th century. Prer., ANTH 104 or ANTH 240 or consent of instructor.

ANTH 409-3. Classics of Anthropological Literature. Analysis of classical literature in the history of anthropology. Prer., ANTH 240, ANTH 349, or ANTH 407 or consent of instructor.

ANTH 420-1 to 3. Advanced Topics in Archaeology. Intensive study of selected topics in archaeology and prehistory. Prer., ANTH 320.

ANTH 430-3. Advanced Topics in Physical Anthropology. Intensive study of selected issues in human evolution, human biology, and primate behavior and ecology. In different years deals with different topic areas. Prer., ANTH 104 or ANTH 240 or ANTH 280.

ANTH 440-3. Advanced Topics in Cultural Anthropology: Indigenous Peoples and Cultures of the Southwest. Intensive study of selected topics in cultural anthropology. In different years deals with different topic areas. Prer., Consent of instructor. Meets with EST 440.

ANTH 471-1 to 6. Internship in Antropology. A program of study and learning outside the classroom. Practical exposure to field of interest is intended to provide appropriate experience related to a student's career orientation. Students must have departmental permission. Anthropology majors only. Prerequisites vary depending on area of specialization.

ANTH 480-3. Advanced Topics in Anthropological Linguistics. Intensive study of selected topics in anthropological linguistics. In different years deals with different topic areas. Prer., Consent of instructor.

ANTH 498-3. Senior Seminar in Anthropology. A one semester special topics course designed to provide a synthesizing cap to the student's undergraduate program in anthropology. Topics vary by semester. Prer., Senior status.

ANTH 499-3. Senior Thesis. A one semester research project. The student will write a formal research paper drawing in primary sources and pertinent secondary material. The student will work under the direction of a full time member of the department and will have a second member as an additional reader.

ANTH 700-1 to 6. Masters Thesis.

ANTH 940-1 to 3. Independent Study in Anthropology. Hours and credits to be arranged. Consent of instructor is required.

ANTH 950-1 to 4. Independent Study in Anthropology. Prer., Consent of instructor.

ART HISTORY

A H 100-3. Languages of Art. An introduction to art making, art history, and the contemporary art world. Course reading, writing assignments, and field trips equip students with the tools they need to think critically, write effectively, and build confidence in discussing art outside the classroom. Course is a prerequisite for all lower and upper division art history or studio art courses.

A H 250-3. Art Matters: Reading, Writing and Research in Art History. An introduction to the practices of critical reading, thesis driven writing, and scholarly research methods in art history. The course is required for art history majors in their sophomore year.

A H 280-3. Survey: Ancient Art. A survey of sculpture, painting, and architecture from the Paleolithic through the Roman periods. The Arts of Mesopotamia, of Egypt, Anatolia, Greece, and Rome will be given primary consideration.

A H 281-3. Survey: Medieval Art. A survey of the arts of early Cristian, Byzantine, early Medieval, Romanesque, and Gothic periods.

A H 282-3. Survey: Renaissance, Baroque, and Rococo Art. A survey of the paintings, sculpture, and architecture of Proto-Renaissance Italy through the European Rococo periods, roughly 1300 through 1750.

A H 285-3. Survey: American Art. This course addresses the material culture of what now is the continental United States. Material culture in this context emphasizes painting, sculpture and architecture, but comprises as well the decorative arts.

A H 286-3. Survey: Modern Art I. An introduction to major movements in art and architecture of the Western world from the late 19th and 20th centuries, beginning with Post-Impressionism and ending with Abstract Expressionism.

A H 287-3. Survey: Modern Art II. An introduction to major movements in art and architecture of the western world from the mid twentieth century to the present, beginning with pop art and ending with a survey of contemporary trends.

A H 289-3. Survey: Nineteenth Century Art. A survey of Western art from the late eighteenth century to the mid-nineteenth century, beginning with the rejection of the rococo and ending with the realist style.

A H 300-3. Topics in Art History. Emphasizes study of a more specific area than that covered in regular art history course offerings. For further information see individual course listing for each semester.

A H 301-3. History of Photography. The history of photography from its infancy to the present. The development of the photograph as art will be traced from the early 19th-century pioneers through the contemporary masters.

A H 324-3. The Art of Greece and Rome. A consideration of the culture of ancient Greece and Rome as expressed by architecture, painting, and sculpture from around 800 B.C. to 400 A.D.

A H 325-3. Women, Visual Arts, and Culture I. A survey of the lives and contributions of women artists, from Ren. to c. 1900. The primary objectives are to introduce issues of gender in the production of visual culture and familiarize the student with the critical literature of art history. Prer., A H 100 or permission of instructor. Meets with WMST 324.

A H 326-3. Women, Art, and Culture II. Introduction to feminist theory and women's artistic production from 1970 to the present. Focuses on how women's art attempts to resist normative ideals of femininity, subvert aesthetic hierarchies, and illuminates the intersections of race, gender, and sexual orientation. Prer., A H 200 or permission of instructor. Meets with WMST 326.

A H 328-3. Introduction to Feminist Film, Video and Digital Media. A survey of major themes in feminist independent film, video and web-based projects produced since the mid-1970s. Meets with WMST 328.

A H 333-3. Film, Video and the Avant-Garde. An examination of the relationship

between avant-garde film and video, and the history of modern and contemporary art. The course will include the film and video works of artists such as Man Ray, Maya Deren, Andy Warhol, and Issac Julien.

A H 343-3. African-American Art. Introduction to contemporary (1970-) African-American art forms with inclusion of traditional African art's influence on American Black culture. Meets with EST 343.

A H 379-3. Romanesque and Gothic Art. A consideration of Romanesque and Gothic culture as manifest in the sculpture, painting, and architecture of Europe from around 1030-1350.

A H 384-3. Baroque Art. The 17th century throughout Europe with primary attention to Caravaggio, Rubens, Bernini, Poussin, Velasquez, and Rembrandt.

A H 385-3. Topics in American Art. Selected topics in the art of America from colonial period to the present, including folk art, craft, modern art, post-modern architecture, monuments, popular art and culture, etc. Prer., A H 100 or A H 200 level survey.

A H 386-3. Contemporary Art. An in-depth, thematic study of art of the late 1980s to the present that emphasizes the analysis of the art of our time in relation to a variety of critical texts. Prer., A H 100 or 200-level A H survey.

A H 400-3. Seminar: The Practice of Art History. Seminar experience in art history methodology. Required of all graduating majors. Open to students with 15 hours of upper-division coursework in art history.

A H 403-1 to 3. Internship in Art History. Supervised opportunities for advanced art history students to apply their knowledge and obtain experience in a variety of professional arenas. Pass/Fail only. Prer., Permission of advisor.

A H 434-3. Arts of Indigenous Cultures. An in-depth investigation of the art forms and related social customs of cultures native to the Americas, Australia, and Africa.

A H 456-3. Perspectives on Art. An examination of selected literature in art history, criticism, and aesthetics not usually covered in standard course offerings.

A H 481-3. Art of the Italian Renaissance I. A study of major trends in the development of painting, sculpture, and architecture as they reflect the culture of Renaissance Italy from around 1300-1500. Prer., A H 282 or equivalent.

A H 482-3. Art of the Italian Renaissance II. The late Renaissance and mannerism. The art of 16th-century Italy; special emphasis upon Michelangelo, Titian and Venice, both Florentine and Roman Mannerists, with some attention to Caravaggio. Prer., A H 282 or equivalent.

A H 483-3. Northern Renaissance Art. History of painting in northern Europe from the late 14th through the 16th century with primary emphasis on the art of the low countries. Prer., A H 282 or equivalent.

A H 489-3. Nineteenth Century Art I. History of the neoclassic and Romantic movements in European art with special reference to the Painting of David, Goya, Ingres, Gericault, and Delacroix, as well as consideration of architecture and sculpture from 1780 to 1850.

A H 490-3. Nineteenth Century Art II. A study of the developments of Realism, Impressionism, Post-Impressionism, and Symbolism in France and England from 1850 to 1905.

A H 491-3. Modern Art: 1900-1945. An in-depth, thematic study of the history of the avante-garde between 1890 and 1945 that emphasizes the analysis of art of this period in relation to a variety of critical texts.

A H 492-3. Art since 1945. An in-depth, thematic study of Modernism and Post- Modernism in the visual arts that emphasizes the analysis of art and architecture of this period in relation to a variety of critical texts. Prer., A H 200 level survey.

A H 493-3. Contemporary Art Theory II. Considers theoretical writings about art and culture by major figures in the field of critical theory with an emphasis on making connections between critical theory and the practice of contemporary artists. Prer., A H 287 or A H 386 or by permission of the instructor.

A H 940-1 to 4. Independent Study in Art History. Independent Study in Art History on the undergraduate level with any full-time professor by arrangement.

BIBLIOGRAPHY

BIBL 101-3. Introduction to Library Research. Introduction to the use of library services and research materials. Emphasis on the individual research needs. Designed for the undergraduate student in any discipline.

BIOLOGY

BIOL 100-3. Biology in the Modern World. Designed for the nonmajor. The introductory principles of biology stressing the relationships between man and the environment. Concepts include heredity, evolution, genetics, nutrition, physiology, and ecology. Satisfies the LAS natural science requirement. To be taken with 106-1 to satisfy the LAS laboratory requirement. May not count as credit for the major. Fall, Spring.

BIOL 105-3. Personal Nutrition. Designed for the nonmajor. A course presenting basic information about factors influencing human nutritional requirements and food sources to meet them. Emphasis is on application of biological principles in the students' own diets and lives. The course will include how to evaluate one's own nutritional needs and the adequacy of personal diet. Satisfies the LAS natural science requirement. Spring. Meets with HSCI 106.

BIOL 106-1. Introductory Biology Laboratory. May be taken in conjunction with BIOL 100 to satisfy the LAS science requirement and lab requirement.

BIOL 110-3. General Biology I: Introduction to Cell Biology. Designed to integrate the more important facts and principles throughout living systems from molecular to organismic levels of organization. Broad areas of coverage include molecular and cellular biology. Prer., High school chemistry or concurrent registration in CHEM 101 or CHEM 103.

BIOL 111-1. General Biology I Laboratory: Introduction to Cell Biology Laboratory. To be taken in conjunction with BIOL 110. A series of experiments designed primarily to illustrate basic concepts of cellular biology and provide hands- on laboratory experience. Fall.

BIOL 113-4. Plant Biology. Structural and functional characteristics of plants. Stresses adaptations that plants have made in transition from aquatic to terrestrial environments. Lab is integral part of course and allows students to examine these organisms and relationships. Prer., BIOL 110 and BIOL 111.

BIOL 114-3. Introduction to Health and Exercise Science. Designed for the nonmajor. Introduction to energy systems in exercise, cardiorespiratory functions, nutrition, body composition, environmental considerations and training during exercise and work.

BIOL 115-3. General Biology II: Organismic Biology. A continuation of

BIOL 110 emphasizing diversity in living systems. The theme of structure and function is emphasized with consideration given to the principles of embryology, ecology, behavior, genetics and evolution. Also emphasizing the structure, function and diversity of the plant world, including cyanobacteria, fungi, and lower and higher plants. Spring. Prer. BIOL 110 and BIOL 111 or equivalent.

BIOL 116-1. General Biology II Laboratory. To be taken in conjunction with BIOL 115. Labs illustrate the basic concepts of plant and animal organisms. Spring.

BIOL 151-3. Environmental Science. Introduction to atomic molecular structure and to biological structure and function. Environmental contaminants in air and their reactions, water quality and its analysis, wastewater treatment, the ecology of natural systems and genetic adaptation. Counts towards fulfillment of the LAS natural science area requirement. Meets with CHEM 151.

BIOL 153-1. Environmental Science Laboratory. With BIOL 151, satisfies the LAS science requirement and lab requirement. Fall, Spring. Meets with CHEM 153.

BIOL 201-4. Human Anatomy and Physiology. Part 1. Lect. and lab. A comprehensive study of the structure and function of the human body. Covers basic anatomical terminology, cells, tissues, and the following systems: integumentary, skeletal, muscle, and nervous. Fall.

BIOL 202-4. Human Anatomy and Physiology. Part 2. Lect. and lab. A comprehensive study of the sense organs, endocrine, cardiovascular, lymphatic, immune, respiratory, digestive, urinary and reproductive systems. Spring. Prer., BIOL 201.

BIOL 203-4. Microbiology. Lect. and lab. Presentation of the basic aspects of microbiology within a broad biological perspective. Subject matter will include microbiological concepts and methodology; a survey of the distinguishing properties of microorganisms based on structural-functional relationships: introduction to growth, metabolism, genetics, and ecology. Fall. Prer., BIOL 110, BIOL 111, BIOL 115 and BIOL 116, CHEM 103 and CHEM 106 or BIOL 201, BIOL 202, CHEM 101 and CHEM 102.

BIOL 204-3. Biomedical Aspects of Aging. A comprehensive study of the normal and pathological aspects of the aging process in human beings. The course treats cellular through organ system function, examining causes and changes related to aging. Immunity, nutrition and biopsychological factors are studied. The course also examines the concept of wellness as it applies to aging. Meets with GRNT 204 and HSCI 280.

BIOL 205-3. Nutrition for Health Sciences. An introductory level course for students preparing for health science careers. Emphasis will be on the variety of biological and environmental factors which influence nutritional needs and nutritional status. The role of nutrients in energy metabolism and physiology will also be covered. The course will also focus on the educational role of the health service provider. Each student will do a detailed analysis of his own diet. Fall. Prer., BIOL 110 and BIOL 111 or CHEM 101 and CHEM 102.

BIOL 206-3. Biology for Computer Scientists. Introductory treatment of molecular and cellular biology. Topics include: cell structure, gene regulation, genetics, genetic engineering, cellular communication, molecular evolution. Some topics relevant to computer science will be addressed. Prer., MATH 104.

BIOL 215-4. Field Botany. Topics include plant life cycles, systematics, life zones, and the use of field guides for identifying cyanobacteria, protists, bryophytes, seedless vascular plants, gymnosperms, and angiosperms in the Colorado foothills, montane, subalpine and alpine life zones. Prer., BIOL 115.

BIOL 300-3. Research Methods in Biology. An introduction to the principles, concepts, and processes involved in scientific research. Emphasis is on critical thinking approaches to evaluating scientific works, statistical methods for analyzing biological data, and research project design and reporting. Prer., MATH 135.

BIOL 302-3. Cell Biology. Life processes with emphasis on relationships of structure and function at organelle and molecular level. Physical and chemical properties of protoplasm, enzyme action; cellular respiration, cell growth, and division. Fall. Spring. Prer., BIOL 110, BIOL 111, BIOL 115, BIOL 116, CHEM 103, CHEM 106 or BIOL 201, BIOL 202, CHEM 101, and CHEM 102.

BIOL 310-3. Microbiology: Bacteriology/ Mycology. Bacteriology/Mycology is an upper division, advanced study of the metabolism, physiology, and genetics of bacteria, yeast and fungus. Prer., BIOL 110 and CHEM 103. Co-req., BIOL 311.

BIOL 311-1. Bacteriology/Mycology Lab. Laboratory course to accompany BIOL 310. Prer., BIOL 310 concurrently or preceding.

BIOL 313-3. Plants of Colorado. An introduction to the identification of plants and the study of vegetation of Colorado. Emphasis will be on the vascular flora. Lecture, lab and field trips. Summer.

BIOL 314-3. Microbiology: Virology. Virology is an upper division course covering the topic of biology of viruses. Prer., BIOL 110 and CHEM 103.

BIOL 315-1. Virology Lab. Research oriented - microbiology lab course. Prer., BIOL 310 and BIOL 314.

BIOL 321-3. Human Physiology. Focuses on the study of homeostatic control and how the nervous, endocrine, muscular, circulatory, respiratory, excretory, digestive and reproductive systems function in the human body. Spring. Prer., BIOL 110, BIOL 111, BIOL 115 and BIOL 116.

BIOL 322-3. Animal Physiology. An examination of how invertebrates and vertebrates have met the problems of survival through physiological adaptations.

BIOL 330-3. Exercise Physiology. A comprehensive, introductory course describing the effect of exercise on normal, physiological function. The course will describe the long-term benefits of exercise training, training adaptations and control mechanisms for these adaptations. Fall.

BIOL 333-2. Alternative Therapies in Nutrition. A review of the use and implications of alternative nutritional therapies. Provides a basis of understanding nutritional and herbal therapies. Winterim. Prer., BIOL 110 and BIOL 115.

BIOL 345-4. Anatomy and Exercise Science: Fundamentals and Applications to Golf. Course integrates musculoskeletal anatomy and scientific principles of relevant sport science disciplines (biomechanics, physiology, nutrition, psychology and technology), in a lecture/lab setting, to provide PGM and Exercise Science students a comprehensive understanding of exercise science applications to golf. Meets with BIOL 545.

BIOL 360-4. Histology. A comprehensive study of basic tissue type stressing the structural and functional interrelations of these tissues within organs. Treatment of cellular ultrastructure and development

as it relates to tissues. Emphasis on vertebrates, including human beings. Spring (even years). Prer., BIOL 110, BIOL 111, BIOL 115, and BIOL 116. Open to junior, senior, or graduate students.

BIOL 361-4. Vertebrate Embryology/ Developmental Anatomy. Lect. and lab. Embryonic development stressing vertebrate animals from fertilized egg through organ systems, with introduction to experimental analysis.

BIOL 370-3. General Ecology. A survey of environmental relationships of plants and animals. Topics include speciation, abiotic, and biotic limiting factors, population, community and ecosystem dynamics, and terrestrial and aquatic biomes. Spring (even years).

BIOL 383-3. Genetics. Classical and molecular genetic principles. Topics discussed include gene structure, function, and regulation; replication and recombination; DNA technology; and evolutionary and population genetics. Spring. Prer., BIOL 302.

BIOL 384-2. Genetics Laboratory. Laboratory course designed to illustrate concepts of Genetics as described in lecture (BIOL383). Spring. Prer., BIOL 383 genetics or concurrent enrollment. Meets with BIOL 544.

BIOL 391-3. Immunology. A basic study of immunity which treats the biochemical, physiological, and genetic aspects of the immune response, particularly in humans. Fall.

BIOL 400-1 to 3. Current Topics in Biology. Specialized topics and current issues are considered. Subject matter will change depending upon individual instructors. The topic in any given semester will be specified in the semester class schedule. May be repeated for credit more than one semester. Spring. Meets with BIOL 500.

BIOL 401-1. Seminar in Biology. Review and discussion of pertinent research subjects. Students will present seminars. Fall. Prer., Senior or graduate standing.

BIOL 403-3. Health and Fitness. A review of exercise prescription and health evaluation techniques including a special section on nutrition. Prer., BIOL 201 and BIOL 202.

BIOL 404-3. Computer Skills for Biologists. The goal of this course is to train biologists to use and understand some of the methods currently employed by computational (molecular) biologists. Additionally, students will be taught how to solve biological problems with the PERL programming language. Prer., BIOL 110 and BIOL 115. Meets with BIOL 504.

BIOL 405-3. Technology Transfer and Biotechnology. The purpose of this course is to inform students about the process of Technology Transfer, from academic discovery and invention, to commercialization of a product. Prer., permission of instructor. Meets with BIOL 505.

BIOL 423-3. Injury Prevention and Treatment. A survey of typical sports-related injuries, their causes, treatment, rehabilitation and prevention. Prer., BIOL 201 and BIOL 202, or consent of instructor.

BIOL 425-3. Evolution. A comprehensive analysis of the evolutionary history of microbes, plants, and animals including studying the driving forces in the development of molecular pathways, organismic morphology and function. Spring (odd years).

BIOL 426-4. Biogeography. An analysis of plant and animal distributions on a world scale from ecological and historical perspectives. Human impact on vegetation and animals is emphasized. Prer., GES 100 or consent of instructor. Meets with BIOL 526, GES 426 and GES 526.

BIOL 428-4. Mammalogy. Lecture, lab, and field studies. Origin, evolution and adaptation, geographic distribution, ecology, and taxonomy of mammals. Fall. Prer., BIOL 110, BIOL 111, BIOL 115, and BIOL 116. Meets with BIOL 528.

BIOL 429-4. Plant Communities of Colorado. An examination of plant assemblages in Colorado. Major plant communities will be examined in the context of environmental factors such as climate and landforms. Required field trip. Prer., GES 426 or consent of instructor. Meets with GES 429 and GES 529.

BIOL 430-3. Advanced Nutrition. A comprehensive study of the energy providing nutrients and how they are metabolized within the human body. This course will provide students with a firm basis of the biochemistry of proteins, fats and carbohydrates. Fall. Prer., BIOL 302.

BIOL 431-3. Advanced Immunology. An advanced course in immunology to follow a junior- senior level introductory immunology course. Prer., BIOL 391.

BIOL 440-4. Plant Physiology. Lect. and lab. A comprehensive study of plant physiology, emphasizing molecular and cellular aspects of physiology. Laboratory topics will include photosynthesis, water relations, growth regulators, tissue culture and cell transformation.

BIOL 443-4. Animal Ecology. Problems concerned with the distribution of animals and their relations to each other and to their environment are considered. Local ecosystems are visited and sampled with special attention to sampling the animal communities. Summer. Prer., BIOL 110, BIOL 111, BIOL 115, and BIOL 116. Meets with BIOL 543.

BIOL 444-3. Winter Ecology. An organismic/environmental course exploring the options available to organisms for surviving winter. Includes evolutionary, behavioral and physiological adaptations involved in migration, hibernation and overwintering in temperate environments. Lecture and field trips. Interim.

BIOL 455-3. Biomechanics/Kinesiology. An introduction to the mechanics of human movement. Includes the application of kinematics, kinetics, hydrodynamics, kinesiology and analytical techniques to human movement. Periodic trips to the International Center for Aquatic Research for analytical methods. Spring. Prer., BIOL 201 and BIOL 202.

BIOL 460-3. Biomechanics of Musculoskeletal Injury. A comprehensive survey of the biomechanics of musculoskeletal injury. The course explores the various bases of musculoskeletal injury to understand causal mechanisms, effects of injury on tissues, and how biomedical sciences contribute to injury management and prevention. Prer., BIOL 201(Anatomy) or equivalent. Meets with BIOL 560.

BIOL 471-1 to 12. Externship in Biology. A program of study and learning outside the classroom. Practical exposure to field of interest is intended to provide appropriate experience to a student's career orientation. A variety of opportunities exists, and students may explore their own avenues as well. Some externships are in open competition. Students must have departmental permission and completed permission form to register. It is strongly suggested that students interested in this program plan their participation one semester before they plan to enroll. (Note: Externship is to be performed off campus at an institution performing biologically-oriented work, e.g., medical clinics and research laboratories.) Fall, Spring.

BIOL 472-1 to 12. Externship in Biology. Exercise Science. Fall, Spring.

BIOL 473-1 to 12. Externship in Biology. Biochemistry. Fall, Spring.

BIOL 474-1 to 12. Externship in Biology. Biotechnology. Fall, Spring.

BIOL 477-3. Human Metabolism. An advanced course in exercise physiology/ biochemistry. Topics will involve extensive review of the scientific literature. These topics involve a review of current trends in sport science and are designed to give the student a practical application and interpretation of the sports sciences. Spring. Prer., BIOL 330.

BIOL 478-2. DNA Technology for Teachers. Introduction to elements of DNA technology and genetic engineering. Practical applications to biotechnology. Discussion of safety and ethical issues. Prer., One year of CHEM or BIOL.

BIOL 479-3. Basic Laboratory Methods in Sports Physiology. A course designed to teach students how to test and evaluate acute and chronic responses and adaptations to exercise. The course is intended to make students proficient in laboratory techniques for assessing human performance primarily from a metabolic standpoint. Fall. Prer., Consent of instructor.

BIOL 480-3. Analytical Methods in Sports Physiology. A laboratory course designed to teach students techniques used in exercise biochemistry, exercise testing and evaluation of human performance. This course is an extension of Basic Laboratory Methods in Sports Physiology with emphasis in exercise biochemistry. Spring. Prer., Consent of instructor.

BIOL 481-3. General Biochemistry. Topics include structure, conformation ande, structure and functions of properties of proteins; enzymes; mechanisms and kinetics; intermediary metabolism; carbohydrates, lipids; and amino acids; energetics and metabolic control; and photosynthesis. Fall. Prer., BIOL 302 and CHEM 332. Meets with BIOL 581, CHEM 481, and CHEM 581.

BIOL 482-4. General Biochemistry. Continuation of BIOL 481/581. Topics include control of metabolic flex through transcriptional and post transcriptional mechanisms, macromolecules; nucleic acids, metabolism of nitrogen-containing compounds; biosynthesis and function of macromolecules including DNA, RNA, and proteins; biochemistry of subcellular systems and special topics. Spring. Prer., Organic Chemistry.

BIOL 483-3. Biochemistry Principles. A comprehensive one semester introduction to cells, proteins, catalysis; metabolism of carbohydrates, lipids and nitrogen compounds; and storage and utilization of genetic information. Prer., BIOL 110, BIOL 111 and CHEM 332. Meets with CHEM 483.

BIOL 484-3. Molecular Biology. Detailed examination of replication, recombination, transposition, and translation in prokaryotes and eukaryotes at the molecular level. Fall. Prer., BIOL 383. Meets with BIOL 584, CHEM 484, and CHEM 584.

BIOL 485-3. Molecular Biology Laboratory. A laboratory course emphasizing techniques in Molecular Biology, including DNA cloning, and analysis of gene expression. Fall. Prer., BIOL 484/584. Meets with BIOL 585.

BIOL 486-3. Biochemistry and Molecular Biology Laboratory. Designed to provide laboratory skills and techniques. Experiments are selected to demonstrate principles and application of current techniques and the use of instrumentation. Spectrophotometry, enzymology, centrifugation and electrophoresis are stressed. Prer., One semester of biochemistry or cell biology and one semester of organic chemistry. Meets with BIOL 586, CHEM 486 and CHEM 586.

BIOL 488-2. Principles of Flow Cytometry. A comprehensive introduction to the instrumentation, techniques and biological applications of flow cytometry, high speed single cell analysis, and cell sorting. Topics to be studied include light sources, fluidics, fluorescent dyes, data collection and analysis, and applications in biological research and clinical medicine. Prer., Upper division biology major.

BIOL 490-3. Pathobiology. Designed primarily for the biology major and pre-health profession students. The course will cover mechanisms of human disease from cellular through organ and systemic pathologies. Major and pertinent health problems will be discussed. Lab demonstrations are primarily from autopsy materials. Spring (odd years). Prer., BIOL 110, BIOL 111, BIOL 115 and BIOL 116. Open to junior, senior or graduate students. Meets with BIOL 590.

BIOL 491-4. Biotechnology I. Lect. and lab. in Biotechnology; part I of a two semester sequence emphasizing practical techniques in several areas. Instrumentation principles, applied immunology, tissue culture, handling radioisotopes, recombinant DNA, cloning and characterization of genes. Special topics required for graduate credit. Fall. Prer., CHEM 331 and CHEM 332; BIOL 383 and BIOL 481; PES 101 and PES 102, and senior standing or consent of instructor.

BIOL 492-4. Biotechnology II. Lect. and lab. Continuation of Biotechnology I. Recombinant DNA techniques, methods in microbial genetics. Engineering gene expression. Biomass conversion with engineered microbes. Computer applications, tumor growth modeling. Radioimmune assay of receptors in mammalian cells. Field trips to regional biotechnology companies. Spring. Prer., BIOL 491 and BIOL 591.

BIOL 493-3. Research Practicum in Genetics. Laboratory course for advanced biology students and graduate students interested in molecular biology, microbial genetics, and biotechnology. Course includes experimental design, laboratory projects, and interpretation and presentation of data from individual projects. Prer., BIOL 484.

BIOL 494-3. Research Practicum in Biochemistry. Laboratory course for advanced biology students and graduate students interested in biochemistry. Course includes experimental design, laboratory projects, and interpretation and presentation of data from individual projects. Meets 9 hours per week. Prer., BIOL 481, BIOL 482, BIOL 486, and consent of instructor.

BIOL 495-3. Research Practicum in Exercise Physiology. Laboratory course for advanced biology students and graduate students interested in exercise physiology and nutrition. Course includes experimental design, laboratory projects, and interpretation and presentation of data from individual projects. Meets 9 hours per week. Prer., BIOL 330, BIOL 481, and consent of instructor.

BIOL 496-3. Tumor Biology. A limited enrollment course that emphasizes the basic science of tumor growth and the clinical approach to cancer treatment. Fall, Spring. Prer., Senior or graduate status and consent of instructor.

BIOL 497-3. Research Practicum in Immunology. Laboratory course for advanced biology students and graduate students interested in Immunology. Course includes experimental design, laboratory projects, and interpretation and presentation of data from individual projects. Meeting 9 hours per week. Consent of instructor required. Limited enrollment. Prer., BIOL 110, BIOL 111, BIOL 115 and BIOL 116.

BIOL 500-1 to 3. Current Topics in Biology. Specialized topics of current issues are considered, thus subject matter will change depending upon individual instructors and time of offering. The topic in any given semester will be specified in the semester schedule. May be repeated for credit. Meets with BIOL 400.

BIOL 501-1. Seminar in Biology. Review and discussion of pertinent research subjects. Students will present seminars. Fall. Prer., Senior or graduate standing.

BIOL 503-3. Health and Fitness. A review of exercise prescription and health evaluation techniques including a special section on nutrition. Prer., BIOL 201 and BIOL 202.

BIOL 504-3. Computer Skills for Biologists. The goal of this course is to train biologists to use and understand some of the methods currently employed by computational (molecular) biologists. Additionally, students will be taught how to solve biological problems with the PERL programming language. Prer., BIOL 110 and BIOL 115. Meets with BIOL 404.

BIOL 505-3. Technology Transfer and Biotechnology. The purpose of this course is to inform students about the process of Technology Transfer, from academic discovery and invention, to commercialization of a product. Prer., Bachelor's degree. Meets with BIOL 405.

BIOL 523-3. Injury Prevention and Treatment. A survey of typical sports related injuries, their causes, treatment, rehabilitation and prevention. Prer: BIOL 201 and BIOL 202 or consent of instructor.

BIOL 526-4. Biogeography. An examination of the distribution of the life on the Earth's surface. The relationship between environmental factors and plant and animal distributions will be the central theme. Changes in distributions through time will also be examined. Required field trip. Prer., GES 100 or consent of instructor. Meets with BIOL 426, GES 426 and GES 526.

BIOL 528-4. Mammalogy. Lecture, lab, and field studies. Origin, evolution and adaptation, geographic distribution, ecology, and taxonomy of mammals. Prer., BIOL 110, BIOL 111, BIOL 115, and BIOL 116. Meets with BIOL 428.

BIOL 530-3. Advanced Exercise Physiology. Lect. Advanced treatment of physiological mechanisms underlying the body's responses to varying muscular and environmental stresses. Prer., BIOL 430 or consent of instructor.

BIOL 531-3. Advanced Immunology. An advanced course in Immunology to follow a junior- senior level introductory Immunology course. Prer., BIOL 391. Meets with BIOL 431.

BIOL 543-4. Animal Ecology. Problems concerned with the distribution of animals and their relations to each other and to their environment are considered. Local ecosystems are visited and sampled with special attention to sampling the animal communities. Prer., BIOL 110, BIOL 111, BIOL 115, and BIOL 116. Meets with BIOL 443.

BIOL 544-2. Genetics Laboratory. Laboratory course designed to illustrate concepts of genetics as described in lecture (BIOL 383). Hands-on laboratory with emphasis on molecular techniques. Spring. Prer., BIOL 383 Genetics or concurrent enrollment. Meets with BIOL 384.

BIOL 545-4. Anatomy and Exercise Science: Fundamentals and Applications to Golf. Course integrates musculoskeletal anatomy and scientific principles of relevant sport science disciplines (biomechanics, physiology, nutrition, psychology and technology), in a lecture/lab setting, to provide PGM and Exercise Science students a comprehensive understanding of exercise science applications to golf. Meets with BIOL 345.

BIOL 555-3. Biomechanics/Kinesiology. An introduction to the mechanics of human movement. Includes the application of kinematics, kinetics, hydrodynamics, kinesiology and analytical techniques to human movement. Periodic trips to the International Center for Aquatic Research for analytical methods. Spring. Prer., BIOL 201 and BIOL 202.

BIOL 560-3. Biomechanics of Musculoskeletal Injury. A comprehensive survey of the biomechanics of musculoskeletal injury. The course explores the various bases of musculoskeletal injury to understand causal mechanisms, effects of injury on tissues, and how biomedical sciences contribute to injury management and prevention. Prer., BIOL 201(Anatomy) or equivalent. Meets with BIOL 460.

BIOL 571-1 to 12. Externship in Biology. A program of study and learning outsidethe classroom. Practical exposure to field of interest is intended to provide appropriate experience to a student's career orientation. A variety of opportunities exists, and students may explore their own avenues as well. Some externships are in open competition. Students must have departmental permission and completed permission form to register. It is strongly suggested that students interested in this program plan their participation one semester before they plan to enroll. (Note: Externship is to be performed off campus at an institution performing biologically-oriented work, e.g., medical clinics and research laboratories.) Fall, Spring.

BIOL 572-1 to 12. Externship in Biology. Exercise Science. Fall, Spring.

BIOL 573-1 to 12. Externship in Biology. Biochemistry. Fall, Spring.

BIOL 574-1 to 12. Externship in Biology. Biotechnology. Fall, Spring.

BIOL 575-1 to 2. Biology Journal Interpretation and Research Seminar. Involves the preparations and delivery of seminars by students and faculty on current research articles in the recent published literature. Topics include biochemistry, cell biology, ecology, genetics, physiology and molecular biology.

BIOL 577-3. Human Metabolism. An advanced course in exercise physiology/ biochemistry. Topics will involve extensive review of the scientific literature. These topics involve a review of current trends in sports science and are designed to give the student a practical application and interpretation of the sports sciences. Spring. Prer., BIOL 330.

BIOL 578-2. DNA Technology for Teachers. Introduction to elements of DNA technology and genetic engineering. Practical applications to biotechnology. Discussion of safety and ethical issues. Prer., One year of CHEM or BIOL.

BIOL 579-3. Basic Laboratory Methods in Sports Physiology. A course designed to teach students how to test and evaluate acute and chronic responses and adaptations to exercise. The course is intended to make students proficient in laboratory techniques for assessing human performance primarily from a metabolic standpoint. Spring. Prer., Consent of instructor.

BIOL 580-3. Analytical Methods in Sports Physiology. A laboratory course designed to teach students techniques used in exercise biochemistry, exercise testing and evaluation of human performance. This course is an extension of Basic Laboratory Methods in Sports Physiology with emphasis in exercise biochemistry. Spring. Prer., Consent of instructor.

BIOL 581-3. General Biochemistry. (CHEM 481) Lect. Topics include structure, conformation, and structure and functions of properties of proteins; enzymes; mechanisms and kinetics; intermediary metabolism; carbohydrates, lipids; and amino acids; energetics and metabolic control; and photosynthesis. Fall. Prer., Organic chemistry or consent of instructor. Meets with BIOL 481, CHEM 481 and CHEM 581.

BIOL 582-4. General Biochemistry. Continuation of BIOL 481/581. Topics include control of metabolic flex through transcriptional and post transcriptional mechanisms, macromolecules; nucleic acids, metabolism of nitrogen-containing compounds; biosynthesis and function of macromolecules including DNA, RNA, and proteins; biochemistry of subcellular systems and special topics. Spring. Prer., Organic Chemistry.

BIOL 584-3. Molecular Biology. Detailed examination of replication, recombination, transposition, transcription and translation in prokaryotes and eukaryotes at the molecular level. Fall. Prer., BIOL 383. Meets with BIOL 484, CHEM 484, and CHEM 584.

BIOL 585-3. Molecular Biology Laboratory. A laboratory course emphasizing techniques in molecular biology, including DNA cloning, and analysis of gene expression. Fall. Prer., BIOL 484/584. Meets with BIOL 485.

BIOL 586-3. Biochemistry and Molecular Biology Laboratory. Designed to provide laboratory skills and techniques. Experiments are selected to demonstrate principles and application of current techniques and the use of instrumentation. Spectrophotometry, enzymology, centrifugation and electrophoresis are stressed. Spring. Prer., One semester of biochemistry or cell biology and one semester of organic chemistry. Meets with BIOL 486, CHEM 486, CHEM 586.

BIOL 587-3. Biochemistry and Molecular Biology of Lipids and Membranes. An in-depth look at the structure and function of acyl and prenyl lipids (e.g. phospholipids and cholesterol) in biology. Focus on lipid synthesis and metabolism and their roles in signal transduction and membrane physiology, emphasis on biomedical ramifications of triacylglycerol, cholesterol and prostaglandin homeostatsis in humans. Prer., BIOL 481/581 or BIOL 482/582.

BIOL 588-2. Principles of Flow Cytometry. A comprehensive introduction to the instrumentation, techniques and biological applications of flow cytometry, high speed single cell analysis and cell sorting. Topics to be studied include light sources, fluidics, fluorescent dyes, data collection and analysis, and applications in biological research and clinical medicine. Summer. Prer., Consent of instructor.

BIOL 589-3. Advanced Flow Cytometry. A seminar and laboratory course for in-depth study of flow cytometric techniques and applications. Topics to be studied include detection and quantitation in single cells of nucleic acids and other nuclear, cytoplasmic and cell surface macromolecules with emphasis on oncology and immunobiology. Fall, Spring. Prer., BIOL 488/588.

BIOL 590-3. Pathobiology. Designed primarily for the biology major and pre-health profession students. The course will cover mechanisms of human disease from cellular through organ and systemic pathologies. Major and pertinent health problems will be discussed. Lab materials are primarily from autopsy materials. Spring (odd years). Prer., BIOL 110, BIOL 111, BIOL 115 and BIOL 116. Open to junior, senior or graduate students. Meets with BIOL 490.

BIOL 591-4. Biotechnology I. Lect. and lab. in Biotechnology; part I of a two semester sequence emphasizing practical techniques in several areas. Instrumentation principles, applied immunology, tissue culture, handling radioisotopes, recombinant DNA, cloning and characterization of genes. Special topics required for graduate credit. Fall. Prer., CHEM 331 and CHEM 332; BIOL 383 and BIOL 481; PES 101 and PES 102; senior standing or consent of instructor.

BIOL 592-4. Biotechnology II. Lect. and lab. Continuation of Biotechnology I. Recombinant DNA techniques, methods in microbial genetics. Engineering gene expression. Biomass conversion with engineered microbes. Computer applications, tumor growth modeling. Radioimmune assay of receptors in mammalian cells. Field trips to regional biotechnology companies. Spring. Prer., BIOL 491 and BIOL 591.

BIOL 636-2. Advanced Biomechanics. An advanced study of biomechanics. Includes methods of smoothing raw data, joint force and torque calculations, three-dimensional theory and kinematics and kinetics in three dimensions. Prer., Consent of instructor.

BIOL 693-3. Research Practicum in Genetics. Laboratory course for advanced biology students and graduate students interested in molecular biology, microbial genetics, and biotechnology. Course includes experimental design, laboratory projects, and interpretation and presentation of data from individual projects. Prer., BIOL 484.

BIOL 694-3. Research Practicum in Biochemistry. Laboratory course for advanced biology students and graduate students interested in biochemistry. Course includes experimental design, laboratory projects, and interpretation and presentation of data from individual projects. Meets 9 hours per week. Prer., BIOL 481, BIOL 482, BIOL 486, and consent of instructor.

BIOL 695-3. Research Practicum in Exercise Physiology. Laboratory course for advanced biology students and graduate students interested in exercise physiology and nutrition. Course includes experimental design, laboratory projects, and interpretation and presentation of data from individual projects. Meets 9 hours per week. Prer., BIOL 330, BIOL 481 and consent of instructor.

BIOL 696-3. Tumor Biology. A limited enrollment course that emphasizes the basic science of tumor growth and the clinical approach to cancer treatment. Fall, Spring. Prer., Senior or graduate status and consent of instructor.

BIOL 700-1 to 6. Masters Thesis.

BIOL 940 to 948-1 to 3. Independent Study in Biology. Advanced students (usually seniors) are encouraged to pursue independent research in some specific area or problem where extensive reference to biological literature on that subject is available. Also encouraged is the design and execution of original research, either in the laboratory or field, that bears on the problem being considered. Prior to being admitted to this course, the student must submit an acceptable written proposal of the area or problem to be studied to the faculty member (selected by the student) who supervises the effort. Students must have consent of instructor and completed permission forms to register. Fall, Spring, Summer.

BIOL 941-1 to 3. Independent Study in Biochemistry. Advanced students (usually seniors) are encouraged to pursue independent research in some specific area or problem where extensive reference to biological literature on that subject is available. Also encouraged is the design and execution of original research, either in the laboratory or field, that bears on the problem being considered. Prior to being

admitted to this course, the student must submit an acceptable written proposal of the area or problem to be studied to the faculty member (selected by the student) who supervises the effort. Students must have consent of instructor and completed permission forms to register.

BIOL 942-1 to 3. Independent Study in Micro Genetics. Advanced students (usually seniors) are encouraged to pursue independent research in some specific area or problem where extensive reference to biological literature on that subject is available. Also encouraged is the design and execution of original research, either in the laboratory or field, that bears on the problem being considered. Prior to being admitted to this course, the student must submit an acceptable written proposal of the area or problem to be studied to the faculty member (selected by the student) who supervises the effort. Students must have consent of instructor and completed permission forms to register.

BIOL 943-1 to 3. Independent Study in Exercise Science. Advanced students are encouraged to pursue independent research in some specific area or problem where extensive reference to biological literature on that subject is available. Also encouraged is the design and execution of original research, either in the laboratory or field, that bears on the problem being considered. Prior to being admitted to this course the student must submit an acceptable written table proposal of the area or problem to be studied to the faculty member who supervises the effort. Students must have consent of instructor and completed permission forms to register.

BIOL 944-1 to 3. Independent Study in Plant Molecular Biology. Advanced students (usually seniors) are encouraged to pursue independent research in some specific area or problem where extensive reference to biological literature on that subject is available. Also encouraged is the design and execution of original research, either in the laboratory or field, that bears the problem being considered. Prior to being admitted to this course, the student must submit an acceptable written proposal of the area or problem to be studied to the faculty member (selected by the student) who supervises the effort. Students must have consent of instructor and completed permission forms to register. Meets with BIOL 954.

BIOL 945-1 to 6. Independent Study in Biochem Genetics.

BIOL 946-1 to 3. Independent Study in Tumor Biology. Advanced students (usually seniors) are encouraged to pursue independent research in some specific area or problem where extensive reference to biological literature on that subject is available. Also encouraged is the design and execution of original research, either in the laboratory or field, that bears on the problem being considered. Prior to being admitted to this course, the student must submit an acceptable written proposal of the area or problem to be studied to the faculty member (selected by the student) who supervises the effort. Students must have consent of instructor and completed permission forms to register.

BIOL 947-1 to 3. Independent Study Organismic Biology. Advanced students (usually seniors) are encouraged to pursue independent research in some specific area or problem where extensive reference to biological literature on that subject is available. Also encouraged is the design and execution of original research, either in the laboratory or field, that bears on the problem being considered. Prior to being admitted to this course, the student must submit an acceptable written proposal of the area or problem to be studied to the faculty member (selected by the student) who supervises the effort. Students must have consent of instructor and completed permission forms to register.

BIOL 949-3. Senior Thesis. For advanced students who wish to pursue independent research for honors standing in biology. Description follows that for Independent Study in Biology (BIOL 941 and 942). The course involves four phases: 1) A proposal must be submitted including a statement of the research goal, materials and methods, review of pertinent literature, and anticipated results. The proposal will be reviewed for acceptability; 2) Research must be carried out; 3) The thesis as a write-up of research should be in the form of a scholarly publication and will be reviewed for acceptability; 4) A seminar on the research must be presented to faculty and students in biology. It is strongly suggested that students initiate their work at the start of the last semester of their junior year. Fall, Spring.

BIOL 950 to 958-1 to 3. Independent Study in Biology. Same as BIOL 940-948 and to be performed at the graduate level. Fall, Spring, Summer.

BIOL 951-1 to 3. Independent Study in Biochemistry.

BIOL 952-1 to 3. Independent Study in Micro Genetics.

BIOL 953-1 to 3. Independent Study in Exercise Science. Advanced students are encouraged to pursue independent research in some specific area or problem where extensive reference to biological literature on that subject is available. Also encouraged is the design and execution of original research, either in the laboratory or field, that bears on the problem being considered. Prior to being admitted to this course the student must submit an acceptable written proposal of the area or problem to be studied to the faculty member who supervises the effort. Students must have consent of instructor and completed permission forms to register.

BIOL 954-1 to 3. Independent Study in Plant Molecular Biology. Meets with BIOL 944.

BIOL 955-1 to 3. Independent Study in Biochem Genetics.

BIOL 956-1 to 3. Independent Study in Tumor Biology.

BIOL 957-1 to 3. Independent Study in Exercise Physiology.

BIOL 958-1 to 3. Independent Study in Cell Physiology/ End.

BIOL 959-1 to 3. Independent Study Senior Thesis.

BIOL 999-0. Candidate for Degree.

CHEMISTRY

CHEM 100-3. Chemistry in the Modern World. Lecture. A brief introduction to chemical principles and study of their application to biochemical materials and processes, consumer chemistry, energy problems, air and water pollution and toxic chemicals. This course may be taken with or without the lab course CHEM 110. Counts towards fulfillment of the LAS natural science area requirement.

CHEM 101-4. Introduction to Chemistry. Lecture and Recitation. This is a first-semester course in chemistry with an emphasis on principles and practical applications. The course is designed for two groups of individuals. Paramedical majors and nursing students comprise one of these groups. The second group will be made up of students who are required to take CHEM 103 but who have not had a high school chemistry course or who have inadequate backgrounds. Students who have not taken algebra in high school or college should take an algebra course before taking CHEM 101. The course covers measurements, matter, atoms, bonding, energy, phases of matter,

acid-base and redox reactions, solutions, equilibria, electrolytes, inorganic and nuclear reactions. Counts towards fulfillment of the LAS natural science area requirement. Prer., One year of high school algebra.

CHEM 102-4. Introduction to Organic and Biochemistry. Lecture, recitation, and lab. This is the second part of a one year course and should be taken after completion of CHEM 101. Students who are required to take CHEM 103-106 should not take both 101 and 102. The course includes a survey of organic functional group and biochemical reactions. A large emphasis is placed on structure and function of organic and biomolecules. Prer., CHEM 101 with a grade of "C" or higher.

CHEM 103-5. General Chemistry I. Lecture, recitation, and lab. A first college-level chemistry course for students with adequate high school chemistry. Emphasis on the structure and composition of matter: elements and compounds, atoms and molecules, and states of matter including solutions. Students having marginal mathematics backgrounds are advised to solidify their mathematics proficiencies before taking this course. To proceed to CHEM 106 a grade of C is necessary. Counts towards fulfillment of the LAS natural science area requirement. Prer., 1 year high school chemistry and 2 years high school math.

CHEM 106-5. General Chemistry II. Lecture, recitation, and lab. This is the second course of the general chemistry sequence. Emphasis is on acid-base and solution chemistry, equilibria, kinetics, redox chemistry, transition metal chemistry, nuclear chemistry and organic chemistry. Counts towards fulfillment of the LAS natural science area requirement. Prer., CHEM 103 with a grade of "C" or higher.

CHEM 108-1. Introduction to Chemistry Lab Research. Research methodology in chemistry is introduced by conducting an investigation involving the synthesis and determination of the physical and chemical properties of a series of metal coordination compounds of acetylacetone and its analogies. Concurrent enrollment in CHEM 106 required.

CHEM 110-1. Chemistry in the Modern World Laboratory. When taken along with CHEM 100, these courses count toward fulfillment of the LAS natural science requirement and lab requirement. Experiments have been chosen that illustrate the principles discussed in the lecture. Prer., Concurrent registration in CHEM 100 or prior completion of CHEM 100. Satisfies the LAS natural science laboratory requirement.

CHEM 115-4. Preparatory Chemistry. Preparatory chemistry lecture and lab for students who have not taken high school chemistry. Prepares students for general chemistry (CHEM 103-106). Credit is granted only if no other college chemistry credits have been earned. Does not count towards the LAS natural science area requirement. Prer., One year high school algebra or concurrent enrollment in MATH 104. For students with little or no chemistry background in preparation for CHEM 103.

CHEM 121-3. Introduction to Physical Science. An integrated presentation of the basic concepts of physics and chemistry for non-science majors. Topics include motion, heat, sound, light, atomic and molecular structure, chemical reactions, acids and bases, and radioactivity. Counts towards fulfillment of the LAS natural science area requirement. Prer., Two years of high school mathematics. Meets with PES 121.

CHEM 124-1. Physical Science Laboratory. A laboratory to accompany CHEM/PES 121. Includes experiments on mechanics, heat, sound, light, electricity, chemical reactions, stoichiometry, acid-based chemistry, and reaction kinetics. Counts towards fulfillment of the LAS natural science area requirement. Meets with PES 124.

CHEM 151-3. Environmental Science. Introduction to atomic molecular structure and to biological structure and function. Environmental contaminants in air and their reactions, water quality and its analysis, wastewater treatment, the ecology of natural systems and genetic adaptation. Counts towards fulfillment of the LAS natural science area requirement. Meets with BIOL 151.

CHEM 153-1. Environmental Science Laboratory. This lab is to designed to accompany BIOL 151 and CHEM 151. Counts towards fulfillment of the LAS natural science area requirement. Meets with BIOL 153.

CHEM 301-3. Materials Science. Lecture. An introductory development of the physical and chemical properties of materials, including metals, alloys, ceramics, polymers, and composite materials. Intended for science and engineering students. Prer., Grades of "C" or higher in CHEM 106, PES 111 and MATH 135, or permission of the instructor.

CHEM 330-3. Organic Chemistry. Lecture for biology majors and non-chemistry majors taking only one semester of organic chemistry. This is a survey of organic nomenclature, structure, preparations, and reactions. The course includes bio-organic topics, such as carbohydrates, peptides, and proteins, as well as a general introduction to important functional groups. Fall semester. Prer., CHEM 106 with a grade of "C" or higher. Students must also enroll concurrently for the lab course, CHEM 340.

CHEM 331-3. Organic Chemistry I. For biochemistry option and non-chemistry majors. Topics include structure and reactions of alkanes, alkenes and alkyl halides. Organic nomenclature stereochemistry, reaction mechanisms and kinetics. Prer., Grade of "B" or higher in CHEM 106. Concurrent registration for CHEM 333 or CHEM 337 required.

CHEM 332-3. Organic Chemistry II. For biochemistry option and non-chemistry majors. Topics include structure and reactions of alcohols, carboxylic acids, aldehydes, ketones, amines, aromatic compounds, heterocycles, sugars and amino acids. Emphasis is on organic synthesis and reaction mechanisms. Prer., CHEM 331 and either 333 or 337 with grades of "C" or higher.

CHEM 333-2. Organic Chemistry Laboratory I. For biochemistry option and non-chemistry majors. Instruction of experimental techniques of modern organic chemistry including microscale techniques. Emphasis is also on reactions of alkenes, alkynes, alkyl halides and on stereochemical modeling. Prer., Grade of "C" or higher in CHEM 106.

CHEM 334-2. Organic Chemistry Laboratory II. For biochemistry option and non-chemistry majors. Emphasis is on spectroscopic techniques and on syntheses of alcohols, aldehydes, ketones, carboxylic acids and their derivatives. Prer., CHEM 331 and 333 with grades of "C" or higher. Students must register for lecture and lab. Coreq., CHEM 332.

CHEM 337-2. Practical Organic Chemistry I. An introduction to organic laboratory methods for chemistry majors. Prer., Grade of "C" or higher in CHEM 106. Coreq., CHEM 331.

CHEM 338-2. Practical Organic Chemistry II. Laboratory. An introduction to organic, synthetic and spectroscopic methods for chemistry for chemistry majors. Prer., CHEM 331 and CHEM 337 with grades of "C" or higher. To be taken concurrently with CHEM 332.

CHEM 340-2. Organic Chemistry Laboratory. Laboratory for biology majors and non-chemistry majors. Lab section to accompany CHEM 330. Instruction in experimental techniques, organic synthesis, analysis, and spectroscopy. Fall semester. Prer. or Coreq., CHEM 330. Laboratory course to be taken concurrently with CHEM 330.

CHEM 341-3. Environmental Chemistry. An in-depth survey and discussion of problems of the environment from a chemical point of view. Air, water, land, pollution, and their effect on the ecology of living organisms. Prer., CHEM 106 with grade of "C" or higher.

CHEM 395-3. Cooperative Education in Chemistry. Students arrange a program with appropriate faculty members through the auspices of local government or industrial facilities. The program will generally require independent laboratory and/or literature work, resulting in a report or series of reports.

CHEM 401-3. Modern Inorganic Chemistry. An introduction to the physical inorganic concepts of modern inorganic chemistry. Topics include atomic structure and periodic properties, ionic and covalent bonding and a survey of inorganic main group reactions. Prer., One year of organic chemistry, CHEM 331-332, with grade of "C" or higher.

CHEM 402-4. Inorganic Chemistry Laboratory. A detailed study of structure, characterization and synthesis of transition metal complexes. Laboratory demonstrates appropriate examples of synthesis and characterization techniques. Prer., CHEM 401 and CHEM 451 with grades of "C" or higher.

CHEM 405-1 to 4. Topics in Chemistry. Examination of selected topics in chemistry in lecture, seminar and/or laboratory format. Topic will change according to the interest of the instructor and students. Students may repeat the course for credit when the topic changes. Consult the schedule of courses for topic.

CHEM 411-3. Nuclear Magnetic Resonance Spectroscopy. Lecture and lab. Theory and practice of advanced techniques in NMR spectroscopy including complex spectra, double resonance, paramagnetic systems, and rate-processes.

CHEM 417-4. Analytical Chemistry I. Lecture and lab. Emphasis is on chemical equilibrium, quantitative analysis by means of titration, spectrophotometry, electrode potentials, and analytical separation techniques. Prer., Grade of "C" or higher in CHEM 106.

CHEM 418-3. Analytical Chemistry II. Emphasis is on instrumental methods of analysis, including spectral, electroanalytical and separations methods. Prer., PES 112, CHEM 417 with grades of "C" or higher and concurrent enrollment or completion of CHEM 452. Coreq., CHEM 420.

CHEM 420-2. Practical Instrumental Analysis. Laboratory work in instrumental methods of analysis, including spectrochemical, electroanalytical and chromatographic techniques. Prer., CHEM 417 and CHEM 452. Coreq., CHEM 418.

CHEM 451-3. Physical Chemistry I. The application of thermodynamics to phase changes, chemical reactions and electrochemical cells. The rates and mechanics of chemical reactions. Prer., Grades of "C" or higher in PES 112, PES 115, MATH 136 and CHEM 332.

CHEM 452-3. Physical Chemistry II. The application of quantum mechanics to atomic and molecular structure and spectra. The application of statistical mechanics to the prediction of thermodynamic properties. Transition state theory of reaction rate. Prer., CHEM 451 with a grade of "C" or higher. Coreq., CHEM 454 or CHEM 455.

CHEM 454-1. Experimental Physical Chemistry Laboratory. Error analysis and experiments in thermodynamics and kinetics. Prer., CHEM 417 and CHEM 451 with grades of "C" or higher. Coreq., CHEM 452. Meets with CHEM 455.

CHEM 455-2. Experimental Physical Cheistry. Laboratory. Instruction in the experimental techniques of modern physical chemistry with emphasis on experiments illustrating the fundamental principles of chemical thermodynamics, quantum chemistry and chemical kinetics for BS chemistry majors. Prer., CHEM 417 and CHEM 451 with grades of "C" or higher. Meets in part with CHEM 454.

CHEM 456-3. Surface Chemistry. A study of the physical chemistry of surfaces and interfaces. Topics will include interfacial tension, wetting, monolayers, adsorption, heterogeneous catalysis, surface diffusion, kinetics of phase transformations, electrocapillarity, and the characterization of solid surfaces. Prer., CHEM 452 (for chemistry majors); or PES 213 and either PES 340 or PES 342 (for physics and engineering majors). Meets with CHEM 556.

CHEM 481-3. General Biochemistry. Lecture. Topics include structure, conformation, and structure and functions of properties of proteins; enzymes; mechanisms and kinetics; intermediary metabolism; carbohydrates; lipids; and amino acids; energetics and metabolic control; and photosynthesis. Fall. Prer., BIOL 302 and CHEM 332. Meets with CHEM 581, BIOL 481, BIOL 581.

CHEM 482-4. Biochemistry II. Lecture. Continuation of CHEM 481. Topics include control of metabolic flex through transcriptional and post transcriptional mechanisms, macromolecules; nucleic acids, metabolism of nitrogen-containing compounds; biosynthesis and function of macromolecules including DNA, RNA, and proteins; biochemistry of subcellular systems and special topics. Prer., Organic Chemistry. Meets with CHEM 582, BIOL 482, BIOL 582.

CHEM 483-3. Biochemistry Principles. A comprehensive one semester introduction to cells, proteins, catalysis; metabolism of carbohydrates, lipids and nitrogen compounds; and storage and utilization of genetic information. Prer., BIOL 110, BIOL 111 and CHEM 332. Meets with BIOL 483.

CHEM 484-3. Molecular Biology. Detailed examination of replication, recombination, transposition, transcription and translation in prokaryotes and eukaryotes at the molecular level. Spring. Prer., BIOL 383. Meets with CHEM 584, BIOL 484, and BIOL 584.

CHEM 486-3. Biochemistry Laboratory. Designed to provide laboratory skills and techniques. Experiments are selected to demonstrate principles and application of current techniques and the use of instrumentation. Spectrophotometry, enzymology, centrifugation and electrophoresis are stressed. Prer., One semester of biochemistry or cell biology and one semester of organic chemistry. Meets with CHEM 586, BIOL 486, BIOL 586.

CHEM 488-3. Clinical Chemistry I. An overview of the chemistry associated with principles and practice of clinical laboratory investigations. Interpretation and analysis of clinical chemistry tests and a discussion of the significance of the results. Compounds considered are carbohydrates, proteins, including cardiac enzymes, electrolytes and others. Studies on drug toxicity, poisons and neurochemistry are included. Prer., CHEM 330 or CHEM 332.

CHEM 495-1. Chemistry Seminar I. A capstone course designed to familiarize students with the chemical literature and

to allow for ten to thirty presentations. Prer., CHEM 332 and either CHEM 417 or CHEM 451.

CHEM 496-1. Chemistry Seminar II. A capstone course designed to familiarize students with the chemical literature and to allow for formal presentations. Prer., CHEM 495.

CHEM 511-3. NMR Spectroscopy. Lecture and lab. Theory and practice of advanced techniques in NMR Spectroscopy including complex spectra, double resonance, paramagnetic systems, rate process and one and two-dimensional pulse methods. Meets with CHEM 411.

CHEM 517-3. Electrochemistry. Electrochemical methods of analysis, analytical instrumentation. Topics will include redox thermodynamics and kinetics, electrochemical techniques, and modern applications. Prer., Physical chemistry with a grade of C or higher.

CHEM 518-3. Chromatography and Analysis. Lecture and labs. Analytical separation processes with special reference to theory and practice of liquid and gas chromatography. Analysis methods include mass spectrometry and nuclear magnetic resonance spectroscopy. Prer., Undergraduate physical chemistry and instrumental methods of analysis.

CHEM 531-3. Advanced Organic Chemistry I. Lecture. Survey of organic chemistry including mechanistic and synthetic organic chemistry. Prer., One year of organic chemistry with a grade of "C" or higher.

CHEM 532-3. Advanced Organic Chemistry II. Lecture. Modern concepts of physical organic chemistry and their use in interpreting data in terms of mechanisms or organic reactions and reactivities of organic compounds. Prer., One year of organic chemistry and CHEM 451 with grades of "C" or higher.

CHEM 556-3. Surface Chemistry. A study of the physical chemistry of surfaces and interfaces. Topics include interfacial tension, wetting, monolayers, adsorption, heterogeneous catalysis, surface diffusion, kinetics of phase transformations, electrocapillarity, and the characterization of solid surfaces. Meets with CHEM 456.

CHEM 581-3. Advanced General Biochemistry. Lecture. Topics include structure, conformation, and structure and functions of properties of proteins; enzymes; mechanisms and kinetics; intermediary metabolism; carbohydrates, lipids; and amino acids; energetics and metabolic control; and photosynthesis. Fall. Prer., Organic chemistry or consent of instructor. Meets with CHEM 481, BIOL 481, BIOL 581.

CHEM 582-4. Biochemistry II. Lecture. Continuation of CHEM 581. Topics include control of metabolic flex through transcriptional and post transcriptional mechanisms, macromolecules; nucleic acids, metabolism of nitrogen-containing compounds; biosynthesis and function of macromolecules including DNA, RNA, and proteins; biochemistry of subcellular systems and special topics. Spring. Prer., Organic Chemistry. Meets with CHEM 482, BIOL 482, BIOL 582.

CHEM 584-3. Molecular Biology. Detailed examination of replication, recombination, transposition, transcription and translation in prokaryotes and eukaryotes at the molecular level. Spring. Prer., BIOL 383. Meets with CHEM 484, BIOL 484, and BIOL 584.

CHEM 586-3. Biochemistry Laboratory. Designed to provide laboratory skills and techniques. Experiments are selected to demonstrate principles and application of current techniques and the use of instrumentation. Spectrophotometry, enzymology, centrifugation and electrophoresis are stressed. Spring. Prer., One semester of biochemistry or cell biology and one semester of organic chemistry. Meets with CHEM 486, BIOL 486 and BIOL 586.

CHEM 700-1 to 6. Masters Thesis.

CHEM 940-1 to 3. Independent Study in Chemistry. Undergraduate. Consent of instructor required. For upper-division students.

CHEM 950-1 TO 3. Independent Study in Chemistry - Graduate.

CHEM 999-0. Candidate for Degree.

COMMUNICATION

COMM 100-3. Contemporary Mass Media. Examines the mass media and their interaction with society, looking at journalism and the mass media in historical, intellectual, political, and social contexts. Same as Journalism 100. (Pre-journalism students should register for JOUR 100). Meets with JOUR 100.

COMM 102-3. Interpersonal Communication. A lecture-discussion-recitation approach to communication theory and its applications in everyday communication. Intended to give students a point of view and certain basic knowledge that will help them become better communicators regardless of their fields of specialization.

COMM 103-3. Principles of Communication. A study of human communication from its classical foundations in Aristotelian rhetoric through contemporary interpersonal theory. Emphasis include basic models of communication and approaches to communication as a discipline. Contemporary theoretical considerations include current interpersonal research in such areas as person perception, attraction, and conflict. Prer., COMM 102.

COMM 111-3. Introduction to Leadership. An introductory exploration of the relationship between leadership theory and practice. The course examines both foundational and emerging leadership paradigms to provide the student a basic understanding of leadership.

COMM 201-3. Oral Communication in the Workplace. Designed to develop and enhance oral communication skills in business and professional settings. Course includes four components: a) basics of business communication, including emphasis on diversity; b) interpersonal skills, including listening and job interviewing; c) working in groups, including problem solving and effective meetings; and d) preparing and delivering effective business presentations.

COMM 210-3. Public Speaking. A lecture-recitation approach to the basic principles of speechmaking. Intended to give students basic information for the preparation and delivery of a variety of public presentations.

COMM 215-3. Male/Female Communication. A lecture-discussion approach to the study of contemporary theories and research in male/female communication. The course will involve reading and discussion in such areas as gender differences in self-perception, social and media images of men and women, language usage and nonverbal behavior differences between genders. Prer., COMM 102. Meets with WMST 215.

COMM 224-3. Introduction to Organizational Communication. An introduction to models of human communication and definitions of organizational communication with emphasis on communication process, information flow, individual communication roles and group process for problem solving and decision making: introduction to auditing. Prer., COMM 102 and COMM 103.

COMM 225-3. Introduction to Film and Video. A study of the principles and techniques of film-making, including practical experience in planning, shooting, lighting, editing, and sound mixing. The study of film as visual language will be integrated with experience and making short video production.

COMM 227-3. Beginning Television Production. An introductory course in creative television production. Course is geared toward developing the writing, directing, and production skills necessary to make intelligent and imaginative programs in a variety of basic formats. Designed for majors and nonmajors, includes lecture and lab.

COMM 250-3. Research Methods. Introduction to the nature of social scientific method methods including research design, measurement, survey methods and introductory statistics. Prer., I D 105.

COMM 260-3. Family Communication. The role of communication in long-term relationships as found in families. It is a descriptive approach designed to provide an understanding of the extent to which communication affects and is affected by the family.

COMM 290-3. Writing for the Media. Fundamentals of news gathering and writing, news story forms. Assignments include reportorial work for campus publications. Meets with JOUR 290.

COMM 310-3. Directing Studio Performance. Overview of directing studio and location performance using multicamera, videotape, and/or film formats. Observation and hands-on approach to basic performance techniques in news and entertainment programs.

COMM 315-3. Communication Competency in Groups and Teams. Theory and practice in group discussion processes, decision making, and participant and laboratory. Prer., COMM 102 or consent of instructor.

COMM 323-3. Nonverbal Communication. Consists of the study of nonverbal communication through proxemics, kinesics, physical appearance, and paralanguage as well as an application of nonverbal communication theory to work, group, and home settings.

COMM 324-3. Business and Professional Communication. Theory and practice in oral and written communication competency for business and the professions. Topics include presentational speaking, business writing, interpersonal communication in organizations, small group process and the role of the leader-manager, and communication trends in business organizations of the future. Prer., COMM 102 and COMM 224.

COMM 327-3. Intermediate Television Production. A study advancing the principles and techniques of television production to include extended experiences doing multicamera studio productions, with an introduction to electronic field production techniques. Topics include production planning and procedures, directing, lighting, and editing. Lecture and lab. Prer., COMM 225 and COMM 227.

COMM 328-3. Intercultural Communication. An examination of the philosophy, process, problems, and potentials unique to communication across cultural boundaries. Implications for personal and social innovations. Comparative study in communication in selected cultures.

COMM 330-3. Scriptwriting. A course in writing for non-print media. Students will learn key elements of fiction and non-fictional media formats, story structures, and exposition. Prer., JOUR/COMM 290, COMM 225, and COMM 227.

COMM 344-3. Leadership Communication. An examination of contemporary theories and research pertaining to the communication of leadership in interpersonal, group, organizational, and societal settings, including consideration of the nature of power, vision, and creativity in leadership.

COMM 350-3. American Cinema. An introductory film course surveying American cinema as art, industry, and system of representation and communication. Students acquire knowledge of film history and genres, technical and critical vocabulary terms, and how popular genres extend to broader social context. Meets with FILM 350.

COMM 365-3. Mass Media and Society. The interrelationships among mass media, society, and communication are explored. The theoretical foundations of mass communication are delineated.

COMM 400-3. Rhetorical Dimensions in Communication. The theory of oral discourse is examined in light of classical thought and practice, historical development, and modern rhetorical processes. Prer., COMM 102 and COMM 103.

COMM 410-3. Advanced Public Speaking. Advanced exploration of the theory, preparation, delivery and evaluation of public speeches. Prer., COMM 210 or equivalent. Meets with COMM 510.

COMM 415-3. Communication for the Classroom Teacher. This course is intended to be both theoretical and practical in nature and will provide teachers and prospective teachers the rationale for using appropriate communication strategies in the classroom. It will include methods for analysis, development, and facilitation of teachers' and their students' communication behaviors. Meets with COMM 515.

COMM 420-3. Persuasion. The theory of motivation and change as it operates in individuals and groups, consideration of attitudes, beliefs, values, credibility, message variables, ethic ethics, and effects. Analysis of persuasive campaigns.

COMM 422-3. Creative Communication. Exploration of the relationship between creativity and communication. Topics include: theories and models of creativity and language, the creative process in groups and organizations, and creative influence. Meets with COMM 522.

COMM 424-3. Advanced Organizational Communication. Major perspectives for the study of organizational communication, communication auditing procedures, and communication training and development practices. Prer., COMM 102, COMM 224, COMM 250, and COMM 324. Meets with COMM 524.

COMM 425-3. Advanced Interpersonal Communication: Conflict Management. A lecture-discussion approach to the study of contemporary theories and research in conflict. Course will involve reading and discussion of both original research reports and secondary sources in such areas as perception, destructive communication, manipulative communication, and communication in developing and terminating relationships. Prer., COMM 102.

COMM 426-3. Organizational Communication in the Global Environment. Theory-based examination of virtual and changing organizational forms, international/intercultural communication, telemediated organizational communication, and legal issues in communication in the workplace. Course additionally prepares students for both technical and human proficiencies necessary for the workplace of the future. Prer., COMM 224.

COMM 427-3. Advanced Television Production. Studio and advisory support for video programs initiated, designed, organized, and produced by advanced students. Students work in production groups to arrange and gain approval for program plans prior to execution. May be repeated up to a maximum of 6 hours. Prer., COMM 225, COMM 227 and COMM 327.

COMM 445-3. Advertising Media. A seminar in the theory and practice of advertising as an art and science. Students will participate in cases and campaigns providing a dynamic approach to the field.

COMM 450-3. Media Management. Analysis of managerial problems in industrial, governmental, and nonprofit media organizations. Case studies, local managers, and outside readings will examine public relations/marketing, inventory, personnel, and legal aspects of managing a media facility. Prer., COMM 100 and COMM 227.

COMM 451-3. Quantitative Methods for Communication Research. Course covers introductory statistics, t-tests, simple ANOVAs, bivariate regression and measurements issues. Students are also introduced to the use of statistical software. Prer., COMM 250 and I D 105. Meets with COMM 551.

COMM 460-3. Contemporary Theories of Human Communication. An exploration of essentials of theory development and construction as related to the human communication process with primary emphasis on contemporary theories of human communication. Taught in a seminar format. Prer., COMM 102 and COMM 103. Meets with COMM 560.

COMM 461-3. Principles and Practice of Public Relations. Designed to provide majors and non-majors an introduction to the principles and practice of contemporary public relations. Students will increase their understanding and knowledge of the formation and implication of public opinion, and the elements and the practice of public relations in contemporary society.

COMM 469-3 to 6. Internship in Communication. Supervised opportunities for obtaining knowledge and experience concerning the role of communication in the world of work. Prer., For Org Comm and Recording Arts/ Media Management majors only.

COMM 490-1 to 3. Special Topics in Communication. Advanced exploration of timely topics and issues related to communication in various contexts. Topics vary from semester to semester. May be taken up to two times for credit with permission of department chair. Prer., Vary from topic to topic.

COMM 499-3. Multicultural Diversity and Communication- A Team Teaching Approach. It will examine the process and theory of communication and its application to a multicultural society. It will explore cases of successes and failures in interpersonal, group, and mass communication. It will also examine the process of verbal and nonverbal communication expressed in a variety of channels, systems, and codes. Meets with COMM 599.

COMM 510-3. Advanced Public Speaking. Advanced exploration of the theory, preparation, delivery and evaluation of public speeches. Prer., COMM 210 or equivalent. Meets with COMM 410.

COMM 515-3. Communication for the Classroom Teacher. This course is intended to be both theoretical and practical in nature and will provide teachers and prospective teachers the rationale for using appropriate communication strategies in the classroom. It will include methods for analysis, development, and facilitation of teachers' and their students' communication behaviors. Meets with COMM 415.

COMM 522-3. Creative Communication. Exploration of the relationship between creativity and communication. Topics include: theories and models of creativity, creativity and language, the creative process in groups and organizations, and creative influence. Meets with COMM 422.

COMM 524-3. Seminar in Organizational Communication. Explores major theoretical perspectives for the study of organizational communication, examines culture and communication relationships, describes the role and responsibilities of organizational communication professionals, and surveys current research in organizational communication. Students make application of organizational communication principles to a variety of case studies and organizational experiences. Meets with COMM 424.

COMM 551-3. Quantitative Methods Communication for Research. Course begins with a review of elementary statistics and measurement concerns and moves on to T-test, ANOVA, Chi-squares, bivariate and multivariate regression. Prer., COMM 250 and I D 105. Meets with COMM 451.

COMM 560-3. Contemporary Theories of Human Communication. An exploration of essentials of theory development and construction as related to the human communication process with primary emphasis on contemporary theories of human communication. Taught in a seminar format. Meets with COMM 460.

COMM 569-1 to 3. Problems in Radio-Television and Film. Opportunity for students to explore, upon consultation with the instructor, areas in radio-TV and film which the normal sequence of offering will not allow. Prer., Consent of instructor.

COMM 570-3. Instructional Media. Comprehensive examination of communication and learning theory, instructional design, and media production.

COMM 577-3. Leadership Communication in a Global Environment. Advanced exploration of contemporary leadership theory and research with an emphasis on global leadership communication issues. Strategic communication methods are investigated through case analysis with emphasis on the relationship between leadership and culture, leadership style, transformational leadership, charisma, corporate culture, leadership challenges in dealing with diverse populations, ethical leadership and followership, and the global leadership challenges of the future.

COMM 580-3. Qualitative Research Practices in Communication Studies. Introduces graduate students to the qualitative communication research process by: locating and critically reviewing scholarly literature, critically analyzing scholarly research, describing various qualitative research methods used in communication research, developing a communication research proposal, and carrying out a project. Prer., COMM 601.

COMM 595-3. Seminar in Leadership and Organizational Change. A dynamic and practical class offering assessment activities and dialogues focusing on the demands the current environment of change and innovation place on organizational leadership.

COMM 599-3. Multicultural Diversity and Communication. It will examine the process and theory of communication and its application to a multicultural society. It will explore cases of successes and failures in interpersonal, group, and mass communication. It will also examine the process of verbal and nonverbal

communication expressed in a variety of channels, systems, and codes. Meets with COMM 499.

COMM 601-3. Introduction to Graduate Work in Communication. Intended to familiarize students with the philosophical, ideological and methodological bases of study in communication. Required for all departmental graduate students.

COMM 602-3. Communication Research Practicum. A project-based graduate course designed to involve students in communication research and/or creative work from the proposal stage through conference presentation/publication/ production. Prer., COMM 601 and/or instructor consent.

COMM 610-3. Communication Competency: Theory, Assessment, and Pedagogy. In a seminar format, this course examines the historical development of various theories, present conceptualizations, and models of communication competency. Models are related to assessment in various contexts. Students develop and present an oral communication competency assessment program.

COMM 625-1 to 6. Problems in Communication. Explores various graduate-level subjects in communication not normally offered on a regular basis. See Schedule of Courses for current offerings and prerequisites.

COMM 626-3. Communication, Training, and Development. Examines the field of training and development from both theoretical and pragmatic perspectives. Although the primary emphasis will be on corporate training and development, the course will also address broad principles relating to adult education in a variety of training contexts.

COMM 651-3. Intermediate Quantitative Methods for Communication Research. Course begins with a review of elementary statistics and measurement concerns and moves to t-test, ANOVA, Chi-Squares, bivariate and multiple regression. Prer., COMM 451/551 or permission of instructor.

COMM 699-3. Emerging Communication Technologies. Examination of new communications technologies with regard to use and capability and impact on interpersonal, small group, organizational, and international contexts. Special emphasis on impact of technologies for problem solving, decision making, power relationships, geographically diverse work teams, and changing communication theory.

COMM 700-1 to 9. Masters Thesis.

COMM 940-1 to 4. Independent Study in Communication. Individually developed and implemented research projects in communication. Prer., COMM 102, COMM 103 and consent of instructor.

COMM 950-1 to 6. Independent Study in Communication. Individually developed and implemented research projects in communication. A student desiring independent study credit must present to the faculty a well-defined topic for research. Prer., Graduate status.

COMM 999-0. Candidate for Degree.

ECONOMICS

ECON 100-3. The Economics of Social Issues. The Economics of Social Issues introduces the student to economics in a less rigorous manner than ECON 102. Economic issues are introduced in examining wealth, poverty, energy, crime, education, health, discrimination, unemployment and inflation.

ECON 101-3. Introduction to Microeconomics. An analysis of the market system and its role in allocating goods and services; problems of market failure (e.g., monopoly, environmental pollution, and public goods), and alternative government responses to such problems.

ECON 202-3. Introduction to Macroeconomics. An examination of the forces which determine national income, employment, and prices; use of government policy to combat inflation and unemployment; balance of payments problems; theories of growth for developed and less developed economies, poverty, and consideration of alternative economic systems. Prer., ECON 101.

ECON 281-3. Introduction to Statistics and Computing in Economics. Uses of descriptive and inferential statistics in economics. Introduction to probability, random sampling, confidence intervals, hypothesis testing and simple linear regression.

ECON 301-3. Intermediate Microeconomic Theory. Production, price, and distribution theory under conditions of perfect and imperfect competition. Prer., ECON 101.

ECON 302-3. Intermediate Macroeconomic Theory. Keynesian, classical, and monetarist theories of national income determination. Problems of unemployment, inflation, international exchange, and growth. Prer., ECON 202.

ECON 315-3. Great Books of Economics. A study of economic principles as developed in the original works of great writers, especially Adam Smith, David Ricardo, and Karl Marx. Prer., ECON 101 and ECON 202.

ECON 321-3. Economics of the Public Sector. Analysis of the role of government in a capitalist economy. Effects of alternative tax structures; local, state, and federal expenditure and revenue policies. Use of fiscal policy in seeking goals of full employment, stable prices, and growth. Prer., ECON 101.

ECON 328-3. International Political Economy. Overview of the world political economy, especially in the post-WWII period. The central goal of the course is to provide information and develop analytical tools necessary for students to grasp the political issues inherent in international economic relations. Prer., ECON 100, ECON 101 or ECON 202. Meets with P SC 428.

ECON 330-3. Environmental Economics. An examination of the economic basis for and possible solutions of the environmental crisis. Particular attention will be placed on the ways in which legal and political institutions affect economic decisions that have an impact on the environment. Specific problems considered will include air and water pollution, solid waste disposal, population control, energy resources, and conservation. Prer., ECON 101 or consent of instructor.

ECON 341-3. International Economics. Analysis of the basis for and consequences of opening an economy to the international arena. Specific issues considered are the benefits and costs of international trade, the reason for barriers to trade, the determination of exchange rates and the effect of government policies of international good and factor flows. Prer., ECON 101, ECON 202 or consent of instructor.

ECON 350-3. Economic History of the United States. American economic organization and institutions and their development from colonial times to the present. Prer., ECON 101 and ECON 202.

ECON 366-3. Economics and Community Problems. Students build on an introductory level knowledge of economics to see the economic aspects of social problems and their solutions through service-learning assignments in the community. Individual journals and oral presentations also required. Prer., ECON 100 or ECON 101 or ECON 202.

ECON 369-3. Economics of Business. Examines the application of economic theory to business behavior, strategy, and market structure. Prer., ECON 101.

ECON 371-3. Comparative Economic Systems. Comparison of resource allocation and stabilization policies under capitalism, socialism, and fascism. Examination of experiences of selected countries. Prer., ECON 101 or consent of instructor.

ECON 377-3. Economic Development. This course examines the sources of economic development and underdevelopment. Through examination of the situation of high, middle, and low income countries recommendations for growth strategies are developed. Prer., ECON 101 or ECON 202.

ECON 385-3. Law and Economics. Examines how economic theory has been applied in legal theory and been used to shape legal outcomes. Numerous cases are examined. Prer., ECON 101 or instructor consent.

ECON 398-3. Special Topics in Economics. A study of special topics in economics. Topics vary from semester to semester and generally emphasize the application of economic analysis to current issues. Prer., ECON 100 or ECON 101 or ECON 202.

ECON 401-3. Advanced Microeconomic Theory. Study of the core of microeconomic theory using calculus. Topics include: consumer theory of the firm, profit maximization, efficiency and market failure. Several advanced topics from recent developments in microeconomics are also examined. Prer., ECON 301 and MATH 112 (or 135) or consent of instructor.

ECON 423-3. Public Expenditures Evaluation and Policy Analysis. Provides training in methods of public policy analysis and evaluation. Covers benefit-cost and cost- effectiveness analysis and research design. Prer., ECON 301, ECON 321 is recommended or consent of instructor. Meets with P AD 5320.

ECON 431-1 to 3. Understanding Our Economy. Explores a variety of topics applicable to the study and teaching of economics. The emphasis will be on themes, topics and structures as ways to motivate students interested in economics. This course will be taught through the Division of Continuing Education. Pass/Fail only.

ECON 441-3. Advanced International Economics. Through development of advanced models, this course examines the likely effects of globalization on the U.S. and other countries. Prer., ECON 301, ECON 302, ECON 341.

ECON 461-3. Labor Economics. The determination of wages and working conditions in the U.S. Economy. A study of the supply and demand for labor under competitive and noncompetitive conditions. Includes the economic effects of trade unions, internal labor markets, migration and labor mobility, as well as analysis of occupational choice, women in the labor force, and the causes and consequences of discrimination. Prer., ECON 101 and ECON 202 or ECON 301, recommended; or consent of instructor.

ECON 481-3. Introduction to Econometrics. Development and application of multiple regression techniques in testing economic theories. Prer., ECON 301 or 302; ECON 281 or consent of instructor.

ECON 631-1 to 3. Teaching Economics. The seminar will explore a variety of topics applicable to the study and teaching of economics. The emphasis will be on themes, topics and strategies most appropriate to motivate students' interest in economics. Courses offered through the council for economic education. Not an option for ECON majors or grad students. Pass/Fail only.

ECON 940-1 to 3. Independent Study in Economics.

ECON 941-1 to 3. Independent Study in Macroeconomics.

ECON 950-1 to 3. Independent Study in Economics.

ENERGY SCIENCE

ENSC 150-3. Introduction to Energy Science I. Survey of present and future energy resources and the technology associated with their use, including economic and environmental considerations. Meets with PES 150.

ENSC 151-3. Introduction to Energy Science II. Survey of present and future energy resources and the technology associated with their use, including economic and environmental considerations. Meets with PES 151.

ENSC 160-3. Introductory Solar Energy. Introduction to the technology of solar heating. Includes experience in practical aspects of active and solar collection and conversion. Meets with PES 160.

ENSC 162-1. Solar Energy Laboratory. Laboratory course designed to provide practical experience in designing and measuring the characteristics of active and passive solar heating systems. Prer., or Coreq., ENSC 160. Meets with PES 162.

ENSC 250-3. Energy Fundamentals. Energy, work, power, and thermodynamic efficiency. World and U.S. energy sources, consumption, and policy. Conservation methods. Introduction to long- term energy sources: solar, breeder reactors, thermonuclear fusion, geothermal, and tidal. This survey course is designed for science majors and assumes some knowledge of calculus and the physical sciences. Meets with PES 250.

ENSC 320-4. Practical Meteorology. An introduction to weather elements and meteorological phenomena with emphasis on physical principles and practical applications. Includes weather elements, air masses, clouds, precipitation, storms and other weather systems, weather map analysis, forecasting, weather control and modification, and current developments in the field of meteorology. Local and current weather facilities will be used to relate meteorological principles to actual observations. Meets with GES 320.

ENSC 361-3. Solar Energy Design. A study of selected design tools for component sizing and performance prediction of active and passive solar thermal systems. Graphic and computer average monthly performance tools and numerical simulation methods will be covered. Meets with PES 361.

ENSC 365-3. Nuclear Energy. Nuclear structure, radioisotopes, nuclear reactions, fission, and fusion. Emphasis on nuclear power production and its environmental impact.

ENSC 367-3. Exotic Energy Sources. A survey of the technology of wind, geothermal, and ocean energy conversion, including climatic aspects, site selection, mechanics of the energy system, legal aspects, and environmental relationships.

ENSC 406-4. Introduction to Remote Sensing. The acquisition and interpretation of environmental and natural resource data by using aerial photography and other imagery. This is a project oriented course which involves the use of various types of photography and analysis techniques. Prer., GES 100 or GES 101. Meets with GES 406 and GES 506.

ENSC 409-4. Image Processing. An introduction to the advance methods of resource analysis using remotely sensed imagery. All relevant portions of the electromagnetic spectrum will be

discussed. Emphasis will be placed on the digital image analysis (by microcomputer) or LANDSAT data. No previous programming experience required. Prer., GES 406. Meets with GES 409 and GES 509.

ENSC 460-3. Advanced Solar Energy. Fundamental, technical principles of solar energy. Solar radiation; data and models. Radiative and convective heat transfer. Optical properties of materials. Optical and thermal analysis of flat- plate and concentrating collectors. Analysis of active and passive system performance, including high temperature application. Introduction to photovoltaics. Prer., PES 213 and MATH 236. (PES 250 and 342 are recommended). Meets with PES 460.

ENGLISH

ENGL 099-3. Components of Writing. Introductory writing course offered through Extended Studies: 262: 4071. Students develop strategies for managing academic reading and writing assignments. Emphasizes the writing process: generating topics, drafting, revising and editing academic prose. Students receive one-on-one support throughout the writing process with special attention to writing conventions and the development of ideas. Critical reading and discussion skills are an integral part of this course. ENGL 099 is taught in a computer- mediated environment. Designed to prepare students for ENGL 131. Placement Criteria: ACT English score of 18 or below; SAT English score of 449 or below. For additional placement information, call the Writing Program: (719) 262-4040.

ENGL 131-3. Rhetoric and Writing I: Academic Reading and Analytical Writing. First semester of a two-semester course, required of all students. Introduces students to academic reading and writing processes. Students develop critical reading, writing and thinking skills through class discussion, the rhetorical analysis of academic texts and the writing of analytical essays. Students write for a variety of purposes and audiences. Emphasis is given to reading and writing processes as multiple, and rhetorically diverse. Students may variously explore multicultural approaches to reading and writing, interdisciplinary approaches to reading and writing, community-specific definitions of literacy and language practices and/or the impact of technology upon academic reading and writing processes. Requirements include an in-class essay exam and three analytical essays. ENGL 131 is taught in a computer-mediated environment. Students needing additional work on sentence-level editing skills may be asked to enroll concurrently in ENGL 135. Prer., Successful completion of ENGL 099 or equivalent; score of 19+ on the English ACT; or score of 450+ on the English SAT. See general information section of the Schedule of Courses or the Course Bulletin for additional information.

ENGL 135-1. Composition I Laboratory. A course in sentence structure and strategies, to be taught in small group workshops in the Writing Center. Students will learn and apply basic grammatical and stylistic principles in small, computer-assisted, interactive group sessions, while also working individually with peer tutors on their own writing. One-hour workshops meet weekly in the Writing Center beginning the third week of classes. Supplements Composition courses. Cannot be repeated for credit.

ENGL 141-3. Rhetoric and Writing II: Argument and Research. Emphasizes argument and research supported through extended inquiry. Students use classical stasis theory to invent arguments as appropriate to audience and situation. Students map complex issues, summarize and negotiate counterclaims, and strategically cast their arguments in stasis deemed effective for their situation. Prer., ENGL 131 or equivalent.

ENGL 145-1. Composition II Laboratory. A self-study lab course in grammar, sentence structure, and basic writing principles. Student programs are individually designed to meet the student's particular area of need. English 145 students will complete grammatical and syntactical exercises, writing revisions, and/or assigned readings, while working collaboratively with a peer tutor on the student's academic writing assignments. Requires a weekly, two-hour commitment. Allows for concentrated study and ongoing individualized support. Supplements Composition courses. Can be taken twice for credit.

ENGL 150-3. Introduction to Literature for Non-Majors. Fundamental literary analysis of poetry, drama and fiction. This course is a prerequisite to all other literature courses. Prer., ENGL 131 or equivalent, or score of 29+ on English ACT or score of 690+ on English SAT

ENGL 190-3. Introduction to Literary Studies (For English Majors Only). Introduction to study of poetry, drama and fiction designed specifically to prepare majors for advanced work in literature. This course is a prerequisite for English majors to every other literature course in the department of English except ENGL 150. Prer., ENGL 131 or equivalent, or score of 29+ on the English ACT or score of 690+ on English SAT.

ENGL 203-3. Introduction to Creative Writing - Poetry. For the beginning student who wants to write poetry. Workshop approach.

ENGL 204-3. Introduction to Creative Nonfiction Prose. Focusing on writing nonfiction pieces, the course explores this burgeoning genre, represented by literary journalism, essays, memoirs, personal narratives, and confessional writing. Students will write in these formats, and their work will be critiqued in class. Reading includes some of today's best nonfiction. Prer., ENGL 131 or instructor consent.

ENGL 205-3. Introduction to Creative Writing - Fiction. Exercises in perception and voice designed to develop students' abilities to write fiction. Workshop approach. Prer., ENGL 131 or permission of instructor.

ENGL 251-3. Survey of British Literature I. Chronological study of major British writers from the beginnings (Beowulf) through the works of Shakespeare. Prer., ENGL 131 or equivalent and ENGL 150 or ENGL 190.

ENGL 252-3. Survey of British Literature II. Chronological study of major British writers from the period following the English Renaissance through the eighteenth century, or from John Donne and John Milton to Thomas Gray and Jane Austen. Prer., ENGL 131 or validated equivalent and ENGL 150 or ENGL 190.

ENGL 253-3. Survey of British Literature III. Chronological study of major British writers from the Romantic period through the rest of the nineteenth century, or from the Romantics (Blake, Burns, etc.) to Yeats. Prer., ENGL 131 or equivalent and ENGL 150 or ENGL 190.

ENGL 254-3. Survey of British Literature IV. Chronological survey of major British writers from Joyce to Beckett, or from the start of the twentieth century to the contemporary era. Prer., ENGL 131 or validated equivalent and ENGL 150 or ENGL 190.

ENGL 260-3. Literature: The Global Perspective I. Designed to introduce students to literature from the ancient and early modern world; particular attention to emerging notions of Western culture and an indebtedness to exchanges with the East. Prer., ENGL 131 and either ENGL 150 or ENGL 190.

ENGL 261-3. Literature: The Global Perspective II. Examines modern works with particular attention to literature outside North America and Great Britain and to how a quickly and often violently changing world affects regional cultures. Prer., ENGL 131 and either ENGL 150 or ENGL 190.

ENGL 280-3. Film and Fiction. This is a course that examines the "transformational" process by which a novel (or short story) is adapted to film. What is gained, lost, altered in that process is then used as a means of coming to understand that novel or short story. Most typically what will not really "transform" itself to film is used as the basis of critical analysis. Prer., ENGL 131 or validated equivalent and ENGL 150 or ENGL 190.

ENGL 290-3. Topics in Literature. While the topic varies by semester and instructor, this course will always focus on national diversity and/or global awareness through the study of how literature and socio-political conditions are reciprocally influenced. Prer., ENGL 131 or validated equivalent and ENGL 150 or ENGL 190.

ENGL 291-1 to 3. Topics in Literature. Topics will vary from year to year and may or may not be offered in any given semester. See individual course schedules for Fall or Spring. May be repeated for credit with permission of department chair. Prer., ENGL 131 or equivalent and ENGL 150 or ENGL 190.

ENGL 300-3. Literary Criticism in Theory and Practice. Introduces students to various critical methods, which they will apply to novels and works from other literary genres; students will also have opportunities to hear English faculty members engage in critical interchange. Prer., ENGL 131 and ENGL 150 or ENGL 190.

ENGL 301-3. Advanced Composition. Writing workshop that offers students the opportunity to work on advanced writing projects and enhance their repertoire of rhetorical strategies. Specific writing projects may vary. TEP sections of ENGL 301 also emphasize instructional strategies for managing the writing process in public school settings. Prer., ENGL 131 and ENGL 141 or equivalent.

ENGL 302-3. Intermediate Rhetoric and Writing. Extends writing and rhetorical strategies mastered in the core composition sequence. Students further develop research and argument skills in unique contexts such as service learning and writing in the community. Learning and research sites may vary. Prer., ENGL 131 and ENGL 141 or equivalents.

ENGL 303-3. Intermediate Creative Writing - Poetry. For the experienced writer of poetry. Workshop approach. Prer., ENGL 203 or consent of instructor. May be taken twice for credit.

ENGL 304-3. Intermediate Creative Non-Fiction. Focusing on personal narrative writing, this course explores the genre of memoir and autobiographical writing. This course is workshop intensive using in-class writing assignments, class critiques, close reading, and discussion of essays. Through memoir, students learn to lift the raw material of life and shape experiences, transform events and deliver wisdom. Prer., ENGL 204 or consent of instructor.

ENGL 305-3. Intermediate Creative Writing: Fiction. Exercises in perception and voice and critical discussion of student work in the forms of fiction. Limited to 21 students. By consent of instructor only. Based upon demonstrated desire and ability to write. Workshop approach. May be taken twice for credit.

ENGL 307-3. Business and Administrative Writing. For all students and especially business and professional writing students who foresee the need for proposal writing, report writing, data collection, and presentation. Prer., ENGL 131 or equivalent or a bachelor's degree.

ENGL 309-3. Technical Writing and Presentation. This course is designed to teach students how to present technical information effectively both through written reports and through oral presentations. It is taught in an electronic classroom with access to software tools for the design of both written and oral personations. Prer., ENGL 131 or equivalent.

ENGL 311-3. Advanced Grammar. Provides a theoretical, historical, and practical study of grammar and the rules governing language use, particularly as they apply to professional writing. The emphasis is on the standard conventions of grammar, usage, mechanics, and syntax. Students will practice a variety of techniques for applying these skills to their own writing. Prer., ENGL 131 or equivalent or a bachelor's degree.

ENGL 312-3. Technical Editing and Style. Focuses on editing strategies for improving the stylistic features of professional writing. In particular, it is concerned with a document's organization, clarity, conciseness, consistency, completeness, and accuracy. Students will practice a variety of techniques for applying these skills to their own writing. Prer., ENGL 131 or validated transfer credit or a bachelor's degree.

ENGL 313-3. Designing Documents for Business and Industry. Examines print and web-based design strategies in specific types of documents for a variety of professional audiences. Each project requires a proposal, a progress report, and a preliminary draft for peer review before submission of the final copy. Prer., ENGL 131 or equivalent or a bachelor's degree.

ENGL 314-3. Managing Writing Projects in Business and Industry. Provides a theoretical framework for managing writing projects and practice in working collaboratively in self-managed teams. Each team completes major writing projects collaboratively produced. Prer., ENGL 131 or equivalent or a bachelor's degree.

ENGL 315-1 to 3. Professional Writing Internship. Gives students an opportunity to apply writing theory to a work environment and to gain practical experience in writing on the job. Working for an organization participating in the Internship Program, students perform 40 hours of writing-related duties over the course of the semester for 1 credit, 80 hours for 2 credits, and 120 hours for 3 credits. Interns are evaluated by a supervisor at the host organization, keep a weekly log of their experiences, and write a final report to the instructor, summarizing and evaluating their internship experience. Prer., ENGL 131 or equivalent or a bachelor's degree, and at least 9 credits in Professional Writing courses.

ENGL 316-3. Tools for Technical Writers. Students will learn to use the standard software tools critical to technical writers in print and online documentation, for example, FrameMaker, Adobe Acrobat, MS Word, MS PowerPoint, FrontPage, and PaintShop Pro among others. Prer., ENGL 131 or equivalent transfer.

ENGL 320-3. Women Writers and Women's Experience. Study of some women writers deserving attention because of their artistry and depiction of women's lives. May be repeated for credit with permission of department chair. Prer., ENGL 150 or ENGL 190. Meets with WMST 320.

ENGL 332-3. Born in the USA: Masterpieces of American Literature. A study of the works by American masters of fiction, poetry, drama, and prose non-

fiction, emphasizing the relationship of the literature to its cultural and historical contexts. Examining works of cultural diversity and giving various perspectives of America, the course includes readings by Native-American, African American, Asian American, and Latino/a writers. Prer., ENGL 131 or equivalent and ENGL 150 or ENGL 190.

ENGL 338-3. Survey of American Literature I. Surveys the foundational texts of American Literary history from the literatures of European encounters with New World Amerindians (Columbus, Cabeza de Vaca, Smith), through the American Romantics (Poe, Hawthorne, Melville) with attention to the cultural and social contexts in which these literatures were produced. Includes study of Puritan literary forms (the Jeremiad, the Captivity Narrative, the meta- physical poetry of Bradstreet and/or Taylor) and reflects on how these forms were revised by such authors as Douglass and Whitman in light of antebellum engagements with the problems of race, class, and gender. Prer., ENGL 131 or equivalent and ENGL 150 or ENGL 190.

ENGL 339-3. Survey of American Literature II. Surveys the development of American Literary voices from the Civil War era experimentations of Davis, Crane and Dickinson, through development of American Modernism in poetry and prose (Williams, Eliot, Stevens, Anderson, Hemingway, Faulkner), concluding with the Native American Renaissance of the 1960s and 70s. Includes such writers as Twain, James, Wharton and/or Chopin with the attention to race-relations, immigration and the New Woman, as well as surveying the development of the African-American literary tradition through the writings of Washington, DuBois, Toomer, Wright, and/or Hurston. Prer., ENGL 131 or equivalent and ENGL 150 or ENGL 190.

ENGL 346-3. Race, Writing & Difference in the Contemporary American Novel. A study of major writers and developments in the fast-expanding field of American ethnic minority literature, the course examines a representative group of novelists who write of the African American, Latino/a or Hispanic, Asian American, and Native American experiences. The ethnic minority novel transmits ethnic identity and cultural history and recovers lost histories and suppressed voices. Prer., ENGL 131 or equivalent and ENGL 150 or ENGL 190 or EST 200. Meets with EST 346.

ENGL 353-3. Literature of the English Renaissance, Excluding Shakespeare. Explores the cultural currents in the time of Shakespeare through four important literary genres: lyric, drama (non-Shakespearean), epic/romance, and various forms of prose. Prer., ENGL 131 or validated equivalent and ENGL 150 or ENGL 190 or EMST 200.

ENGL 355-3. Native American Literature. Provides students with the necessary cultural and literary background required to understand and appreciate some of the major works of Native American literature. Prer., ENGL 131 or validated equivalent and ENGL 150 or ENGL 190. Meets with EMST 355.

ENGL 360-3. Contemporary African American Literature. Provides students with the necessary cultural and literary background required to understand and appreciate some of the major works of African American Literature. Prer., ENGL 131 or validated equivalent and ENGL 150 or ENGL 190 or EMST 200. Meets with EMST 360.

ENGL 380-3. Peer Tutoring, Writing Across the Curriculum. Instruction and practice in the principles of teaching/tutoring writing as required in a variety of academic disciplines in the University. Examines one- on-one conferencing techniques, discipline-specific writing demands, differences in individual learning styles and cultural values, and individual writing processes. Students will also work on further development of their own writing processes. Students will also work on further development of their own writing abilities as well as understanding of basic grammatical principles. An interactive, collaborative class that includes one hour of supervised tutoring in the Writing Center weekly. Students in all majors are encouraged to enroll. A required class for employment as a Writing Center peer tutor. Prer., ENGL 131 and ENGL 141, or equivalent.

ENGL 390-3. Topics in Literature. While the topic varies by semester and instructor, this course will focus on national awareness and/or global awareness through the study of how literature and socio-political conditions are reciprocally influenced. Prer., ENGL 131 and either ENGL 150 or ENGL 190.

ENGL 391-1 to 3. Topics in Literature. Topics will vary from semester to semester. Check Fall and Spring schedules. May be taken up to two times for credit with permission of department chair. Prer., ENGL 131 or equivalent and ENGL 150 or ENGL 190.

ENGL 395-3. Chaucer. Study of major works with emphasis on "Canterbury Tales." Readings will be in middle English; short introduction to the language will precede study of the poetry. Prer. ENGL 131 or validated equivalent and ENGL 150 or ENGL 190.

ENGL 397-3. Shakespeare I. Comedies and Histories. Prer., ENGL 131 or equivalent and ENGL 150 or ENGL 190.

ENGL 398-3. Shakespeare II. Tragedies and Romances. Prer., ENGL 131 or validated equivalent and ENGL 150 or ENGL 190.

ENGL 410-3. Advanced Creative Writing. Focuses on generating new material, revising existing work with an eye towards completion of a manuscript for publication, and furthering the development of critical voice. Students must bring a high level of dedication to their writing and a demonstrated proficiency in their craft. Workshop approach and independent projects required. Genres vary. Prer., Intermediate courses in the genre or instructor approval.

ENGL 420-3. The Eighteenth-Century British Novel: Defoe to Austen. Traces the emergence of the novel from its subliterary roots in early 18th century to its stunning transformation by early 19th century. Examines historical context, narrative techniques, theory of character, and major themes. Authors include Defoe, Richardson, Fielding, Sterne, and Austen. Prer., ENGL 131 or validated equivalent and ENGL 150 or ENGL 190. Meets with ENGL 520.

ENGL 421-3. The Nineteenth-Century British Novel. Continuation of 420, but may be taken without previous novel course. Examines major British novels of the 19th century and early 20th century. Authors include the Brontes, Dickens, Eliot, and Hardy. Prer., ENGL 131 or equivalent and ENGL 150 or ENGL 190. Meets with ENGL 521.

ENGL 423-3. Development of the American Novel I. Study of the American novel from its beginnings, with the work of Charles Brockden Brown, through the 19th century, concluding with the work of Henry James. Will examine both artistic development of American writers and the novels' functions as vehicles of cultural history. Prer., ENGL 131 or validated equivalent and ENGL 150 or ENGL 190. Meets with ENGL 523.

ENGL 424-3. Development of the American Novel II. Continuation of ENGL 423. Covers development of the "modern" realistic novel, from beginning of the 20th century through 1945, and examines work of Wharton, Hemingway, Fitzgerald,

Dreiser, Wright and others. Prer., ENGL 131 or validated equivalent and ENGL 150 or ENGL 190. Meets with ENGL 524.

ENGL 425-3. Contemporary Novel. Study of major novelists and developments in the genre, with emphasis on British and American novels written since 1965. Prer., ENGL 131 or validated equivalent and ENGL 150 or ENGL 190. Meets with ENGL 525.

ENGL 430-3. Studies in American Literature and Culture. Advanced study of such topics as early American and modern American poetry and literature of the American frontier. May be repeated for credit with permission of department chair. Prer., ENGL 131 or validated equivalent and ENGL 150 or ENGL 190. Meets with ENGL 530.

ENGL 440-3. Genre Studies. Topics may include medieval epic and romance, lyric poetry, dramatic comedy, medieval comedy, satire. May be repeated for credit with permission of department chair. Prer., ENGL 131 or equivalent and ENGL 150 or ENGL 190. Meets with ENGL 540.

ENGL 450-3. Studies in Anglo-Saxon and Medieval Literature. Study of major works in prose, poetry, and drama of medieval Europe. May be repeated for credit with permission of the department chair. Prer., ENGL 131 or validated equivalent and ENGL 150 or ENGL 190. Meets with ENGL 550.

ENGL 483-3. Rhetoric and Writing. Theoretical and practical study of writing processes across diverse contexts. Explores the rhetorical nature of writing, and applies rhetorical theory and research to the teaching and practice of writing. Theoretical topics may vary. See the Schedule of courses for the topic in any given semester. Prer., Upper-division standing or permission of instructor, and ENGL 131 and ENGL 141 or course equivalents. Meets with ENGL 583.

ENGL 485-3. History of the English Language. Outline of the history of the English language including a brief survey of sound changes, of grammatical forms and of the vocabulary. Meets with ENGL 585.

ENGL 486-3. Special Topics in Rhetoric and Writing. Advanced, in-depth study of the theoretical and practical accomplishments of writers and rhetors across diverse historical contexts. Rhetors, theorists, and historical contexts shift with topics. Prer., ENGL 131 and ENGL 141 or equivalent courses. Meets with ENGL 586.

ENGL 495-3. Seminar in Literary Topics. Course topic will vary by semester. Check Schedule off Courses each term for specific course content. May be repeated for credit with permission of department chair. Prer., ENGL 131 or validated equivalent and ENGL 150 or ENGL 190. Meets with ENGL 595.

ENGL 498-3. Seminar in Major Authors. Author varies from semester to semester and may not be offered in any given year. Check schedule of courses for specific information. May be repeated for credit with permission of department chair. Prer., ENGL 131 or validated equivalent and ENGL 150 or ENGL 190. Meets with ENGL 598 and WMST 498, if appropriate.

ENGL 520-3. The Eighteenth-Century British Novel: Defoe to Austen. Traces the emergence of the novel from its subliterary roots in early 18th century to its stunning transformation by the early 19th century. Examines historical context, narrative techniques, theory of character, and major themes. Authors include Defoe, Richardson, Fielding, and Austen. Prer., ENGL 131 or validated equivalent and ENGL 150 or ENGL 190. Meets with ENGL 420.

ENGL 521-3. The Nineteenth-Century British Novel. Continuation of 520, but may be taken without previous novel course. Examines major British novels of the 19th century and early 20th century. Authors include Bronte, Dickens, Eliot, and Hardy. Prer., ENGL 131 or validated equivalent and ENGL 150 or ENGL 190. Meets with ENGL 421.

ENGL 523-3. Development of the American Novel I. Study of the American novel from its beginnings with the work of Charles Brockden Brown, through the 19th century, concluding with the work of Henry James. Will examine both artistic development of American writers and the novel's functions as vehicles of cultural history. Prer., ENGL 131 or validated equivalent and ENGL 150 or ENGL 190. Meets with ENGL 423.

ENGL 524-3. Development of the American Novel II. Continuation of ENGL 523. Covers development of the "modern" realistic novel from beginning of the 20th century through 1945 and examines work of Wharton, Hemingway, Fitzgerald, Dreiser, Wright and others. Prer., ENGL 131 or validated equivalent and ENGL 150 or ENGL 190. Meets with ENGL 424.

ENGL 525-3. Contemporary Novel. Study of major novelists and developments in the genre, with emphasis on British and American novels written since 1965. Prer., ENGL 131 or validated equivalent and ENGL 150 or ENGL 190. Meets with ENGL 425.

ENGL 530-3. Studies in American Literature and Culture. Advanced study of such topics as early American and modern American poetry and literature of the early American frontier. May be repeated for credit with permission of department chair. Prer., ENGL 131 or validated equivalent and ENGL 150 or ENGL 190. Meets with ENGL 430.

ENGL 540-3. Genre Studies. Topics may include medieval epic and romance, dramatic comedy, medieval comedy, satire. May be repeated for credit with permission of department chair. Prer., ENGL 131 or validated equivalent and ENGL 150 or ENGL 190. Meets with ENGL 440.

ENGL 550-3. Studies in Anglo-Saxon and Medieval Literature. Study of major works in prose, poetry, and drama of medieval Europe. May be repeated for credit with the permission of the department chair. Prer., ENGL 131 or validated equivalent and ENGL 150 or ENGL 190. Meets with ENGL 450.

ENGL 583-3. Rhetoric and Writing. Theoretical and practical study of writing processes across diverse contexts. Explores the rhetorical nature of writing and applies rhetorical theory and research to the teaching and practice of writing. Recommended for students and professionals interested in teaching writing in the public schools or at the college level, also intended for students interested in pursuing graduate studies in Rhetoric and Composition. Designed as a graduate seminar. Meets with ENGL 483.

ENGL 584-3. Graduate Practicum for Writing Instructors. Graduate training practicum for writing instructors at the college level. Theoretical inquiry and practical development of syllabi, course plans, and instructional materials. Pass/Fail only.

ENGL 585-3. History of the English Language. Outline of the history of the English language including a brief survey of sound changes, of grammatical forms and of the vocabulary. Meets with ENGL 485.

ENGL 586-3. Special Topics in Rhetoric and Writing. Advanced, in-depth study of the theoretical and practical accomplishments of writers and rhetors across diverse historical contexts. Rhetors, theorists and historical contexts shift with topics. Prer., ENGl 131 and ENGL 141 or equivalent courses. Meets with ENGL 486.

ENGL 595-3. Seminar in Literary Topics. Course topic will vary by semester. Check the Schedule of Courses each term for specific course content. May be repeated for credit with permission of department chair. Prer., ENGL 131 or validated equivalent and ENGL 150 or ENGL 190. Meets with ENGL 495.

ENGL 598-3. Seminar in Major Authors. Authors to vary from semester to semester and may not be offered in any given year. Check Schedule of Courses for specific information. May be repeated for credit with permission of department chairperson. Prer., ENGL 131 or validated equivalent and ENGL 150 or ENGL 190. Meets with ENGL 498 and WMST 498, if appropriate.

ENGL 696-3. Renaissance Drama Exclusive of Shakespeare. Graduate study in the major plays of Elizabethan and Stuart drama from the 1580s to the closing of the theaters in 1642. Consideration of representative sub-genres of comedy, history, tragedy, and romance in the context of their culture. Prer., ENGL 131 or validated equivalent and ENGL 150 or ENGL 190.

ENGL 940-1 to 3. Independent Study in English. Students may not enroll for independent study in this course without prior consent of the English faculty. A student desiring independent study credit must present to the faculty, in writing, a well- defined topic for research which is not included in the regular English course offerings. Approval for such study must be secured from the department chair before registration. May be repeated for credit with permission of department chairperson.

ENGL 950-1 to 3. Independent Study in English.

ETHNIC STUDIES

EST 200-3. Introduction to Ethnic Studies. Introduction to Ethnic Studies focuses upon, and historically contextualizes, the perspectives and cultural expressions of U.S. minority groups. Among other things, this course will consider key concepts such as racial/ethnic formation and examine the inter-relationship among race, ethnicity, gender, class and power.

EST 201-3. Introduction to Race and Gender. Through critical analysis, this course will examine race and gender in society. It will focus on how systems of inequality are maintained and perpetuated. A strong emphasis will be placed on the concept of social change. Meets with WMST 201.

EST 205-3. Introduction to Jazz. Survey course on Jazz. Various styles of Jazz from New Orleans style through Swing, Bebop, Cool, Avant Garde, Fusion, and the most recent developments will be studied in a musical and socio-humanistic perspective. Attendance at concerts required. Meets with MUS 205.

EST 211-3. Introduction to Teatro Chicana/o. An introductory survey of the historical development of contemporary Teatro Chicana/o from Spanish drama, and an introduction to methods of Theatre: acting, direction, staging and script writing. Meets with THTR 211.

EST 290-3. Special Topics. Offered to allow lower division study in a specific area on a demand basis. Prer., EST 200 recommended.

EST 300-3. Race and Gender at the Movies. Through critical analysis, this class will focus on race and gender in movies to facilitate an understanding of student's own identities, roles, and behavior in society, and the potential for social change. Meets with WMST 300.

EST 305-3. Race and Ethnicity in American Politics. An examination of the role of U.S. ethnic minority groups in American politics from the perspectives of the groups themselves. Topics will include historical and contemporary perspectives on the political activities, interests and legal status of U.S. ethnic minorities; the relationship of power, race/ethnicity and class in determining the effects of the political system on these groups; and the impact of these groups on the political system. Meets with P SC 305.

EST 310-3. Women of Color: Image and Voice. An examination of the ways in which the intersections of race, ethnicity, and gender are constructed both within and against traditional American feminism and gender critiques. The course will address areas of divergence from mainstream feminism, as well as the construction of alternative representations by women of color. Prer., WMST 100 or EST 200. Meets with WMST 310.

EST 323-3. The Chicana/o Community. The study of the origin, development, and current order of the Chicana/o community. Includes studies of the "barrio," ethnic identity, social organization and values, and the consequences of prejudice and discrimination. Prer., SOC 111 or SOC 220. Meets with SOC 323.

EST 324-3. The African American Community. The study of the origin, development, and contemporary nature of Black community. Includes understanding of Black culture and values, and the consequences of prejudice and discrimination. Prer., SOC 111 or SOC 220 or EST 200. Meets with SOC 324.

EST 328-3. The Asian American Community. This course provides a general introduction to Asian American Studies. It surveys Asian American social organization and political history from the 1800s to the present through the lens of immigration, family, labor, community, activism and resistance. Prer., SOC 111 or SOC 220 or EST 200.

EST 329-3. Perspectives on Race and Ethnic Relations. A survey of racism, discrimination, prejudice, and relationships between dominant and minority groups in selected areas of the world. Prer., SOC 220 or consent of instructor. Meets with SOC 329.

EST 342-3. North American Indians. A survey of the native cultures of America north of Mexico. Examines major institutions by culture area and type of social organization. Prer., ANTH 104 or ANTH 240 or consent of instructor. Meets with ANTH 342.

EST 343-3. African American Art. Introduction to contemporary (1970-) African American art forms with inclusion of traditional African art's influence on American Black culture. Meets with A H 343.

EST 346-3. Race, Writing & Difference in the Contemporary American Literature. A study of the major writers and developments in the fast expanding field of U.S. ethnic minority literature. Prer., ENGL 150 or ENGL 190 or EST 200 and ENGL 131 or validated equivalent. Meets with ENGL 346.

EST 350-3. Chicana/o History to 1910. A panoramic sketch of Chicana/o history to about 1910. Integrates events, ideas, and personalities from both sides of the border to illuminate the evolution of Spanish-speaking people of the American Southwest. Meets with HIST 350.

EST 351-3. Chicana/o History Since 1910. A broad sketch of Chicana/o history since 1910. This course integrates events, ideas, and personalities from both sides of the border to illuminate the evolution of Spanish-speaking people of the American Southwest. Meets with HIST 351.

EST 352-3. History of Latinos in the US. Course covers the history of US Latino communities and Latin American immigrants to the US from the 1820's to the present. Meets with Hist 352.

EST 355-3. Native American Literature. This course is designed to provide students with the necessary cultural and literary backgrounds to understand and appreciate some of the major works of Native American literature. Prer., ENGL 190 or ENGL 350 or EST 200 and ENGL 131 or validated equivalent. Meets with ENGL 355.

EST 358-3. Immigrant Histories. The history of immigrants/migrants from Latin America, Africa, the Middle East, and Europe as of 1840 to the present will be examined. Emphasis will be placed on US immigration laws, the development of ethnic based communities and connections to US policy. Meets with HIST 358.

EST 360-3. African American Literature. This course is designed to provide students with the necessary cultural and literary background required to understand and appreciate some of the major works of African American literature. Prer., ENGL 150 or ENGL 190 or EST 200 and ENGL 131 or validated equivalent. Meets with ENGL 360.

EST 363-3. Gender and Race in Biblical Literature. This course examines the presence(s), result(s), and interpretation(s) of gender and race in biblical literature, and the issues and problems these categories present to the reader. Prer., EST 200 recommended. Meets with PHIL 363 and WMST 363.

EST 366-3. Ethnic Minority Communities: Service and Learning. This course provides students the opportunity to put into practice the theoretical knowledge gained in EST courses within the context of placements with community-based organizations that serve the various ethnic minority communities in Colorado Springs. Prer., EST 200 or consent of instructor.

EST 372-3. From Slavery to Freedom: The African American Experience, 1619-1877. Introduces students to the major political, social, and cultural developments in the history of African Americans from 1619 through Reconstruction. Meets with HIST 372.

EST 373-3. Vision & History in Native American and African American Narratives. Examines via biography/autobiography how North America impacts the perspective and reality of American Indian and African American people(s), circa 1790-2000. Meets with HIST 373.

EST 374-3. African American Social and Political Thought, 1790-1980. Surveys the historical basis of socio-political thought in North America's diaspora (African American) communities. Meets with HIST 374.

EST 390-1 to 3. Special Topics. Offered to allow intermediate study in a specific area on a demand basis. Prer., EST 200 recommended.

EST 401-3. Special Topics. Offered to allow intensive study in a specific area. May be repeated for credit with permission of the Program Director. Prer., EST 200 or consent of instructor.

EST 440-3. Indigenous Peoples and Cultures of the Southwest. An intensive study in cultural anthropology of the indigenous peoples and cultures of the Southwest. Prer., Consent of instructor. Meets with ANTH 440.

EST 442-3. U S Latino/Hispanic Literature. Study of the works of the leading Chicana/o, Puerto Rican, and Cuban American writers in the United States. Prer., SPAN 310 or consent of instructor Meets with SPAN 442 and SPAN 542.

EST 443-3. US Latina/o Drama. The drama and theatrical work of Chicana/o, Puerto Rican and the U.S. Cuban writers. Meets SPAN 443 and SPAN 543.

EST 444-3. Hispanic, Chicana/o, and Mexican American Literature. The literary manifestation of individuals of Mexican origin or descent in theater, prose, and poetry. Prer., SPAN 319 and SPAN 320. Meets with SPAN 444 and SPAN 544.

EST 445-3. US Cuban Literature. Since 1960, and even in the 19th century, Cubans migrated to the U.S. and began to write poems, essays, fiction and theater. A study of examples of these works. Prer., SPAN 319 and SPAN 320. Meets with SPAN 445.

EST 471-3. Asian American History. The course will trace the social, political, economic, and cultural history of Asian Americans from the early settlements of the nineteenth century to the present. Meets with HIST 471.

EST 940-1 to 3. Independent Study in Ethnic Studies. Provides an opportunity to advanced students with good scholastic records to independently pursue the study of some subject of special interest. Prer., EST 200 and consent of Director.

FILM STUDIES

FILM 100-3. Introduction to Film Studies. Basic film theory, stylistics, and genre analysis in Western dominant and avant garde cinema. Themes include sociopolitical and feminist critique, surrealism, semiotics, metafilm, neorealism, and postmodernism.

FILM 200-3. Narrative Film. A continuation of basic film study and analysis from FILM 100. This course explores international cinema history and trends in cinema's aesthetic forms as well as the significant personalities and cultural impact of narrative genres. Prer., FILM 100, or consent of instructor.
FILM 280-3. Film and Fiction. Examines the "transformational" process by which a novel (or short story) is adapted to film. What is gained, lost, and/or altered in that process is then used as a means of coming to understand that novel or short story. Most typically what will not really "transform" itself to film is used as the basis of critical analysis.

FILM 345-3. German and Austrian Film. Screenings, lecture, discussion; knowledge of German not required. German and Austrian film in a cultural context from beginnings to the present featuring such directors as Lang, Von Sternberg, Riefenstahl, Hartl, Fassbinder, Schlondorff, Export, and Wenders. Meets with GER 345 and F CS 345.

FILM 350-3. American Cinema. An introductory film course surveying American cinema as art, industry, and system of representation and communication. Students acquire knowledge of film history and genres, technical and critical vocabulary terms, and how popular genres extend to broader social context. Meets with COMM 350.

FILM 369-3. Topics in Hispanic Film. The cinematic manifestations of the richness and the variety of Hispanic culture as expressed through an artistic and humanistic vision. May be repeated once for credit if the topic is different. Meets with F CS 369.

FILM 371-3. Great European Film Directors: A Historical View, 1945-1994. A study of the history of cinema, through works of great European directors of Post WWII period: from De Sica, Antonioni, Fellini, Pasolini, to Tarkovsky, Paradjanov, Wajda, Jarman, and Greenway. Course will be a valuable elective for all arts and sciences majors.

FILM 372-3. Russian Avant-Garde Cinema: A Historical View, 1915-1995. A study of history of nearly 100 years of Russian and Soviet cinema through works of great directors: Eisenstein, Tarkovsky, Paradjanov, Shepit'ko, and others; from 1910's through 1990's. Every 4 hour session includes a complete feature film, some rare and never released on video. A

valuable elective for all arts and sciences majors.

FILM 373-3. Russian Art Cinema Today: A Historical View: 1989-1997. An in-depth study of the latest page in the history of its best directors: classics, such as Ioseliani, Soluiror, Muratova, as well as young talented directors, bound to become classics tomorrow. Every 4 hour session includes a complete feature film, often unavailable commercially. Available elective for all arts and science majors.

FILM 390-3. Special Topics in Film Studies. Selected topics in the theory, history and aesthetics of film. Prer., FILM 100 or FILM 200, or consent of instructor.

FILM 395-3. Women in Film. Selected topics dealing with the various roles of women in international cinema history.

FILM 403-1 to 3. Internship in Film Studies. Supervised opportunities for advanced film studies students to apply their knowledge and obtain experience in the film industry and at film festivals. Prer., FILM 100 and FILM 200. Film minors only.

FILM 411-3. French or Francophone Film. The evolution of French cinema from the 1940's to the "new wave." About six movies will be viewed and analyzed both as objects and as reflections of the evolution of French society from 1940 to present. All lectures, readings, discussions, and films in French. Prer., FR 211, FR 217, FR 301, FR 302. Meets with FR 411.

FILM 940-1 to 3. Independent Study. Independent work for undergraduates only. By special arrangement with the faculty. Prer., FILM 100 and FILM 200.

FOREIGN AND CULTURAL STUDIES

F CS 101-4. Selected Topics in Strategic Languages I. Elementary Language Study-written, oral, and aural in a less commonly taught languages: Arabic, Cambodian, Chinese, Farsi (Persian), Korean, Thai, and Vietnamese. Permission of Department Chair.

F CS 102-4. Selected Topics in Strategic Languages II. Elementary Language Study continued-written, oral and aural in a less commonly taught languages: Arabic, Cambodian, Chinese, Farsi (Persian), Korean, Thai, and Vietnamese. Permission of Department Chair. Prer., F CS 101.

F CS 318-3. German and Austrian Civilization and Culture. Lectures, film, readings, discussions in English; knowledge of German not required. Study of development of German and Austrian culture and institutions from 1700 to 1918, emphasizing literature, art, philosophy, and music. Meets with GER 318.

F CS 319-3. 20th Century German and Austrian Civilization and Culture. Lectures, films, readings, discussions in English; knowledge of German not required. Study of development of German and Austrian cultures and institutions from 1919 to the present emphasizing literature, design, art, and film. Meets with GER 319.

F CS 322-3. Japanese Culture and Civilization. Main currents of Japanese civilization from its beginning to the contemporary period. History, art, plus case studies of cultural differences (taught in English).

F CS 323-3. Southwestern Culture Studies. Taught in English. A cultural socio-history of the southwestern United States and its Mexican presence.

F CS 324-3. Modern French Culture and Civilization: France from 1700-1917. Studies the creation of modern France from its roots in the culture of the Ancient Regime through the upheaval of Enlightenment and Revolution to the Industrial Revolution and World War I. Emphasis will be on intersections of historical schools of thought, cultural movements and institutional structures in the development of France.

F CS 337-3. Origins and Development of Russian Cultural Traditions. Traces the development of Russian cultural traditions from the earliest recorded history of the Slavic people to contemporary society. The impact of religion, foreign domination and invasion, and geography on the Russian mind and behavior are examined. Special emphasis is given to the flowering of Russian literature, music and art in the 19th and early 20th centuries as well as to the role of the arts in the Soviet period.

F CS 339-1 to 3. Internships in Foreign Cultures. The Language and Culture department will offer to advanced language students the opportunity to apply their knowledge in settings such as schools, social support agencies, etc. May be repeated up to three times. Prer., 300 Level courses and permission of the department.

F CS 345-3. German and Austrian Film. Screenings, lecture, discussion; knowledge of German not required. German and Austrian film in a cultural context from beginnings to the present featuring such directors as Lang, Von Sternberg, Riefenstahl, Hartl, Fassbinder, Schlondorff, Export, and Wenders. Meets with GER 345 and FILM 345.

F CS 349-1 to 3. Internship in Foreign Cultures. The Language and Culture department will offer to advanced language students the opportunity to apply their knowledge in settings such as schools, social support agencies, etc. May be repeated for credit up to three times. Prer., 300 Level courses and permission of the department.

F CS 356-3. German Literature in Translation. Masterworks of German literature representing the major literary genres. Reading knowledge of German not required (in English). Meets with GER 350.

F CS 359-3. Deaf Culture. Examines the culture of deaf people. The course will explore their customs, values, norms and heritage of the deaf community in America. Prer., ASL 101 and ASL 102. Meets with ASL 359.

F CS 369-3. Topics in Hispanic Film. The cinematic manifestations of the richness and the variety of Hispanic culture as expressed through an artistic and humanistic vision. May be repeated twice for credit if the topic is different. Meets with FILM 369 and SPAN 369.

F CS 389-1 to 3. Field Studies in Language and Culture. Designed to study both on campus and in the field any aspect of aspects of departmental offerings in language, culture, and/or civilization. May be repeated once for credit, provided that the field trip destination is not duplicated. Prer., Consent of instructor.

F CS 399-3. Topics in Foreign Culture. Offered to allow intensive study in a specific area of interest. Prer., Permission of instructor.

F CS 421-3. Hispanic Heritage of Colorado. The study of the history and traditions of Hispanics in the state from the 16th century to the present. Meets with SPAN 421.

F CS 450-1 TO 3. Seminar in Foreign and Cultural Studies. Seminars and conferences on Foreign Studies subjects including languages and ethnicity. Only offered through Extended Studies.

F CS 589-3. Field Studies in Language and Culture. An on-campus and off-campus travel study class that explores a specified topic in language, culture, and civilization. May be repeated once for credit if the topic and field trip are different. Prer., Consent of instructor.

FRENCH

FR 101-4. Beginning French I. Essentials of French, oral-aural skills stressed with additional reading, writing and grammar.

FR 102-4. Beginning French II. Essentials of French continued. Additional oral-aural skills practice with increased grammar, reading, and writing. Prer., FR 101 or equivalent.

FR 211-4. Intermediate French I. French at the intermediate level with concentration on conversation, culture and civilization, or literature at that level. Prer., FR 102 or its equivalency.

FR 212-3. Intermediate French II. An intermediate French course continuing conversational usage and cultural integration utilizing contemporary materials, newspapers, etc. Prer., FR 211 or equivalent.

FR 293-3. Business French. The vocabulary and usage of the world of finance and commerce. Applied business correspondence, marketing and accounting terminologies. Prer., FR 212 or FR 217.

FR 300-3. Advanced Grammar. A course designed to review extensively the functional application of modern French. Prer., FR 212 or 217 or equivalent.

FR 301-3. French Conversation and Composition I. Practice in conversation with emphasis on pronunciation and diction; exercises in grammar review and oral communication. Prer., FR 212 or equivalent.

FR 302-3. French Conversation and Composition II. Practice in conversation with emphasis on pronunciation and diction; exercises in grammar review and oral communication. Prer., FR 301 or equivalent.

FR 303-3. Advanced French Conversation & Composition. Prer., FR 302 or equivalent.

FR 304-2. Advanced Pronunciation and Phonetics. A supplemental course for the advanced student emphasizing the "why's and wherefore's" of native pronunciations. Working from a solid knowledge structure of French, pronunciation work will stress the whole phrase as well as the relationship between grammar and speech. Prer., FR 300 or 301 or 302 or concurrent enrollment.

FR 310-3. Interpretive Practice: French Literature. An introduction to approaches to literature and genre studies in French. The course will provide an initial contact with all major literary genres in French as well as practical application of the major schools of literary interpretation. Prer., FR 212 or equivalent.

FR 311-3. Main Currents of French Literature I. An introductory survey. Selected literary texts representing major trends in the development of French literature. Prer., FR 212 or equivalent.

FR 312-3. Main Currents in French Literature II. An introductory survey of French literature from Neoclassicism to the present. Prer., FR 212 or equivalent.

FR 317-3. Advanced French Readings, Conversation and Composition. This course in advanced French bases classroom discussion and written assignment on contemporary journals, newspaper and nonliterary writings. Prer., FR 301, FR 302 or equivalent.

FR 323-1. Applied Conversation. Conversation at the advanced level on contemporary topics in French culture. Prer., FR 212, 217 or equivalent.

FR 324-3. Modern French Culture and Civilization: France from 1700-1917. Study of the creation of modern France from its roots in the culture of the Ancient Regime through the upheaval of Enlightenment and Revolution to the Industrial Revolution and World War I. Emphasis will be on intersections of historical schools of thought, cultural movements and institutional structures in the development of France.

FR 325-3. 20th Century France: Civilization & Culture. Study of French culture and institutions as they have developed from 1919 to the present, emphasizing the relationship between changing social structures and value systems and their representation in literature, design, art and film. Prer., FR 301, FR 302 or equivalent.

FR 327-3. Francophone Cultures. An intensive examination of linguistically defined cultures, treating particular cultural difference and issues of choice in relation to the imperial (culturally, politically or economically) culture and language. Readings will be drawn from a variety of sources ranging from historical documents and travel literature to contemporary writings (literary and others) from Francophone areas. Taught in French.

FR 339-1 to 3. Internship in Applied French. The Language and Culture department will offer to advanced French language students the opportunity to apply their knowledge of French in settings such as schools, social support agencies, etc. May be repeated up to three times for credit. Prer., 300 Level French courses and departmental permission.

FR 349-1 to 3. Internship in Applied French. The Language and Culture department will offer to advanced French language students the opportunity to apply their knowledge of French in settings such as schools, social support agencies, etc. May be repeated up to three times for credit. Prer,. 300 Level French courses and departmental permission.

FR 350-3. Special Topics in French. Varying topics of current importance in literary and socio-cultural study. May be repeated once for credit if the topic is different. Prer., FR 212 or equivalent.

FR 411-3. French Film. The evolution of French cinema from the 1940's to the "new wave." About six movies will be viewed and analyzed both as objects and as reflections of the evolution of French society from 1940 to present. All lectures, readings, discussions, and films in French. Prer., FR 301 and FR 302. Meets with FILM 411.

FR 930-1 to 4. Independent Study in French: Undergraduate. Independent work for undergraduates. By special arrangement with the faculty. Only for students presenting strong French preparation. May be repeated up to three times for credit. Prer., Consent of instructor.

FR 940-1 to 4. Independent Study in French: Undergraduate. Independent work for undergraduates. By special arrangement with the faculty. Only for students presenting strong French preparation. May be repeated up to three times for credit. Prer., Consent of instructor and department chair.

FR 950-1 to 4. Independent Study in French: Graduate. Independent work for graduate students only, by special arrangement with the faculty. Only for students presenting strong French preparation. May be repeated up to three times for credit. Prer., Consent of instructor and department chair.

GALLERY MANAGEMENT

G M 404-3. Gallery Management I. Seminar and practical hands-on experience in administration, fundraising, curatorial selection, publicity, and installation of contemporary exhibits. Organization and research of programs at the gallery for contemporary art will be the focus of activities in addition to case studies and evaluation of pertinent off-campus exhibits.

G M 405-3. Gallery Management II. Continuation of G M 404 with emphasis on development of concepts of gallery management and exhibition organization.

G M 940-1 to 4. Independent Study in Gallery Management. Independent study in gallery management to be arranged with director.

GEOGRAPHY AND ENVIRONMENTAL STUDIES

GES 100-4. Environmental Systems: Climate and Vegetation. A general introduction to energy and mass budgets, including atmospheric motion, solar radiation, and water budgets. Includes consideration of climatic elements as they interact with vegetation, animals, and humans in ecosystems. This class is taught in a variety of learning situations, including lecture, laboratory, web-based and tutorials.

GES 101-4. Environmental Systems: Landforms and Soils. An introductory survey primarily concerned with the agents and processes of landform shaping and soil genesis. Major emphasis is on the genesis, distribution, and utility of surface features in a variety of learning situations, including lecture, web-based, laboratory, tutorials, and field trips.

GES 105-4. Introduction to Map & Compass. A basic introduction to topographic maps will be given. This will include the process involved with making and field-checking maps; discussion of symbolization, scale, and landform representation. The development of the compass will be outlined and basic skills will be taught.

GES 198-3. World Regional Geography. A survey of world regions that explores the diversity of human culture within the wider global context. This issues-oriented class examines the cultural, political, economic and environmental forces that shape each region and the impacts of globalization on our increasingly interconnected world.

GES 199-4. Introduction to Human Geography. A systematic introduction to the broad field of human-land interactions and spatial order. Emphasis is placed on the major themes of geographic inquiry including population numbers and distribution, changing resource use, location decisions, settlements, transportation, political units, and a geography of the future.

GES 200-3. Geographic Regions of the World. An introduction to the world's geographic realm and their human and physical characteristics. A variety of geographic themes such as population growth, urbanization, economic development and environmental deterioration are set in their regional contexts.

GES 201-3. Economic Geography: Resources, Development, and the Future. Introductory consideration of the location of resources, the role of natural resources in economic and technological development and resource utilization and the future. Use of the theory of spatial organization and behavior in economic activity including agriculture, manufacturing, transportation, service activities, urban location, systems of cities, and growth patterns. Case studies.

GES 210-3. Humans and Environments. An overview of global environmental issues including climate change, sustainable agriculture, waste management, deforestation, population and energy. Individual, local, state, regional, national and international decision making tools and implications will be explored through case studies in industrialized and nonindustrialized countries.

GES 298-1 to 6. Professional Experience I. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations.

GES 305-4. Introduction to Cartography. An introduction to the principles and theory of map-making. The emphasis will be on the design of maps for research and publication using advanced computer hardware and software. The course entails the creation of reproducible, thematic maps using the various computer techniques available to the cartographer.

GES 320-4. Practical Meteorology. An introduction to weather elements and meteorological phenomena with emphasis on physical principles and practical applications. Includes weather elements, air masses, clouds, precipitation, storms and other weather systems, weather map analysis, forecasting, weather control and modification, and current developments in the field of meteorology. Local and current weather facilities will be used to relate meteorological principles to actual observations. Meets with ENSC 320.

GES 321-4. Basic Weather Analysis and Forecasting. An expanded application of meteorological principles with emphasis on modern techniques for interpreting and forecasting weather. The course includes a review of basic principles, interpretation of various types of weather charts, and forecast techniques. Lecture sessions will be followed by student preparations of weather analysis and forecast charts. Prer., GES 100 or 320.

GES 325-3. The Geography of Climate Change. Students investigate the theory and evidence of climate change from a geographical perspective. The course incorporates the interactions and interrelationships of humans and the environmental system while in the study of global environmental changes in different locations. Students use readings, lectures, discussion, research, computer simulation, and their own critical and analytical thinking skills in the process of forming their own conclusions about the status of climate change in different locations. Written and oral presentation skills will be enhanced as the students present and defend their theory and findings to their peers.

GES 360-3. Geography of American Folk and Ethnic Music. Music is ubiquitous in America today. This course will analyze the geographic context of American folk and ethnic music. A variety of geographic concepts and their relationship to the development of American folk and ethnic music will be discussed.

GES 366-3. Community Service: Theory and Practice. Combines theory with practical application; includes reading assignments, seminars, and community service. Prer., Sophomore standing and consent of instructor.

GES 380-3. Regional Geography of the Pikes Peak Area. A regional rather than synoptic approach is taken to the study of two formal regions: the Great Plains and the southern Rocky Mountains, and an informal region to include Colorado Springs, Cripple Creek and the nearby western High Plains.

GES 382-3. Mexico, Central America, and the Caribbean. Study of human relationship to the physical environment of Mexico, the central American countries, and the central American countries, and the Caribbean islands.

GES 385-3. Historical Geography of the United States. Historical geography as a method for study of changing and evolving landscapes.

GES 386-3. Geography of American's Southwest. Examines the physical and cultural environment of the American Southwest. Includes an analysis of landforms, vegetation, climate, prehistoric cultures, modern native American

peoples, Hispanic settlement, and modern demographic and social changes.

GES 390-3. Historical Geography of the British Isles. Traces the historical evolution of the British landscape from prehistoric times to the present day. Particular regions like Wales, Yorkshire, the Lake District and Western Ireland will be examined in detail. Meets with HIST 300 SEC 001.

GES 400-4. Statistical Analysis in Geography. The application of statistical and other quantitative techniques to geographically organized data, areal, distributions, and the solution of geographic research problems. Meets with GES 500.

GES 401-4. Technology, Development and Economic Geography. Theory and issues in contemporary economic geography. Explores process leading to interregional change, spatial interaction between places, and the homogenization of economies and cultures.

GES 405-4. Introduction to GIS. An introduction to Geographic Information Systems (GIS) as a research tool. Students will use ArcView and/or Arc/Info to complete a series of geographic projects. A basic understanding of cartography and computer use is expected. Prer., GES 305 or instructor consent. Meets with GES 505.

GES 406-4. Introduction to Remote Sensing. The acquisition and interpretation of environmental and natural resource data by using aerial photography and other imagery. This is a project-oriented course which involves the use of various types of photography and analysis techniques. Meets with ENSC 406 and GES 506.

GES 408-4. Advanced Geographic Information Systems (GIS). Continued application of GIS for spatial analysis. Focuses on Arc/Info and complete original research projects. Prer., GES 405 or consent of instructor. Meets with GES 508.

GES 409-4. Image Processing. An introduction to the advanced methods of resource analysis using remotely sensed imagery. All relevant portions of the electromagnetic spectrum will be discussed. Emphasis will be placed on the digital image analysis (by microcomputer) of LANDSAT data. No previous programming experience required. Prer., GES 406. Meets with ENSC 409 and GES 509.

GES 410-3. Global Positioning System with GIS. Explores the theory of GPS, provide practical experience using numerous GPS units, and explore the interaction between GIS and GPS through use of ArcPad, ArcGIS, and Trimble Pathfinder software. Prer., GES 305, or instructor consent. GES 405 is preferred. Meets with GES 510.

GES 411-4. Introduction to Field Techniques. A field-based course that demonstrates the multiple techniques used by geographers for data gathering and analysis. These techniques will include elementary surveying, GPS, hydrologic and landform measurements, map and compass use, dendrochronology analysis, and cultural/economic land use mapping. Extended field trip(s) required.

GES 416-2 to 4. Teaching Geography. Practicum and/or tutorial, by special arrangement only, in the teaching of geography (for example, serving as small-group leaders or proctors in introductory courses, or developing and/or testing curriculum materials).

GES 417-3. Geographic Writing Seminar. Course provides opportunities for student-instructor interaction aiming to improve geographic writing skills.

GES 422-3. Synoptic Climatology. The physical processes involved with the development and transportation of weather systems. Selected topics include relationships between upper atmospheric flow and surface weather phenomena, synoptic evaluation of air masses and techniques for environmental analysis. Prer., GES 100. Meets with GES 522.

GES 426-4. Biogeography. An examination of the distribution of life on the Earth's surface. The relationship between environmental factors and plant and animal distributions will be the central theme. Changes in distributions through time will also be examined. Required field trip. Prer., GES 100 or consent of instructor. Meets with GES 526, BIOL 426 and BIOL 526.

GES 427-4. Advanced Biogeography. A project-oriented class with students studying the distribution of plants as related to environmental factors. This class will combine lecture, fieldwork, and data processing, resulting in maps and reports. The geographical area of study will be changed each time. Prer., GES 426/GES 526 or instructor consent. Meets with GES 527.

GES 428-4. Plant Communities of the Western United States. An examination of plant assemblages in the contiguous United States west of the one-hundredth meridian. The distribution of major plant species will be used to illustrate plant community interactions with environmental factors such as climate and landforms. Prer., GES 426/GES 526. Meets with GES 528.

GES 429-4. Plant Communities of Colorado. An examination of plant assemblages in Colorado. Major plant communities will be examined in the context of environmental factors such as climate and land forms. Required field trip. Prer., GES 426 or consent of instructor. Meets with BIOL 429 and GES 529.

GES 431-4. Principles of Geomorphology. Systematic study of weathering, mass-wasting, fluvial, wind, and marine processes and the landforms resulting from these processes. Prer., GES 101, GEOL 101, or consent of instructor. Field projects, trips required. Meets with GES 531, GEOL 463, GEOL 563.

GES 432-3. Mountain Environmental Systems. Field course emphasizing study of landforms produced by weathering and soils, mass movement, erosional processes under all climatic and altitudinal conditions. Includes front range glacial geology and glaciology. Prer., GES 100 or consent of instructor. Meets with GES 532.

GES 434-4. Soils. Covers the nature and distribution of soils through an investigation of the basics of soil genesis and development. It will stress the environmental components involved in soil production and the geographic distribution of soil types. Prer., GES 101 or GEOL 101 or instructor consent. Meets with GES 534.

GES 441-3. Resource Management and Conservation. Inventory, policy, and management of natural resources. Nature, significance, distribution, and problems associated with water, forest, wildlife, soils, and recreational resources. Emphasis is on experience in the United States, but other global problems may be included. Meets with GES 541.

GES 445-3. Analysis of Environmental Systems. An analysis of the various factors involved in the routing of environmental impact statements. Emphasis will be on analytical procedures associated with the evaluation of environmental systems and applications specific environmental impact problems. Meets with GES 545.

GES 446-1 to 6. Field Studies in Geography. Field investigations focused on a specific aspect of the landscape in a selected area. Topic and credit vary from year to year. Field trips required.

GES 448-3. Environmental Problems of Colorado. A discussion and investigation of the environmental problems of the State of Colorado with an emphasis on land planning and land use, pollution, transportation, energy, and hazards. Programs to alleviate as well as to minimize any further related environmental problems will be developed. Meets with GES 548.

GES 450-3. Water Resources and Water Problems. A descriptive interpretation and detailed inventory of hydroclimatic data, surface water, and ground water. The use of water is critically evaluated with emphasis on problems associated with geographic maldistribution, appropriation, irrigation, industry, pollution, and regional development. Meets with GES 550.

GES 451-3. Applied Hydrology. Exploration of the principles of hydrology and their application to environmental investigations. Prer., GES 100 or consent of instructor. Meets with GES 551.

GES 455-3. Disasters and Society. Case studies of slow and quick developing disasters will be discussed in a local, national, cross- cultural, and global framework. Issues covered will include technological hazards, the role of environmental perception, risk-taking, decision- making and the impact legislative changes at the local, state, and national levels. Meets with GES 555.

GES 460-3. The Cultural Landscape. Students will learn to interpret the American cultural landscape, particularly everyday surroundings that they frequently take for granted. We will emphasize how culture shapes the world around us, from modifications to the natural terrain to the cities in which we live. Meets with GES 560.

GES 461-3. Urban Geography. Course addresses topics in urban location, urban morphology and design, urban function, and urban social issues. We analyze why cities look as they do and the role cities play in society. Emphasis is on cities in the United States. Meets with GES 561.

GES 470-1 to 4. Geographic Issues. Geographic perspectives or dimensions of selected areas such as pollution, poverty, world conflict, natural hazards, landscape perception or women's communities will be presented. Topics vary from year to year.

GES 473-3. Geography of Population. National and social patterns of population distribution; organization of populations; and methods of census, demographic analysis and mapping. Meets with GES 573.

GES 475-3. Recreation, Tourism, and the Environment. An inquiry into the spatial distribution and environmental/ cultural impacts of recreation and tourism, including international tourism. Recreational values, cultural norms and change, economic tradeoffs, and future trends are included. Meets with GES 575.

GES 476-3. Women's Space, Women's Place: Women's Role in Changing the Face of the Earth. A re-examination of traditional aspects of cultural and regional geography from a feminist perspective. Understanding the full richness of the human experience in utilizing earth as habitat requires a conscious effort to explore the omissions about where, how, and why women live, work, migrate, perceive their environment, and generally contribute to the intricate mosaic of spatial organization. The geographical origins and distributions of differing roles of women in a number of societies are also explored. Meets with WMST 476.

GES 477-3. Development of Geographic Thought. The course will focus upon discussions and studies of the development of geographic thought and philosophies. Both past and present literature will be appraised with particular emphasis placed upon the themes and topics significant to the growth of modern geographic philosophy. Prer., GES 199 or consent of instructor. Meets with GES 577.

GES 491-3. The World of Wines and Vines. Focus on the physical and cultural geography of the world's grape-producing regions. Coverage will include the study of terrain, soils, climate, and other aspects of physical geography; the historical geography of viticulture; the procedures and processes associated with growing grapes and making wines; and a detailed analysis of specific regions such as the Bordeaux area, the Napa Valley, and German wine regions. Prer., Must be 21 years of age.

GES 494-4. Seminar: Practicum in Image Processing. Prer., GES 405 or GES 409 and consent of instructor required.

GES 497-3. Honors in Geography. Independent research and thesis for geography majors who have maintained a superior scholastic performance in their overall program and within the department of geography and environmental studies. For superior students who wish to attain honors in the field of geography. May be taken in lieu of GES 499.

GES 498-1 to 12. Professional Experience II. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations.

GES 499-3. Senior Thesis. A one semester research project. The student will write a formal research paper drawing on primary sources and pertinent secondary material. The student will work under the direction of a full time member of the department and have a second member as an additional reader.

GES 500-4. Quantitative Methods. Research-oriented quantitative methods seminar. Advanced data analysis techniques for use in geographic and environmental research. Meets with GES 400.

GES 501-3. Seminar: Geographic Research. An analysis of research topics and methodologies in geography. Students will define a research topic, review literature in their field of interest, and prepare a research proposal. Prer., BA or BS.

GES 505-4. Introduction to GIS for Graduate Students. Information Systems (GIS) as a research tool. Students will use ArcView or Arc/Info to complete a series of geographic projects and pursue the application of GIS to their own research areas. Prer., GES 305 or consent of instructor. Meets with GES 405.

GES 506-4. Seminar: Advanced Remote Sensing. Intensive work on data acquisition using manual methods of imagery analysis. Specific research methods will be discussed. Students will accomplish several exercises and at least one major independent project. Meets with GES 406 and ENSC 406.

GES 508-4. Advanced GIS for Graduate Students. Continued application of GIS for spatial analysis. Students will learn ARC/Info and complete original research projects in their field of interest. Prer., GES 405, GES 505 or instructor consent. Meets with GES 408.

GES 509-4. Image Processing. An introduction to advanced image processing techniques used by the remote sensing community. Image restoration, enhancement, and classification will be emphasized. Prer., GES 406/GES 506. Meets with GES 409 and ENSC 409.

GES 510-3. Global Positioning System with GIS. Explores the theory of GPS, provide practical experience using numerous GPS units, and explore the interaction between GIS and GPS through use of ArcPad, ArcGIS, and Trimble Pathfinder software. Prer., GES 305, or

instructor consent. GES 405 is preferred. Meets with GES 410.

GES 516-4. Workshop in Geographic Education. A course outlining methods of teaching geography in K-12. Includes discussion of important geographic concepts and their integration into the classroom. Students will develop teaching activities and materials for incorporation into their curriculum. Prer., Consent of instructor.

GES 517-2 to 4. Seminar: Research Methods. Intensive work in using various forms of data and field investigation for analysis of geographic problems. Case studies and field experience.

GES 522-3. Synoptic Climatology. The physical processes involved with the development and transportation of weather systems. Selected topics include relationships between upper atmospheric flow and surface weather phenomena, synoptic evaluation of air masses and techniques for environmental analysis. Prer., GES 100. Meets with GES 422.

GES 526-4. Biogeography. An examination of the distribution of life on the Earth's surface. The relationship between environmental factors and plant and animal distributions will be the central theme. Changes in distributions through time will also be examined. Required field trip. Prer., GES 100 or consent of instructor. Meets with GES 426, BIOL 426 and BIOL 526.

GES 527-4. Advanced Biogeography. A project-oriented class with students studying the distribution of plants as related to environmental factors. This class will combine lecture, field work, and data processing; resulting in maps and reports. Prer., GES 426, GES 526 or instructor consent. Meets with GES 427.

GES 528-4. Plant Communities of the Western United States. An examination of plant assemblages in the contiguous United States west of the one-hundredth meridian. The distribution of major plant species will be used to illustrate plant community interactions with environmental factors such as climate and landforms. Prer., GES 426/GES 526. Meets with GES 428.

GES 529-4. Plant Communities of Colorado. An examination of plant assemblages in Colorado. Major plant communities will be examined in the context of environmental factors such as climate and land forms. Required field trip. Prer., GES 426, GES 526 or instructor consent. Meets with GES 429 and BIOL 429.

GES 531-4. Topics in Geomorphology. Current research in landform processes. Focus on the western United States. Field projects, trips required. Prer. GEOL 101, GES 101 or instructor consent. Meets with GES 431, GEOL 463, GEOL 563.

GES 532-3. Mountain Environmental Systems Seminar. Same as GES 432 but will include additional research work. Field trips optional. Prer., GES 100 or consent of instructor. Meets with GES 432.

GES 534-4. Seminar: Soils. In-depth study of techniques used in analyzing soil classification systems for global soils. Problems in human use and misuse of soils. Prer., GES 101, GEOL 101, or instructor consent. Chemistry recommended. Meets with GES 434.

GES 541-3. Seminar in Resource Management and Conservation. An investigation of environmental problems with emphasis on land-planning and land use, pollution, water, energy and natural hazards. Prer., Consent of instructor. Meets with GES 441.

GES 545-3. Seminar: Analysis of Environmental Systems. Problems associated with development of environmental impact studies. Case examples and field work. Meets with GES 445.

GES 548-3. Environmental Problems of Colorado. Specific land and resource use problems in Colorado. In-depth analysis of interacting systems of natural resources and human decision-making processes. Meets with GES 448.

GES 550-3. Topics in Water Resource Management. Experience of water resource management in the United States, prospects for the future and problem solving techniques. Critical analysis of issues important in the western United States. Meets with GES 450.

GES 551-3. Applied Hydrology. Exploration of the principles of hydrology and their applications to environmental investigations. Meets with GES 451.

GES 555-3. Disasters and Society. The impact of extreme geophysical events on human society. Emphasis upon adaptations to extreme events and ways of reducing vulnerability and damage. Meets with GES 455.

GES 560-3. The Cultural Landscape. Students will learn to interpret the American cultural landscape, particularly everyday surroundings that they frequently take for granted. You will see clues about our culture and society from modifications to the natural terrain, including the cities in which we live. Meets with GES 460.

GES 561-3. Urban Geography. Course addresses topics in urban location, urban morphology and design, urban function, and urban social issues. We analyze why cities look as they do and the role cities play in society. Emphasis is on cities in the United States. Meets with GES 461.

GES 573-3. Seminar: Population Geography. The geographic aspects of population characteristics including fertility, mortality, migration, distribution, and composition. Both theoretical and empirical considerations are included. Meets with GES 473.

GES 575-3. Seminar: Recreation Geography. An inquiry into the spatial distribution and environmental conditions of recreation. Emphasis is on outdoor recreation in nonurban settings. The implications of recreational values to resource managers and land use decisions will be included. Meets with GES 475.

GES 577-3. History and Nature of Geography. A history of geographical ideas from Greek classical efforts through the 19th century. Prer., Consent of instructor. Meets with GES 477.

GES 602-4. Data Processing in Earth Science. Advanced data processing using digital image models and Geographic Information Systems. Students will be responsible for extensive individual project design and completion. Prer., GES 517 or GES 409/GES 509.

GES 700-1 to 6. Master's Thesis.

GES 940-1 to 4. Independent Study in Geography. Independent work for undergraduates. By special arrangement with faculty only. Only for students presenting strong geography preparation.

GES 950-1 to 4. Independent Study in Geography: Graduate. Independent work for graduate students. By special arrangement with faculty only. Prer., Consent of instructor.

GES 960-1 to 4. Independent Study in Geography: Graduate. Independent work for graduate students. By special arrangement with faculty only. Prer., Consent of instructor.

GES 999-0. Candidate for Degree.

GEOLOGY

GEOL 101-4. Physical Geology. Study of surface features of the earth and how they were formed: rocks that make up the crust of the earth. GEOL 101L must be taken concurrently.

GEOL 102-4. Historical Geology. Development of the science of geology, study of earth history and development of life forms throughout geologic time. Three lectures and one field trip or laboratory per week. Prer., GEOL 101, GES 101, or concurrent enrollment.

GEOL 153-4. Geological Development of Colorado and the West. Three lectures and one field trip or laboratory per week. An outline of the development, through time, of the geology of Colorado. Includes a summary of the evolution of life. Last part of course is devoted to history of development of economic resources, including placer and hard rock mining, coal, oil and gas production, and oil shale. This is a course for nonmajors designed as a follow-up for those who have had GEOL 101.

GEOL 317-3. Geology and Our National Parks. Promotes an interest in and an appreciation of the geologic aspects of our national parks. The student will be given fundamental background in the geological processes which have worked to evolve the spectacular or unique scenery found in the national parks. Because the approach to this class is of a qualitative nature, the prospective student need not have a prior background in the earth sciences. Field trips are included as part of the course content.

GEOL 352-3. Oceanography. Oceans and their basins, water masses, circulation patterns, climate regulation, life zones, bottom sediments, and resources. Geologic aspects of the sea, both modern and ancient.

GEOL 370-4. Environmental Geology. Interaction of industrial society with earth resources and geologic processes. Investigation of geologic hazards to engineering systems and problems related to resource development. Evaluation of criteria for urban planning, land utilization, waste disposal, and resource conservation. Prer., GEOL 101 or GES 101. Field trips required.

GEOL 403-4. Introduction to Hydrology and Ground Water. Occurrence, movement and properties of subsurface water; introduction to groundwater geology and hydrology. Prer., GEOL 101, GES 101 or concurrent enrollment in MATH 104.

GEOL 411-3. Geologic Field Methods. Methods of geologic mapping including Brunton compass and plane table surveying utilization. Coreq., GEOL 312. Additional field work required. Meets with GEOL 511.

GEOL 436-4. Glacial and Periglacial Geology. Introduction to glaciology and periglacial geology and their influence on topography, crustal rebound, and sea level; and glacial chronology for northern North America. A study of cold-climate geomorphic and climatic processes. Prer., GEOL 101 OR GES 101. Meets with GEOL 536.

GEOL 463-4. Principles of Geomorphology. Systematic study of weathering, mass-wasting, fluvial, wind, and marine processes and the landforms resulting therefrom. Field work and trips required. Prer., GEOL 101 or GES 101 or consent of instructor. Meets with GEOL 563, GES 431 and GES 531.

GEOL 466-1 to 4. Field Study in Geology. A field trip to an area of special geologic interest such as the Grand Canyon, Death Valley, Yellowstone, Northern Rockies and the Mojave Desert. Field trips usually occur during the Winter, Spring, or Summer breaks. Meets with GEOL 566.

GEOL 491-4. Engineering Geology. Intensive literature review and field investigations leading to a recognition of the engineering and construction problems associated with natural hazards and earth materials such as mass movement, dam location, highway development, and building construction. Basic courses in physics, mathematics, and geology recommended. Meets with GEOL 591.

GEOL 503-4. Introduction to Ground Water. Same as GEOL 403 with additional work required.

GEOL 536-4. Glacial and Periglacial Geology. Same as GEOL 436 with additional work required. Prer., GEOL 101, GES 101, GEOL 463 preferred. Meets with GEOL 436.

GEOL 563-4. Principles of Geomorphology. Systematic study of weathering, mass-wasting, fluvial, wind, and marine processes and the landforms resulting therefrom. Field work and trips required. Prer., GEOL 101 or GES 101 or consent of instructor. Meets with GEOL 463, GES 431, and GES 531.

GEOL 566-1 to 4. Field Study in Geology. Same as GEOL 466 with additional work required. Meets with GEOL 466.

GEOL 591-4. Engineering Geology. Intensive literature review and field investigations leading to a recognition of the engineering and construction problems associated with natural hazards and earth materials such as mass movement, dam location, highway development, and building construction. Basic courses in physics, mathematics, and geology recommended. Will require additional field work. Meets with GEOL 491.

GEOL 700-1 to 6. Masters Thesis.

GEOL 940-1 to 4. Independent Study in Geology: Undergraduate. Independent work for undergraduates. By special arrangement with faculty. Only for students presenting strong geology preparation. Prer., Consent of the instructor.

GEOL 960-1 to 4. Independent Study in Geology: Graduate. Independent work for graduate students. By special arrangement with faculty only. Prer., Consent of instructor.

GEOL 999-0. Candidate for Degree.

GERMAN

GER 101-4. Beginning German I. Essentials of German, oral-aural skills stressed with additional reading, writing, and grammar.

GER 102-4. Beginning German II. Essentials of German continued. Additional oral-aural skills practice with increased grammar, reading, and writing. Prer., GER 101 or its equivalency.

GER 211-4. Intermediate German I. German at the intermediate level with concentration on conversation, culture, and civilization or literature at that level. Prer., GER 102 or equivalent.

GER 212-3. Intermediate German II. An intermediate German course continuing conversational usage and cultural integration utilizing contemporary materials, newspapers, etc. Prer., GER 211 or equivalent.

GER 293-3. Business German. German for business studies: exercises in German business correspondence, terminology, readings and translations in the area of business German. Prer., GER 211 or equivalent.

GER 300-3. Advanced German Grammar. A course designed to review intensively the functional application of Modern Germany. Prer., GER 212 or 217 or its equivalency.

GER 301-3. German Conversation and Composition I. Practice in conversation; exercises in written communication. Prer., GER 212.

GER 302-3. German Conversation and Composition II. Practice in conversation; exercises in written communication. Prer., GER 212 or its equivalency.

GER 313-3. 18th Century German Literature. A survey of German language

literature from 1700 to 1800. Readings and analysis of literature of the phases of the Enlightenment and of Classicism including such authors as Leibnitz, Lessing, Goethe, and Schiller. Prer., GER 300 or 301 or its equivalency.

GER 314-3. 16th and 17th Century German Literature. A survey of German language literature from 1500 to 1700. Readings and analysis of literature of the Renaissance, Reformation and Baroque including such authors as Martin Luther, Hans Sachs, Gryphius, and Von Grimmelshausen. Prer., GER 300 or GER 301 or its equivalency.

GER 316-3. 20th Century German/ Austrian Literature. A survey of German language literature from 1900 to the present. Lecture course. Readings and analysis of different periods and styles from impressionism through feminism and post-modernism including authors such as Holz, Schnizler, Thomas Mann, Kaiser, Brecht, Boll, Bachmann, Durrenmatt, Muller, and Wolf. Prer., GER 300 or GER 301 or its equivalency.

GER 317-3. 19th Century German Austrian Literature. A survey of German language literature from 1800 to 1890S. Lecture course. Readings and analysis of literature of late Romanticism, Realism, Naturalism, including such authors as Goethe, Kleist, Eichendorff, Stifter, Buchner, Keller, Hauptmann. Prer., GER 300 or 301 or its equivalency.

GER 318-3. German/Austrian Civilization and Culture From 1700-1918. Lectures, films, readings, discussions in English; knowledge of German not required. Study of development of German and Austrian culture and institutions from 1700 to 1918, emphasizing literature, art, philosophy and music. Meets with F CS 318.

GER 319-3. 20th Century German and Austrian Civilization and Culture. Lectures, films, readings, discussions in English; knowledge of German not required. Study of development of German and Austrian cultures and institutions from 1919 to the present emphasizing literature, design, art, and film. Meets with F CS 319.

GER 323-1. Applied Conversation. Conversation at the advanced level on contemporary topics in German culture. Prer., GER 212, 217, its equivalency.

GER 339-1 to 3. Internship in Applied German. The foreign language department will offer to advanced German language students the opportunity to apply their knowledge of German in settings such as schools, social support agencies, etc. Prer., 300 level German courses and departmental permission.

GER 345-3. German and Austrian Film. Screenings, lecture, discussion; knowledge of German not required. German and Austrian film in a cultural context from beginnings to the present featuring such directors as Lang, Von Sternberg, Riefenstahl, Hartl, Fassbinder, Schlondorff, Export, and Wenders. Prer. GER 212 or equivalent if taken for German credit. Meets with F CS 345 and FILM 345.

GER 350-3. Special Topics in German/ Austrian Literature. Varying topics of current importance in literary and socio cultural study. May be repeated once for credit if topic is different. Prer., GER 300, GER 301, or its equivalency. Meets with F CS 356.

GER 920-1 to 4. Independent Study. Independent work for undergraduates. By special arrangement with the faculty. Only for students presenting strong German preparation. May be repeated up to three times for credit. Prer., Consent of instructor.

GER 930-1 to 4. Independent Study. Independent work for undergraduates. By special arrangement with the faculty. Only for students presenting strong German preparation. May be repeated up to three times for credit. Prer., Consent of instructor.

GER 940-1 to 4. Independent Study. Independent work for undergraduates only, by special arrangement with the faculty. Only for students presenting strong German preparation. May be repeated up to three times for credit. Prer., Consent of instructor and department chair.

GER 950-1 to 4. Independent Study. Independent work for graduate students only, by special arrangement with the faculty. Only for students presenting strong German preparation. May be repeated up to three times for credit. Prer., Consent of instructor and department chair.

GERONTOLOGY

GRNT 204-3. Biomedical Aspects of Aging. A comprehensive study of the normal and pathological aspects of the aging process in human beings. The course treats cellular through organ system function, examining causes and changes related to aging. Immunity, nutrition and biopsychological factors are studied. The course also examines the concept of wellness as it applies to aging. Meets with BIOL 204 and HSCI 280.

GRNT 300-3. Introduction to Gerontology. A comprehensive introduction to the experience of aging, including an overview of the biological, psychological, and social aging of individuals as well as the issues that confront us as an aging society.

GRNT 462-3. Sociology of Aging. Examination of the aging process in American society. Focus on development from late adolescence through old age and death. Meets with SOC 462.

GRNT 463-3. Psychology of Aging. An overview of gero-psychology covering such topics as the aging central nervous system, cultural contexts of aging, personal transitions in later life, mental disorders, and gero-psychology in the future. Prer., PSY 100. Meets with PSY 351.

GRNT 498-1 to 6. Professional Field Experience in Gerontology. Designed learning experiences involving application of specific, relevant concepts and skills in supervised Gerontology related employment situations. (Pass/Fail grading only). Prer., GRNT 300 and consent of instructor. Sign up for no more than 3 credits per semester.

GRNT 940-1 to 6. Independent Study in Gerontology: Undergraduate. Hours and credits to be arranged. Prer., Consent of instructor required.

HISTORY

HIST 101-3. The Ancient World. A survey of major political, economic, religious, and social themes of the ancient world, from the beginnings of civilization in the Near East to the end of the Roman empire in the West. Students will read a selection of original sources.

HIST 102-3. Medieval World. A survey of major political, economic, religious and social developments in Europe from the end of the Roman Empire to 1500. This also includes a brief examination of the rise of Islam and the survival of Byzantium. Students will read a selection of original sources.

HIST 103-3. The Rise of Modern Europe, 1500-1815. A survey of major political, economic, social, and cultural developments from the Reformation through the era of the French revolution. Students will read a selection of original sources.

HIST 104-3. Modern Europe, 1815-Present. A survey of major political, economic, social, and cultural developments from the fall of Napoleon

until today. Students will read a selection of original sources.

HIST 111-3. Asian History: Southeast Asia. A survey of Southeast Asian society, culture, politics and economy, from early Southeast Asian civilizations to the present.

HIST 112-3. Asian History: The Indian Subcontinent. Survey of South Asian society, culture, politics and economy, from the birth of Indian civilization to the present.

HIST 113-3. Asian History: China. The evolution of Chinese society, economy, culture and political systems from the birth of Chinese civilization to the present.

HIST 114-3. Asian History: Japan. A survey of Japanese society, culture, politics and economy, from the birth of Japanese civilization to the present.

HIST 121-3. History of the Middle East. A survey course covering the history of the Middle East. Special attention will be given to the birth of Islam; the Ottoman empire; European imperialism; the birth of Israel; the Six-Day War; the Camp David accords; the tragedy of Lebanon; the Irani revolution; the Gulf War; and steps for peace.

HIST 140-3. Latin America to 1810. Survey of the political, social and economic development of Latin America from pre-Columbian beginnings to 1810.

HIST 141-3. Latin America Since 1810. Survey of the political, social, and economic development of Latin America since 1810.

HIST 151-3. US: Birth of a Nation, 1607-1789. Survey of the development of the US from the colonial period through the ratification of the Constitution, with emphasis on causes, events, and results of the American Revolution.

HIST 152-3. US: Expansion and Division, 1789-1877. Survey of the major issues related to interpretation of the Jeffersonian and Jacksonian eras with emphasis on the challenges derived from westward expansion and the social, economic, and political factors contributing to disunion and civil war.

HIST 153-3. US: Emergence of Modern America, 1865-1920. Survey of the economic, social and politi-cal development of industrial America from the reconstruction through World War I.

HIST 154-3. US: Recent America, 1918-Present. Survey of America's social, political, economic and cultural history during the time the U.S. has been a world power. The roots of contemporary society, with emphasis on the emergence of a multicultural America.

HIST 300-1 to 3. Special Topics. These courses are usually taught on a one-time basis. The subject matter will change from year to year and will cover an important but rarely taught subject in history.

HIST 304-3. Sex, Marriage, Death in Pre-Industrial Europe. Examines the life cycles of Europeans in the pre-industrial period (before c. 1750) through analysis of the theory and practice of procreation, child-rearing, marriage, and death.

HIST 310-3. Great Thinkers of Europe. An examination of the major currents of recent thought. Thinkers to include some of the following: Freud, Weber, Lenin, Virginia Woolf, Buber, Brecht, Sartre, and Benn.

HIST 311-3. Great Thinkers of Europe: The Nineteenth Century. Following an introduction to the major trends and movements of nineteenth-century European thought, this course will acquaint students with some of the period's most significant and influential works. Readings will be selected from among such authors as Sir Walter Scott, George Sand, the Brothers Grimm, Marx and Engels, John Stuart Mill, and Ibsen.

HIST 323-3. Fascism and the Holocaust. An analysis of Nazi Germany's policy of genocide against the Jews in the context of European fascism of the 1920s, 1930s, and 1940s.

HIST 325-3. Germans and the Holocaust. An analysis of Germans and the Holocaust from several perspectives: the development of German anti-Semitism; the identity of German Jews; genocide as perpetrated by the Third Reich; subsequent efforts of atonement, commemoration.

HIST 335-3. Germany, 1763 to 1866. An examination of major developments of German politics, society, economic life and culture from the end of the Seven Years War to the Austro-Prussian War. Special attention to nationalism and the emergence of national literature.

HIST 336-3. Germany since 1866. An examination of major developments of German politics, society, economic life and culture from the end the Austro-Prussian War to today. Inclusion of some German literature.

HIST 337-3. Hitler and German National Socialism. An examination of the Nazi leader in terms of the historical situation in which he attained power, his historical significance generally and the policy of genocide for which he was responsible. Some use of psycho-historical approach.

HIST 338-3. Germany Since 1945. An analysis of German politics, economics, society, and culture since the end of World War II.

HIST 342-3. Medieval England. A survey of the early formation of the English nation, from the coming of the Anglo-Saxons to c. 1500. The focus will be on major economic, political and religious trends as seen through a variety of original sources.

HIST 344-3. Tudor-Stuart England. Traces the creation and maintenance of the Tudor state in the 16th century and its dismantlement during the revolutions of the 17th century. The emphasis will be on political, social, and economic structures as seen through a variety of original sources.

HIST 346-3. Early Modern England. Survey of early Modern English history from 1688 to 1830 with an emphasis on political and economic developments and their impact on social structure.

HIST 349-3. History of Ireland. Traces developments in Irish history since the 1100's, the century in which Ireland's stormy relationship with Great Britain began. Special emphasis will be placed upon that relationship, but the course will also examine the various social groups that coincided Irish society and their relationships with each other. Irish culture in its many facets will be examined through the study of various works of literature interspersed throughout the course.

HIST 350-3. Chicano History to 1910. A panoramic sketch of Chicano history to about 1910. This course integrates events, ideas and personalities from both sides of the border to illuminate the evolution of Spanish-speaking people of the American Southwest. Meets with EST 350.

HIST 351-3. Chicano History Since 1910. A broad sketch of Chicano history since 1910. This course integrates events, ideas, and personalities from both sides of the border to illuminate the evolution of Spanish-speaking people of the American Southwest.

HIST 352-3. History of Latinos in the US. Course covers the history of US Latino communities and Latin American immigrants to the US from the 1820's to the present. Meets with EST 352.

HIST 353-3. Religion and Culture in America, 1500-1865. Close study using primary and secondary texts of the religious cultures of America from Native American origins to the Civil War. Meets with Est 358.

HIST 354-3. Religion and Culture in the US, 1865-2000. Seminar discussions of the mutual influences of American religion and American culture from the Civil War to the present.

HIST 358-3. Immigrant Histories. The history of immigrants/migrants from Latin America, Africa, the Middle East, and Europe as of 1840 to the present will be examined. Emphasis will be placed on US immigration laws, the development of ethnic based communities and connections to US policy. Meets with EST 358.

HIST 359-3. Latin American History Through Film. Exploration of major themes in the history of Latin America such as conquest, colonialism, cultural clashes, revolution, and nationalism through the use of films and texts.

HIST 360-3. The 1960s. Examines the social, political and cultural changes arising in the turbulent years of the 1960's. Special attention will be given to the Civil Rights Movement, the domestic aspects of the Vietnam War, and challenges to traditional culture and values.

HIST 371-3. Good Wives and Nasty Wenches: American Women's History, 1607-1877. Study the history of American women from the Colonial era through the Civil Wars concentrating on the nineteenth century. It will introduce students to the changing economic, gender, and familial roles of American women. Meets with WMST 371.

HIST 372-3. "From Slavery to Freedom": Slavery and the African-American Experience in Colonial and Antebellum America. Introduces students to the major political, social and cultural developments in the history of African Americans from 1619 through Reconstruction. Meets with EST 372.

HIST 373-3. Vision & History in Native American and African American Narratives. Examines via biography/autobiography how North America impacts the perspective and reality of American Indian and African American people(s), circa 1790-2000. Meets with EST 373.

HIST 374-3. African American Social and Political Thought, 1790-1980. Surveys the historical basis of socio-political thought in North America's diaspora (African American) communities. Meets with EST 374.

HIST 386-3. Popular Culture in 20th Century America. How do Americans live, relax, and entertain themselves? The answer involves high culture but also popular culture. Over the course of the century, pop culture forces such as the rise of the auto, advertising, the sexual revolution, radio, TV, movies and music from jazz to rock have transformed modern American civilization.

HIST 388-3. The History of American Education. An examination of the critical developments taking place in the history of American education. The background of pressing issues and challenges facing modern education are covered along with examples of how education has been used to improve human conditions.

HIST 389-3. History of Colonial India. A history of India that details the colonization of South Asia. Topics of special attention are British imperialism, rebellions against British control, and the Indian struggle for freedom and independence.

HIST 394-3. Theory and Methods in History. Seminar discussions and presentations emphasizing research skills and methods in history. Students should take prior to or along with Senior Thesis Seminar, HIST 499.

HIST 398-3. The Vietnam War Through Film. A survey of the war in Southeast Asia through the eyes of Hollywood. Major periods include France's war with Vietnam, early American involvement, the war through Asian eyes (as portrayed in Hollywood), the soldiers' war back home, and the fall of Vietnam.

HIST 399-3. European Film - European History. The study of European film in conjunction with major developments in European society, politics and culture. Topics to include: realism and social commentary; symbolism; historical films; propaganda films; reception; the development of film techniques; the film industry. Emphasis will vary by semester.

HIST 411-3. Early Medieval Europe. Scope of course: 3rd century through 10th century. Themes covered will be Christianization of the Roman Empire, the transformation of the Western Empire into European feudal kingdoms, and the survival of the Eastern Empire.

HIST 412-3. The Twelfth Century Renaissance. Scope of the course: 11th century through the 13th century. Themes covered will be political, social, religious, and economic developments that shaped Medieval Europe into a unique civilization.

HIST 421-3. History of Christianity: Primitive Church to circa 300. An exploration of primitive Christianity through its immediate Judaic and Hellenistic roots, to include extended historical and literary discussion of the literature of the New Testament and an analysis of the historical Jesus.

HIST 422-3. History of Christianity: circa 300 to circa 1500. A history of the Christian church in the West from its acceptance as a legal religion in the 4th century to the eve of its breakup at the Reformation. The focus is especially on theological, organizational, and heretical developments.

HIST 423-3. Renaissance/Late Middle Ages. A survey of the major political, economic, and social developments in Western Europe from the early 14th through the early 16th century. Included will be the expansion of Europe, notably of Spain and Portugal.

HIST 424-3. The Reformation and Counter-Reformation. A survey of Europe from the early 16th century through the mid-17th century from Martin Luther through the Thirty Years War. Emphasis will be given to religious themes and their relation to politics, economics and society.

HIST 426-3. Europe in the Age of Enlightenment. An examination of the eighteenth century, with special emphasis on the enlightenment and popular culture.

HIST 429-3. Europe and the World: 1492-1750. Europe's relations with major portions of the world with focus on factors that contributed to Europe's dominance over much of the world before the Age of Imperialism.

HIST 449-3. Europe Between the World Wars. An analysis of the major trends and developments of European politics, society, economics, and culture between the world wars.

HIST 451-3. The American Revolution: The Forging of the Union, 1763-1789. A comprehensive survey of the social, political, economic and intellectual transformations in America during the revolutionary era. The focus will be on the causes of the war, the war itself, the consequences of independence and the ratification of the constitution.

HIST 453-3. History of the US Civil War.

HIST 454-3. American Religious Cultures 1945-2000. Intensive research seminar focusing on primary texts of

recent American religions from Cold War Protestantism to New Age Buddhism.

HIST 458-3. The American West. A continuation of the study of the westward movement extended to the region beyond the Mississippi, beginning with the Spanish exploration and continuing through the end of the 19th century. Emphasis on the association of Western interests with those of a rapidly developing industrial society in the east.

HIST 469-3. Colorado History. A history of Colorado from prehistoric Indians to nuclear projects. Topics covered will include exploration and conquest, the mountain men, settlement and pioneer life, Indians, mining, economic and political developments, exploitation and preservation of the environment, and recent trends.

HIST 471-3. Asian American History. Course will trace the social, political, economic, and cultural history of Asian Americans from the early settlements of the nineteenth century to the present. Meets with EST 471.

HIST 472-3. American Policy in the Pacific. Traces the historical origins of U.S. diplomatic, political, and fiscal relationships in Asia. Topics include the early "China trade", the "opening of Japan", and aspects of American imperialism in East and Southeast Asia. Views U.S. foreign policy with an eye toward congressional and presidential decisions which resulted in American participation in three major wars in the Asian region.

HIST 473-3. Early China. A history of China from archaeological origins through the Imperial Ages, the Mongol years to the final dynastic era - the Qing. Special attention focuses on early philosophic ideals, aspects of unity and disunity, as well as social, political and economic events.

HIST 474-3. Modern China. An examination of the fall of the Imperial dynastic system and the rise of new political ideas of governance including republicanism, and communism. Important topics include: the 1911 revolution, the warlord years, the creation of the nationalist and Communist parties, WWII in Asia and the rise and fall of Mao Zedong.

HIST 475-3. Modern Japan. Included in this semester will be a study of Japan's contact with the West, the Meiji Restoration and the creation of a modern nation, the expansion of the empire, and the rise of militarism and World War II. The course concludes with the postwar occupation and recovery of Japan.

HIST 476-3. Shoguns of Japan. Course begins with the establishment of the first military feudal regime in 1185 and ends with the "restoration" of imperial rule in 1868. Included is an examination of the political, cultural, economic, and social aspects of each of the three Shoguns that comprise the era of the Shoguns in Japan.

HIST 477-3. Vietnam Wars. A focus on the country, people and U.S. involvement. Guest speakers will supplement the lectures and give first hand accounts of their participation in the war. 'Vietnam' will also define the role of American Foreign Policy during the Cold War.

HIST 478-3. History of Modern Southeast Asia. The countries of Malaysia, Indonesia, the Philippines Singapore, Thailand, Laos, Cambodia and Vietnam in 19th and 20th centuries. Students will consider religious, social, economic and revolutionary trends prior to independence and then look at the problems of post colonial independence from a regional point of view.

HIST 479-3. The American Military Experience. An objective examination of the military history of the United States from the colonial period to the present. Significant battles and campaigns are carefully analyzed, but equal attention is given to cause and effect relationships of America's wars in a national and global context.

HIST 485-3. War and Society: 20th Century US.

HIST 487-3. History of the British Empire. A seminar tracing the evolution of the British Empire from its American roots, through its 19th Century apex in Asia, Africa, and the West Indies, to its dissolution in the late 20th Century.

HIST 489-3. Environmental History: The West and the World. A seminar dealing with global environ-mental history, with particular emphasis being given to the environmental history of the American West.

HIST 490-3. Creators of Mathematics: A Historical View. Prer., I D 105. Meets with I D 445 and I D 545.

HIST 499-3. Senior Thesis Seminar: Approaches to the Study of History. A required course for the history degree. The focus is on research methods, organization of ideas, analysis of evidence, and writing history. Under the direction of a faculty member, each member of the seminar will prepare an original piece of research: the Senior thesis. Prer., Junior or Senior status.

HIST 600-3. Historiography. Introduction to the professional study of history. Required of all graduate students.

HIST 611-3. Readings in Medieval European History. This graduate course analyzes the major secondary literature and historical interpretations in Medieval history, from c. 300 to c. 1300 A.D. Prer., Graduate status.

HIST 615-3. Readings in the Renaissance and Late Medieval Europe. This graduate course analyzes the major secondary literature and historical interpretations in the Renaissance and late Medieval Europe, from c. 1300 to c. 1500 A.D. Prer., Graduate status.

HIST 622-3. Readings in the Reformation and Counter Reformation. This graduate course analyzes the major secondary literature and historical interpretation in the era of the Reformation and the Counter-Reformation, from c. 1500 to c. 1648 A.D. Prer., Graduate status.

HIST 625-3. Readings in the Old Regime, 1648 to 1789. Graduate-level readings in a period of European history. Prer., Admission to program or permission of instructor.

HIST 631-3. Readings in the Age of Revolution 1789 to 1870. Graduate-level readings in a period of European history. Prer., Admission to program or permission of instructor.

HIST 635-3. Readings in Modern Europe, 1870 to the Present. Graduate-level readings in a period of European history. Prer., Admission to program or permission of instructor.

HIST 646-3. Readings: Religion and Culture in America, 1500 to 20th Century. Graduate seminar emphasizing intensive and extensive scholarly readings on religion and culture in America, preparing students for the graduate research seminar paper. Prerequisite to HIST 746.

HIST 651-3. Readings in US History, 1765 to 1815. A graduate reading course designed to familiarize graduate students with the historiography of the American Revolution and the early national period. Students will read major works by past masters as well as current historiography.

HIST 661-3. Readings: US, 1815 to 1876. Graduate level readings in the major historiographic problems of the early nineteenth century through the Civil

War and Reconstruction. Prer., Graduate status in history.

HIST 666-3. Readings in US History: Emergence of Modern America. Extensive reading of modern historians in the political, economic, social, and cultural history of the US during the period of the emergence of industrialized America. Prer., Graduate status.

HIST 669-3. Special Topics. A readings or research seminar in a particular field not covered in regular graduate courses. Prer., Permission of instructor.

HIST 671-3. Readings in US History: The Super Power Era, 1918-Present. Extensive reading of modern historians in the political, economic, social, and cultural history of the US during the period of America as a world superpower. Prer., Graduate status.

HIST 676-3. Readings in the Trans-Mississippi-West. A graduate seminar designed to provide an in-depth understanding of the role of the trans-Mississippi American West in the history of the United States.

HIST 679-3. Readings in Latin American History. Provides students with a broad introduction to the major themes in Latin American history. Indigenous cultures, colonial history, the emergence of nations in the nineteenth century and revolutions of the twentieth century will be covered.

HIST 681-3. Readings in the Indian Subcontinent Since 1556. Graduate seminar designed to provide an in-depth knowledge of South Asia since the advent of the Mughal Empire.

HIST 686-3. Readings in the Pacific Rim Since 1600. Graduate seminar designed to provide an in-depth knowledge of East Asia since 1600.

HIST 699-3. Special Topics. A readings or research seminar in a particular field not covered in regular graduate courses. Prer., Permission of instructor.

HIST 711-4. Research in Medieval European History. Graduate level research and preparation of a scholarly paper, using primary sources, in medieval history. Prer., HIST 611.

HIST 715-4. Research in Renaissance & Late Medieval History. Graduate level research and preparation of a scholarly paper, using primary sources, in the Renaissance and late Medieval Europe. Prer., HIST 615.

HIST 722-4. Research in the Reformation and Counter-Reformation. Graduate level research and preparation of a scholarly paper, using primary sources, in the Reformation and Counter-Reformation. Prer., HIST 621.

HIST 725-4. Research in the Old Regime, 1648-1789. Graduate level research in a period of European history. Prer., HIST 625.

HIST 731-4. Research in the Age of Revolution, 1789-1870. Graduate level research in a period of European history. Prer., HIST 631.

HIST 735-4. Research in Modern Europe, 1870 - Present. Graduate level research in a period of European history. Prer., HIST 646.

HIST 746-4. Research in American Religion. Graduate research seminar emphasizing an individualized research project on any approved topic in religion and culture in American history. Prer., HIST 646.

HIST 751-4. Research in US History, 1765-1815. A course in primary research in Revolutionary America. Prer., HIST 651.

HIST 761-4. Research in U. S. History, 1815 to 1877. A course in research for M.A. students. Students will be required to use primary sources in American history (1815-1877).

HIST 766-4. Research in U. S. History: the Emergence of Modern America, 1876 - 1918. Graduate level research in modern American history. Prer., HIST 666.

HIST 771-4. Research in U.S. History: The Super Power Era, 1918 - Present. Graduate level research in modern American history. Prer., HIST 671.

HIST 776-4. Research in the Trans-Mississippi West. A graduate seminar in which students will research and write a term paper on a specialized topic in the history of the Trans-Mississippi American West. Prer., HIST 676.

HIST 779-4. Research in Latin American History. Students will engage in primary source research of a topic of their choice within the field of Latin American history. Prer., HIST 679.

HIST 781-4. Research in the Indian Subcontinent Since 1556. A graduate seminar in which the students will research and write a term paper on a specialized topic in South Asian history. Prer., HIST 681.

HIST 786-4. Research in the Pacific Rim Since 1600. A graduate seminar in which the students will research and write a term paper on a specialized topic in East Asian history. Prer., HIST 686.

HIST 940-1 to 3. Independent Study in History: Undergraduate. Prer., Consent of instructor.

HIST 960-1 to 3. Independent Study in History: Graduate. Prer., Instructor consent.

HUMANITIES

HUM 303-3. Humanities: 1848, The Rise of Modernity. A year of political, industrial, artistic, and technological revolutions, 1848 is studied from such perspectives as Dickens' Hard Times, Dumas' Camille, the Realism of Courbet, the rise of the women's movement, the Communist Manifesto, and other visual, literary, and aural texts. The theme is the rise of modernity. Prer., ENGL 141 or equivalent.

HUM 311-3. Film, Technology, and Culture. A study of film as a cultural medium through which people express anxieties and hopes, vent critical reactions against social norms and modes of behavior, and reflect on possible changes. Prer., ENGL 141 or equiv and Junior standing.

HUM 313-3. The Baroque. This is an interdisciplinary course focusing on world art and culture of the Baroque period. Issues and themes include the impact of political and religious absolutism, and the rise of modern science on theatre, literature, art, and music. Prer., ENGL 141 or equivalent.

HUM 314-3. Mythologies. An examination of myths central to varying cultures and epochs as they are represented in different fields; including music, art, literature, philosophy, film, politics, history, psychology, and popular culture.

HUM 317-3. Minority Voices. The voices which celebrate positions and oppositions in race, class, gender, culture and sexual orientation. Selected literature, film, and artistic musical and historical documents. Analysis of social, political, and ethical concerns.

HUM 399-3. Special Topics in Humanities. The topic will vary by semester and a specific course may be cross-listed with a course in another department. Students should check each semester's Schedule of Courses for specific topics.

HUM 940-1. Independent Study. Independent Study in Humanities is set aside for those students needing one credit hour in Humanities to satisfy the General Humanities Requirement.

Permission of Director of Humanities is required. Prer., Permission of Director of Humanities.

INTERDEPARTMENTAL STUDIES

I D 101-3. Freshman Seminar. A three-credit interdisciplinary learning experience to help freshmen succeed in college. Students refine their skills in speaking, writing, teamwork, and technology; examine a topic based on the fundamentals of various disciplines; and work closely with faculty and peers. The course emphasizes faculty coaching, collaborative learning, and campus resources through a variety of assignments, such as electronic journals and PowerPoint oral presentations.

I D 103-3. Fundamentals of Written/ Oral Communication. Fundamentals of written and oral communication necessary for undergraduate academic success. The course focuses on three related components: strategies for writing expository essays; basic conventions of standard written English and oral communication competency. Enrolled students are participants in the pre-collegiate program at UCCS.

I D 105-3. Quantitative and Qualitative Reasoning Skills. Designed to bring incoming students up to a minimum competency in quantitative and qualitative skills. It includes such topics as logic arithmetic, graphing, statistics, problem solving skills, and algebraic skills. The course is one of the means to satisfy the Qualitative and Quantitative Reasoning requirement.

I D 111-1. Academic Fitness. In this course, students will study goal-setting, time management, note-taking, test-taking, critical thinking, and oral and written communication. They will develop academic success strategies and apply them to this course and other courses being taken concurrently. Required for LAS second-semester freshman on academic probation and is open to other interested students.

I D 200-3. Mathematics: A Human Endeavor. An introductory course in mathematics as a liberal art. Designed to demonstrate the beauty of mathematics, its methods and its place in human endeavors. Recommended for those who like the subject and for those who think they don't. This course is one of the means to satisfy Qualitative and Quantitative Reasoning requirement.

I D 205-3. Beyond the Finite. Shows how infinity, which plays a key role in mathematics and many other areas of human endeavor, appears in arithmetic, geometry, foundations of analysis and the arts. Just as every intelligent person needs at least some acquaintance with discoveries of Einstein and Freud, one needs exposure to George Cantor's discovery of the infinite. Strongly recommended for natural science, math and math education majors, but can be expected to benefit everyone. The course can be used to satisfy 3 of the 12 hour Natural Sciences Area requirement.

I D 301-1 to 3. Transition Seminar. Specifically designed for first-semester transfer students, this course helps students integrate into the UCCS campus community; refine speaking, writing, and technology skills through project-based learning; cultivate critical research competence; and explore academic and career options. Each semester, a topic is investigated according to three broad academic perspectives. Prer., Not open to students who have taken I D 101.

I D 366-3. Service Learning: Theory and Practice. Combines theory with practical application; includes reading assignments, discussion, and a service learning project. Prer., Sophomore standing or consent of instructor.

I D 401-1. Honors Senior Roundtable: Sharing Passions, Sharing Perspectives. Seniors in their graduating semester will reflect on and share with others their passion for their major field, and perspectives as to why this field is important in the context of both the university and society at large. Prer., Consent of instructor required. Open to seniors in graduating semester, by invitation from major department Chair only.

I D 409-3. Peer Mentoring for Freshman Seminar JTAs. Examines the complementary processes of teaching and learning from both theoretical and pragmatic perspectives. Students will study learning styles, develop coaching and mentoring skills, and work with first-year students under the guidance of faculty sponsors. Prer., Instructor consent.

I D 410-1 to 3. A Sense of Place. Focuses on the character of a particular place. An understanding of these places will be accomplished through an analysis of selected aspects such as history, culture, literature, art and geography.

I D 445-3. Creators of Mathematics: A Historic View. An introduction to the history of mathematics and its creators. Traces the lives and works of the greatest mathematicians of all time. Explores birth and discovery of new ideas. Designed for math, math education, and history majors but may also be a valuable experience for science and art majors. Meets with I D 545 and HIST 490.

I D 446-3. Emergence of Graph Theory: A Historical Exploration of a Mathematical Theory. Explores the emergence of Graph Theory through its history. Studies original pioneering papers and their creators. A valuable elective for math., math. ed., history, physics and other majors. Prer., I D 105, I D 200, or consent of instructor. Meets with I D 546.

I D 450-3. A Serious Course in Recreational Mathematics. An exciting, unique introduction to mathe-matics through the study of mathematical games, puzzles and competition with emphasis on the beauty, elegance, paradoxy, and ingenuity of mathematical ideas. As part of the course, students and instructor will organize the annual Colorado Mathematical Olympiad for Junior and Senior high school students. Meets with I D 550.

I D 480-3. What is Mathematics? Demonstrates how mathematicians create new results in mathematics; how problems of high school geometry lead to open problems-to mathematical frontiers; how several areas of mathematics join together to solve a problem. Invaluable for math majors and math teachers as well as for all science and math ed. majors. Prer., High school algebra or ID 105 and high school geometry. Meets with I D 580.

I D 485-3. Geometric Insight in Combinatorial Mathematics. Geometric insight is a strikingly beautiful tool in mathematics. It demonstrates the power of visualization, experimentation, and imagination in combinatorial mathematics. Designed for math, math education, and natural science majors, but may be taken by anyone who enjoys mathematics. Prer., High school geometry.

I D 490-3. Mathematical Coloring. Shows how coloring can solve mathematical problems; traces ideas of coloring through geometry, combinatorics, number theory, and other areas of mathematics. Allows students to visit a "studio of a mathematician." Invaluable for math majors and math teachers as well as science majors. Prer., High school geometry. Meets with I D 590.

I D 499-6 to 12. Argonne Semester. Students apply to Argonne National Laboratories during their Junior year

for acceptance into the long- standing Argonne Scientific research program for undergraduates. Prer., Acceptance by the Argonne National Laboratory and approval by the dean of the college.

I D 545-3. Creators of Mathematics: A Historic View. An introduction to the history of mathematics and its creators, the greatest mathematicians of all time, their lives and their works, through birth and discovery of new ideas. Prer., I D 105. Meets with I D 445 and HIST 490.

I D 546-3. Emergence of Graph Theory: A Historical Exploration of a Mathematical Theory. Explores the emergence of Graph Theory through its history. Studies original pioneering papers and their creators. A valuable elective for math., math. ed., history, physics and other majors. Prer., I D 105 or consent of instructor. Meets with I D 446.

I D 550-3. A Serious Course in Recreational Mathematics. An introduction to mathematics through the study of mathematical games, puzzles, and competitions with the emphasis on the beauty, elegance, paradoxy, and ingenuity of mathematical ideas. As a part of the course, students and instructor may participate in organizing the Colorado Mathematical Olympiad. Prer., I D 105 or consent of instructor. Meets with I D 450.

I D 580-3. What is Mathematics? Demonstrates how mathematicians create new results in mathematics; how problems of high school geometry lead to open problems-to mathematical frontiers; how several areas of mathematics join together to solve a problem. Invaluable for math majors and math teachers buy may be of interest to science majors or others who wish to have a better understanding of mathematics. Prer., High school algebra or I D 105 and high school geometry. Meets with I D 480.

I D 585-3. Geometric Insight in Combinatorial Math. Geometric insight is a strikingly beautiful tool in mathematics. It demonstrates the power of visualization, experimentation, and imagination in combinatorial mathematics. Designed for math, math education, and natural science majors, but may be taken by anyone who enjoys mathematics. Prer., High school geometry.

I D 590-3. Mathematical Coloring. Shows how coloring can solve mathematical problems; traces ideas of coloring through geometry, combinatorics, number theory, and other areas of mathematics. Allows students to visit a "studio of a mathematician." Invaluable for math majors and math teachers as well as science majors. Prer., High school geometry. Meets with I D 490.

I D 940-1 to 3. Independent Study: Undergraduate. Independent study in interdepartmental studies (Upper Division).

ITALIAN

ITAL 101-5. Beginning Italian I. Essentials of basic Italian, oral-aural skills stressed with additional reading, writing and grammar.

ITAL 102-5. Beginning Italian II. Essentials of Italian continued. Additional oral- aural skills practice with increased grammar, reading, and writing. Prer., ITAL 101 or equivalent.

ITAL 211-3. Intermediate Italian I. Italian at the intermediate level with concentration on conversation, culture, and civilization, or literature at that level. Prer., ITAL 102 or equivalent.

JAPANESE

JPNS 101-5. Beginning Japanese I. Skills in listening to and speaking Japanese. Emphasis on useful expressions with cultural orientation. Hiragana and Katakana.

JPNS 102-5. Beginning Japanese II. Continued skills in listening to and speaking Japanese. Reading and writing intensified with further study of Hiragana and basic Kanji. Prer., JPNS 101 or its equivalency.

JPNS 211-3. Intermediate Japanese I. Conversational Japanese at the intermediate level. Reading and writing with additional study of Kanji. Prer., JPNS 102 or its equivalency.

JPNS 212-3. Intermediate Japanese II. Japanese at the advanced intermediate level. Speaking, reading and writing with additional study of Kanji. Prer., JPNS 211 or consent of instructor.

JPNS 320-3. Japanese Culture and Civilization. Elements of history, culture, art, music and rituals of the Japanese experience. Meets with F CS 310.

JPNS 920-1 to 3. Independent Study in Japanese. Selected topics in Japanese language, literature and culture. May be offered to meet specific student needs. May be repeated up to three times for credit. Prer., JPNS 102.

JPNS 930-1 to 3. Independent Study in Japanese. Selected topics in Japanese language, literature and culture. May be offered to meet specific student needs. May be repeated up to three times for credit. Prer., JPNS 211.

JOURNALISM

JOUR 100-3. Contemporary Mass Media. Examines the mass media and their interaction with society, looking at journalism and the mass media in historical, intellectual, political, and social contexts. Meets with COMM 100.

JOUR 290-3. Writing for the Media. Fundamentals of new gathering and writing news story forms. Assignments include reportorial work for campus publications. Meets with COMM 290.

JOUR 666-3. Media Ethics. Selected topics in the area of journalistic ethics and issues. Students examine current theory and practice in journalism and apply these concepts to simulated communications problems. Topics vary each semester; examples include media ethics and social problems from cases in advertising, news and entertainment programming.

LATIN

LAT 101-4. Beginning Latin I. Essentials of Latin. Elements of grammar, reading and writing.

LAT 102-4. Beginning Latin II. Continued study of Latin grammar with expanded reading and writing. Prer., LAT 101 or equivalent.

LAT 211-4. Intermediate Latin I. Latin at the intermediate level. Readings in culture, civilization and literature. Prer., LAT 102 or sufficient score on placement test.

MILITARY SCIENCE

M S 101-1. Fundamental Concepts of Leadership. An introduction to the fundamentals of leadership. The course helps students be more effective leaders and managers in the future, whether serving in the military or in civilian life. Topics include values, leadership, and "life skills" (communication theory/ practice, interpersonal relationships, and fitness). Students should be prepared to receive more complex leadership instruction by the course end. Lab is required once a week.

M S 102-1. Basic Leadership. An introduction to the "life skills" of problem solving, decision making, and leadership. The course is designed to help students in the near-term as leaders on and off

campus. Topics include critical thinking, problem solving methods, leadership theory, followership, group cohesion, goal setting, and feedback mechanisms. Lessons emphasize student discussions and practical exercises. Lab is required once a week.

M S 201-2. Advanced Leadership. Course delves into the theoretical and practical leadership topics. Several communication and leadership topics are examined (assertiveness, motivation, written/oral communication, organizational culture, etc.). A major leadership problem solving case study is included. Students will be grounded in fundamental leadership principles by course end and be able to apply the principles to future life experiences. Lab is required once a week.

M S 202-2. Tactics and Officership. Focuses on the practical application of decision- making and leadership and examines the roots of national and Army values and ethics. Focuses basic knowledge required for a competent leadership (i.e.: physical fitness, consideration of others, operational terms and graphics, duties and responsibilities of an officer, land navigation, basic tactics and principles of war, leadership skills and attributes).

M S 301-3. Fundamentals of Military Leadership and Training I. Focuses on building leadership competencies and military skills in preparation for a student's future responsibilities as a military leader. Topics include the principles of war, decision- making, planning models, and risk assessment. Advanced leadership instruction is on motivational theory, the role and actions of leaders, and organizational communications. Lab is required once a week and physical training is required three times per week.

M S 302-3. Fundamentals of Military Leadership and Training II. Builds on the skills and knowledge attained in M S 301. Instruction will include individual leader development, planning and execution of small unit operations, individual and team development, and the Army as a career choice. Students should be prepared to attend National Advanced Leadership Camp at Fort Lewis, Washington the following summer by course completion. Lab is required once a week and physical training is required three times per week.

M S 303-3. Advanced Camp. Mandatory 5-week practicum conducted at Fort Lewis, WA for all advanced course Army ROTC students. Students are assigned leadership positions at various levels of responsibility, in varied environments and are evaluated on their ability to function within the Army team. Contract Army ROTC students only. Prer., M S 301 and M S 302.

M S 401-3. Military Staff Functions. Provides the student with an understanding of the U.S. Army staff organizations, the interrelationships of these staffs and their role in support of the commander. Course work also addresses Army values, ethics and military customs and courtesies. Lab is required once a week and physical training is required three times per week. Prer., M S 301 and M S 302.

M S 402-3. Transition to Lieutenant. Course completes the transition from student to lieutenant. It delves into the legal and ethical aspects of decision-making and leadership. Other topics include how the Army organizes for tactical/ strategic operations and how to manage administration and logistics at unit level. Lab is required once a week and physical training is required three times per week.

M S 498-3. Special Studies in Leadership. Course is for the student participating in the Army ROTC Advanced Course who wants to pursue further studies in the application of leadership principles and group dynamics. This course is by arrangement with the Professor of Military Science only. Students must be Army ROTC Advanced Course participants. Prer., M S 402.

MUSIC

MUS 100-3. Introduction to Music. Intro. to Music is a course in appreciation of music. The primary focus is "Classical" music although there will be several excursions into the music of non- Western cultures. The approach is "get up and go" with attendance at concerts required. Course content will supplement readings and meaning of their musical references.

MUS 101-3. Music Theory I. The fundamentals of music, rhythm theory, scale theory, key signatures, intervals and functional harmony are taught in Music Theory I. The development of written and aural skills are the highest priority.

MUS 131-1. University Choir. Study and performance of choral music. Open to all qualified students. May be repeated three times for a total of 3 hours' credit.

MUS 150-1. Applied Music-Private Instruction. This instruction is open to all students regardless of musical background. Fourteen 45-minute lessons per semester are offered with the meeting time and place to be arranged with the instructor. All students are required to perform or attend two recitals. Lessons will cover technique, interpretation and musical style.

MUS 201-3. Advanced Music Theory. Continuation of Theory I. Topics of study include part-writing in four voices, modulating, knowing how to use non-chord tones and harmonizing a given part. Prer., MUS 101 or consent of instructor.

MUS 205-3. Introduction to Jazz. Survey course on Jazz. Various styles of Jazz from New Orleans style through Swing, Bebop, Cool, Avant Garde, Fusion, and the most recent developments will be studied in a musical and socio-humanistic perspective. Attendance at concerts required. Meets with EST 205.

MUS 210-3. Rock and Roll Music. This introductory level history and music appreciation course will survey the major musical, social and economic trends in Rock and Roll music from its roots in the popular music of the late 1800's to the present. Students will sharpen their musical analysis skills through listening and active participation.

MUS 225-1. Jazz Ensemble. Performance oriented course of music from the Jazz tradition in the United States. Prer., Prior musical experience. Meets with MUS 205.

MUS 315-3. Introduction to Non-Western Music. An introduction, from the listener's point of view, to the music of various non-western cultures, including those of Africa, Asia and the Americans. Examination, through recordings, readings, and films, of musical styles and esthetics and the relationships between music and culture.

MUS 375-3. 20th Century Music. A survey of significant works of music literature in this century. Prer., MUS 101/ 102 or 185 or consent of instructor.

MUS 385-3. Symphonic Literature. Symphonic literature studies orchestral masterworks from Bach to Rautavaara. Emphasis is on nineteenth century composers. Symphonies, concertos, overtures, and ortario included in course content. Attendance at orchestra concerts is required and at rehearsals is recommended.

MUS 403-1 to 3. Internship in Music. Designed musical experience involving specific application of relevant concepts and skills in supervised professional

situations. Pass/Fail only. Prer., Permission of Program Director.

MUS 493-1 to 3. Advanced Special Topics. Special topics usually taught on a one time basis. Subjects offered will respond to special interest or rapidly changing topics. Can be taken twice for credit but not more than 6 hours may apply toward graduation. Prer., Basic knowledge of topic.

MUS 495-1 to 3. Special Topics. Special topics are usually taught on a one-time basis. Subjects offered will respond to special interest or rapidly changing topics.

PHILOSOPHY

PHIL 100-3. Introduction to Philosophy. An introduction to the fundamental questions of philosophy through a study of several major philosophers in the history of philosophy.

PHIL 102-3. Ethics. Introductory study of major philosophies on the nature of the good for humans, principles of evaluation, and moral choice. Some attention is given to contemporary topics such as violence and abortion.

PHIL 104-3. Philosophy and Society. Critical introduction to ideas and values used to justify key institutions of advanced technological society.

PHIL 105-3. Philosophy and Religion. An introduction to philosophy through religious topics such as sacredness, faith, reason, revelation, creation, immortality, and God's existence.

PHIL 110-3. Introduction to Religious Studies. An introduction to the study of religious phenomena such as myth, symbols and rituals as they relate to religious beliefs. The concepts of sacred narratives, sacred histories, and religious experiences will be discussed along with different approaches (e.g., psychological, sociological, anthropological) to the study of religion.

PHIL 112-3. Critical Thinking. Introduction to the formal and informal standards and critical techniques used in the evaluation of daily reasoning and argument.

PHIL 115-3. Ethics in the Professions. An examination of the applicability of some standard ethical theories to the specific moral issues raised by and encountered in the practice of professions such as business, engineering, law, health care, politics, and teaching.

PHIL 131-3. A Lab of Her Own - Science and Women. An introduction to natural science and its methods for non-science majors. It focuses on women's participation in both the formation of scientific concepts and the development of methodology. Modern concepts of science and mathematics with an emphasis on women's contributions to these fields will be presented. This course will offer a feminist critique of the traditional methods of science. Meets with PES 131 and WMST 131.

PHIL 310-3. Comparative Religions. A reading-discussion course which explores the major world religions and the nature of their appeal to the spiritual aspirations of members of the human family.

PHIL 311-3. Women and Religion. Examines the way(s) in which women have been, and continue to be viewed in various religions through comparing sacred and other texts with actual religious practices and beliefs. This course engenders an appreciation of the tension between the ideal expectations for and the real possibilities available to women in religious traditions. Meets with WMST 311.

PHIL 312-3. Greek and Roman Myth. A philosophical examination of Greek and Roman myth based on a variety of ancient and modern hermeneutical methods, including approaches from the Presocratics, Platonism, Aristotle, Stoicism, Structuralism, Semantic Theory, Psychoanalysis and Ritual Theory.

PHIL 316-3. Philosophical Issues in Death and Dying. The meaning of death and dying in the history of Western philosophy from antiquity to contemporary Existentialism. Detailed examination of ethical issues raised in the care of the dying. Euthanasia and termination of treatment, care of the seriously ill newborn, etc.

PHIL 317-3. Theories of Knowledge. Consideration of the classical and contemporary, contributions to the analysis of the nature, limits, and conditions of knowledge. Meets with PHIL 518.

PHIL 320-3. Politics and the Law. Examination of the most influential recent works expressing the conservative, liberal, Marxist and anarchist contributions to contemporary social and political theory.

PHIL 322-3. Philosophy of Law. A consideration of various views of the nature of law, its role in society and its relation to other disciplines. Examination of the philosophic commitments that underlie and affect legal convention and procedures. Meets with PHIL 526.

PHIL 323-3. Women's Equality, Women's Differences. An introductory course that presents both the history of philosophical treatments of women and contemporary philosophical analyses of women's social, political, artistic, scientific, and philosophical roles. Prer., PHIL 100 or WMST 200. Meets with WMST 323.

PHIL 324-3. Philosophy of War and Terrorism. Critical examination of the philosophic commitments that underlie and affect war, conflict resolution, and peace; evaluation of various questions involved in conducting war and resolving disputes; consideration of the feasibility of pacifism.

PHIL 330-3. Philosophy of Mind. Consideration of the central problems in the philosophy of mind, including the mind-body problem; the knowledge of other minds; free will and determinism; as well as discussion of concepts such as action, intention, motive, desire, memory, etc.

PHIL 333-3. Understanding Emotion. Philosophy has tended to relegate emotions and emotional life to a minor role in the exposition of traditional philosophical questions or to eliminate emotions altogether from consideration. This course will rethink the role of emotions in philosophy. Prer., PHIL 100 or similar.

PHIL 334-3. Love and Hatred. Examines the concepts of love and hatred in philosophy beginning with the Ancient Greeks and continuing through contemporary philosophy in order to examine the influence of the Greeks on contemporary thought and to develop new ideas about what constitutes love and hatred. Prer., one philosophy course (not PHIL 112).

PHIL 335-3. Metaphysics. Traditional and contemporary theories of the basic categories used to describe reality and the human relationship to it, including concepts such as substance, identity, space and time, causality, determination, and systematic ontology. Prer., three hours of philosophy.

PHIL 339-3. Philosophy of Psychology. Course covers classical and contemporary discussions of philosophical issues raised by psychological theory. Issues include introspectionism (James), psychoanalytical models of the self (Freud, Horney), learning theory (Piaget), depth psychology (Jung), behaviorism (Skinner), feminist psychology (Chodorow, Gilligan), cognitive science, psychology and language (Lacan), and existential psychology (Merleau-Ponty).

PHIL 340-3. Holocaust. Detailed analysis of the holocaust and its educational importance. Main focus is the Jewish holocaust with attendant eugenic policies, with possible attention to other examples of holocaust. Examination of philosophies that support organized social violence and principles that achieve a humane philosophy of life.

PHIL 344-3. Symbolic Logic. An exposition of the ideas and techniques of modern symbolic logic including several formal systems to distinguish between valid and invalid arguments and discussion of the foundations of arithmetic and set theory. Meets with PHIL 544.

PHIL 348-3. History of Philosophy: Philosophies of India. Historical development and a critical analysis of the major philosophical texts and school of India, including the Vedas, Upanishads, and Bhagavad-Gita; the 6 orthodox schools; Jainism; Buddhism; and modern Indian thinkers including Gandhi and Radhakrishnan.

PHIL 349-3. History of Philosophy: China. Historical development and critical analysis of the major philosophical schools and texts of China, including Confucianism, Taoism, Ch'an (Zen) Buddhism, Neo-Confucianism and modern Chinese thought.

PHIL 350-3. Buddhist Philosophy. General survey of key Buddhist philosophical concepts of both the Theravada and Mahayana traditions, such as dukha, nirvana, anatman and voidness. The relationship between Pali Sutta's and the Theravada tradition will be discussed as well as the relationship between Mahayana and the Prajna Paramita Suttas. Key schools of Mahayana, such as Cittamattra and Madhyamaka will also be introduced.

PHIL 351-3. History of Philosophy: Ancient. Systematic examination of the development of western philosophy from its inception among the pre-Socratics through Socrates to Plato and Aristotle.

PHIL 353-3. History of Philosophy: Hellenistic. History of Western Philosophy during the Hellenistic period ©. 310 B.C.E. To 450 C.E.). Covers Stoicism, Epicureanism, Skepticism, Atomism, neo-Platonism and the introduction of Jewish and Christian thought into philosophy via Philo of Alexandria and St. Augustine, respectively.

PHIL 354-3. History of Philosophy: Medieval and Renaissance. History of Western Philosophy from the Medieval period to the beginning of modern times. Course covers Christian, Jewish and Islamic philosophers, including Augustine, Anselm, Avicenna, Averroes, Maimonides, Aquinas, Ockham, Machiavelli, and F. Bacon.

PHIL 356-3. History of Philosophy: Modern Classical. Systematic examination of some fundamental philosophic problems treated by Rationalists and Empiricists in the 17th and 18th centuries (Hobbes, Descartes, Locke Spinoza, Leibniz, Berkeley, Hume), especially those concerning the foundations and limits of knowledge and attempts to overcome the limitations of these two traditions.

PHIL 357-3. History of Philosophy: Kant and the Enlightenment. Study of the Enlightenment (Age of Reason) with special emphasis on Kant's work and some of his precursors and critics.

PHIL 358-3. History of Philosophy: From Hegel to Nietzsche. In-depth survey of some of the major thinkers in the 19th century such as Hegel, Marx, Kierkegaard, and Nietzsche.

PHIL 360-3. Philosophy of Religion. Detailed analysis of religious experience from Eastern and Western traditions, including mysticism, mythology, cosmology, knowledge of God and the divine attributes, salvation, immortality, and the influence of secularism.

PHIL 361-3. Philosophical Approaches to the Hebrew Bible. The formation of the Old Testament; manuscript traditions and canonization; an investigation of the major genres within the Old Testament (history, poetry, prophecy); the historical developments of the ancient Near East as they reflect upon the Old Testament and the history of biblical interpretation.

PHIL 362-3. Philosophical Approaches to the New Testament. An investigation of the development of the New Testament, incorporating the history of the individual books and the Hellenistic and Jewish background to the New Testament itself. The course focuses on the historical problem of the emergence of various theological perspectives within the New Testament writings, especially the contrast between the teachings of Jesus and those of Paul.

PHIL 363-3. Gender and Race in Biblical Literature. Course examines the presence(s), result(s), and interpretation(s) of gender and race in biblical literature and the issues and problems those categories present to the reader. Meets with EST 363 and WMST 363.

PHIL 370-3. Aesthetic Theory. Investigation of concepts such as the aesthetic object, the artistic experience, and creative expression and a critique of certain theories designed to solve problems of aesthetic evaluation. Meets with PHIL 570.

PHIL 373-3. Philosophy and Literature. A study of the intersection of philosophy and literature, the benefits each derives from the other and of philosophical themes expressed in literary works and philosophical problems raised by literature. Meets with PHIL 573.

PHIL 404-3. Twentieth Century Philosophy. Critical analysis of such influential 20th century philosophical movements as logical positivism, analytical philosophy, pragmatism, Marxism, existentialism, phenomenology, hermeneutics, and deconstruction. Meets with PHIL 504.

PHIL 407-3. Existentialism. Main themes of existentialist thought from its origins in Kierkegaard and Nietzsche to such 20th century figures as Jaspers, Heidegger, Sarte and Camus. Meets with PHIL 507.

PHIL 408-3. Contemporary Continental Philosophy. An intensive examination of major figures, such as Husserl, Heidegger, Habermas, Foucault and Derrida; and of major movements, such as phenomenology, critical theory and deconstruction.

PHIL 410-3. American Pragmatism. Analysis and appreciation of America's most important contribution to intellectual life, pragmatism. Also discussed are two of pragmatism's predecessors, transcendentalism and naturalism. Meets with Phil 510.

PHIL 414-3. Environmental Philosophy. The philosophical significance of ecology for establishing an environmental ethic. Application of environmental ethics to such issues as responsibilities to future generations, the problem of the moral standing of nonhuman species and wilderness, and the deficiencies of cost-benefit analysis as a basis for decision making. Meets with PHIL 514.

PHIL 415-3. Ethical Theory. The problem of rational justification of ethical standards, including a selected treatment of the history of ethics. Prer., PHIL 100 or PHIL 102 or PHIL 104. Meets with PHIL 515.

PHIL 416-3. Business and Management Ethics. Designed to teach students to appreciate the ethical dimensions of the decision-making process in which most

business managers are engaged during their careers. Meets with PHIL 516.

PHIL 417-3. Health Care Ethics. Ethical dimensions of the patient-physician relationship and the impact of medical technology. Topics include informed consent and experimentation with human subjects, technological manipulation of birth and death processes, allocation of medical resources, genetic screening in the work-place, and genetic engineering. Meets with PHIL 517.

PHIL 420-3. Consciousness. Consciousness has re-emerged as a fundamental topic in psychology, neuroscience, cognitive science, and philosophy. This course introduces students to some of the recent neuroscientific studies of consciousness and surveys some of the philosophical problems posed by consciousness. Meets with PHIL 520.

PHIL 425-3. Topics in Social Theory. In-depth examination of a particular trend in contemporary social theory such as critical theory, the Frankfurt school, Marxism and post-Marxism, economic democracy, deep ecology, postmodernism and deconstruction. Prer., Three hours of philosophy. Meets with PHIL 524.

PHIL 435-3. Analytic Philosophy. "Analytic Philosophy" is a term used to describe both a particular method and a style of philosophizing. This course examines that method and that style and shows the promise the former once held for settling traditional philosophical issues and problems and the continuing influence of the latter. Meets with PHIL 535.

PHIL 440-3. Philosophy of Science. A close examination of issues in the history, philosophy and sociology of science. Attention will be given to contemporary debates on such topics as the methodology of science, the growth of scientific knowledge, the logic of scientific discovery and the value-neutrality of science. Meets with PHIL 540.

PHIL 441-3. Philosophy of Biology. A broad examination of pertinent issues in biology, from the theory of evolution to contemporary debates concerning DNA and the human genome project.

PHIL 443-3. Logical Theory. An intensive study of issues in philosophy of logic and advanced logic. Topics examined include: modal logic, many-valued logic, second-order logic, fuzzy logic, semantics and syntax, and incompleteness. Prer., PHIL 344. Meets with PHIL 543.

PHIL 446-3. Theories of Human Nature. An examination of the meaning of human nature from various perspectives, including Greek thinking, religious explanations, naturalist, existentialist and pragmatist theories.

PHIL 449-3. Philosophy of Language. A historical survey of developments in philosophy of language. Topics covered include sense and reference, signifier and signified, rule-following, ordinary language philosophy, deconstruction, and casual theories of reference. Authors covered include Frege Husserl, De Saussure, Wittgenstein, Austin, Derrida, and others. Meets with PHIL 549.

PHIL 455-3. Feminism, Sexuality, and Culture. An examination of selected philosophical issues in the context of recent developments in feminist thought. Course will consider the question of whether traditional patterns of philosophical thought express gender bias, and if so, why. Meets with PHIL 555 and WMST 455.

PHIL 460-3. Theory of Film. Relation between philosophical issues and film to show how philosophical concepts are embodied in film and filmmaking. Meets with PHIL 560.

PHIL 491-3. Systematic Philosophy. A thorough study of a single philosophical problem, system, or single philosopher. Meets with PHIL 591.

PHIL 493-3. Advanced Topics in Philosophy. Detailed examination of a special topic taken from the history of philosophy which is not covered by the regular departmental course offerings (variable content). Prer., Philosophy majors, consent of instructor or deep ecology students from Spring 2000. Meets with PHIL 593 and WMST 490.

PHIL 495-3. Senior Seminar and Thesis. A research project directed under the supervision of a full time departmental faculty member. The topic of the research is chosen by the student in consultation with the project advisor. Required of all philosophy majors.

PHIL 504-3. Twentieth Century Philosophy. Critical analysis of such influential 20th century philosophical movements as logical positivism, analytical philosophy, pragmatism, Marxism, existentialism, phenomenology, hermeneutics, and deconstruction. Meets with PHIL 404.

PHIL 507-3. Existentialism. Main themes of existentialist thought from its origins in Kierkegaard and Nietzsche to such 20th century figures as Jaspers, Heidegger, Sarte and Camus. Meets with PHIL 407.

PHIL 508-3. Contemporary Continental Philosophy. An examination of major figures, such as Husserl, Heidegger, Habermas, Foucault, and Derrida; and of major movements, such as phenomenology, critical theory, and deconstruction.

PHIL 510-3. American Pragmatism. Analysis and appreciation of America's most important contribution to intellectual life, pragmatism. Also discussed are two of pragmatism's predecessors, transcendentalism and naturalism. Meets with PHIL 410.

PHIL 514-3. Environmental Ethics and Deep Ecology. The philosophical significance of ecology for establishing an environmental ethic. Application of environmental ethics to such issues as responsibilities to future generations, the problem of the moral standing of non-human species and wilderness, and the deficiencies of cost-benefit basis for decision making. Meets with PHIL 414.

PHIL 515-3. Ethical Theory. The problem of rational justification of ethical standards including a selected treatment of the history of ethics. Prer., PHIL 100, PHIL 102 or PHIL 104. Meets with PHIL 415.

PHIL 516-3. Business and Management Ethics. Designed to teach students to appreciate the ethical discussions of the decision-making process in which most business managers are engaged during their careers. Meets with PHIL 416.

PHIL 517-3. Health Care Ethics. Ethical dimensions of the patient-physician relationship and the impact of medical technology. Topics include informed consent and experimentation with human subjects, technological manipulation of medical resources, genetic screening in the workplace, and genetic engineering. Meets with PHIL 417.

PHIL 518-3. Theories of Knowledge. Consideration of major philosophers, both classical and contemporary, who have contributed to the analysis of the nature, limits and conditions of knowledge. Meets with PHIL 317.

PHIL 520-3. Consciousness. Consciousness has re-emerged as a fundamental topic in psychology, neuroscience, cognitive science, and philosophy. This course introduces students to some of the recent neuroscientific studies of consciousness and surveys some of the philosophical problems posed by consciousness. Meets with PHIL 420.

PHIL 524-3. Selected Topics in Social Theory. In-depth examination

of a particular trend in contemporary social theory such as critical theory, the Frankfurt school, Marxism and post-Marxism, economic democracy, deep ecology, post-modernism and deconstruction. Variable content. Meets with PHIL 425.

PHIL 526-3. Philosophy of Law. Consideration of various views of the nature of law, its role in society and its relation to other disciplines. Examination of the philosophic commitments that underlie and affect legal convention and procedures. Meets with PHIL 322.

PHIL 530-3. Philosophy of the Mind. Consideration of the central problems in the philosophy of mind, including the mind-body problem; the knowledge of other minds; free will and determinism; as well as discussion of concepts such as action, intention, motive, desire, memory, etc. Meets with PHIL 330.

PHIL 535-3. Analytic Philosophy. 'Analytic Philosophy' is a term used to describe both a particular method and a style of philosophizing. This course examines that method and that style and shows the promise the former once held for settling traditional philosophical issues and problems and the continuing influence of the latter. Meets with PHIL 435.

PHIL 540-3. Philosophy of Science. A close examination of issues in the history, philosophy, and sociology of science. Attention will be given to contemporary debates on such topics as the methodology of science, the growth of scientific knowledge, the logic of scientific discovery and the value-neutrality of science. Meets with PHIL 440.

PHIL 543-3. Logical Theory. A study of issues in philosophy of logic and advanced logic. Topics examined include: modal logic, many- valued logic, second order logic, fuzzy logic, semantics and syntax, and incompleteness. Prer., PHIL 344. Meets with PHIL 443.

PHIL 544-3. Symbolic Logic. An exposition of the ideas and techniques of modern symbolic logic including several formal systems to distinguish between valid and invalid arguments and discussion of the foundations of arithmetic and set theory. Meets with PHIL 344.

PHIL 546-3. Theories of Human Nature. An examination of the meaning of human nature from various perspectives including Greek thinking, religious explanations, naturalist, existentialist and pragmatist theories.

PHIL 549-3. Philosophy of Language. A historical survey of developments in philosophy of language. Topics covered include sense and reference,, signifier and signified, rule-following, ordinary language philosophy, deconstruction, and casual theories of reference. Authors covered include Frege Husserl, De Saussure, Wittgenstein, Austin, Derrida, and others. Meets with PHIL 449.

PHIL 560-3. Theory of Film. Relation between philosophical issues and film to, show how philosophical concepts are embodied in film and filmmaking. Prer., A B.A. in any LAS field. Meets with PHIL 460.

PHIL 591-3. Systematic Philosophy. A thorough study of a single philosophical problem, system or single philosopher. Variable content. Meets with PHIL 491

PHIL 593-1 to 3. Advanced Topics in Philosophy. Detailed examination of a special topic taken from the history of philosophy which is not covered by the regular departmental course offerings. Variable content. Prer., Consent of instructor. Meets with PHIL 493 and WMST 490 001.

PHIL 940-1 to 3. Independent Study in Philosophy: Undergraduate. Prer., Prior consent of faculty required.

PHIL 950-1 to 3. Independent Study in Philosophy: Graduate. Intended to give an opportunity for advanced students with good scholastic records and with appropriate courses completed to pursue independently the study of some subject of special interest. Subjects are chosen and arrangements are made to suit the needs of each student. Prer., Consent of instructor.

PHYSICS

PHYS 503-3. Mathematical Methods in Physics. Survey of classical mathematical physics. ncludes complex variable theory, boundary value problems, Green's functions, matrices, and vector spaces, and the use of numerical methods for solving physical problems. Prer., PES 325 or equivalent.

PHYS 515-3. Solid State Laboratory. Advanced lab on the measurement of fundamental properties of solids. Includes introduction to vacuum and thin film technologies. One lecture and one lab session per week. Meets with PES 415.

PHYS 516-1. Thin Films Laboratory. Introduction to thin film deposition and characterization. Facilities include evaporation, sputtering, Auger electron spectroscopy, ellipsometry and scanning electron microscopy. Coreq., PHYS 549

PHYS 520-3. Computational Physics. An introduction to methods of solving physics problems via computers. Topics include molecular dynamics, calculation of electromagnetic fields, electronic states, Monte Carlo methods applied to statistical mechanics and quantum systems. Prer., C S 105 or equivalent.

PHYS 541-3. Statistical Mechanics. An introduction to equilibrium statistical mechanics. Topics include classical or Bollzmann statistics, Fermi-Dirac and Bose-Einstein statistics, partition functions and ensembles. Also included are applications to the liquid and solid states.

PHYS 542-3. Physics of Materials. An introduction to the physics of materials. Topics will include crystallography and defects, phase diagrams, phase transformations, diffusion, mechanical properties, and electrical properties.

PHYS 546-3. Introduction to Solid State Physics. Theory of solids including crystal structure, x-ray diffraction, phonons, thermal properties of insulators, theories of metals, band structure, semiconductors, impurities and doping in semiconductors, junctions, superconductivity, and magnetism. Meets with PES 446.

PHYS 548-3. Surface and Interface Physics. An introduction to the solid state physics of surfaces and interfaces including structural, thermodynamic and electrical properties. Gas-surface interactions and characterization techniques will also be examined.

PHYS 549-3 to 4. Physics of Thin Films. A combined lecture/lab course covering common techniques for the production and characterization of thin films and the physics which underlies these methods. Lab equipment includes evaporation, Auger spectroscopy, ellipsometry and scanning electron microscopy. Offered as a 3 credit lecture or 4 credits with integrated lab. Meets with PES 449.

PHYS 572-3. Stellar Structure and Evolution. Basic stellar astronomy and astrophysics. H-R diagrams. Principles of stellar structure including energy generation and energy transport. Stellar formation and evolution to compact objects.

PHYS 595-1 to 6. Special Topics. Various topics in physics, energy science, astronomy and related fields.

PHYS 596-1 to 6. Special Topics. Various topics such as, but not limited to: spin flop transition in anti-ferromagnetic/ ferromagnetic structures; effective of spin flop on domain structures and other current topics in physics.

PHYS 621-3. Theoretical Mechanics. Variational principles, Lagranges's equations, Hamilton's equations, motion of a rigid body, relativistic mechanics, transformation theory, continuum mechanics, small oscillations, Hamilton-Jacobi theory.

PHYS 625-3. Introduction to Quantum Mechanics. Quantum phenomena, relation to classical physics, Schroedinger and Heisenberg picture, application to problems, approximation techniques; angular momentum; scattering; theory; Pauli spin theory; radiation theory; relativistic wave equations with simple applications; introduction to field theory and second quantization. Prer., PES 426.

PHYS 626-3. Quantum Mechanics II. Quantum phenomena, relation to classical physics, Schroedinger and Heisenberg picture, application to problems, approximation techniques; angular momentum; scattering theory; Pauli spin theory; radiation theory; relativistic wave equations with simple applications; introduction to field theory and second quantization.

PHYS 631-3. Electromagnetic Theory I. Electromagnetic fields; applications of Maxwell's equations to electromagnetic wave propagation, and fundamental properties of light; relativistic electrodynamics, radiation theory. Prer., PES 331, PES 332 or equivalent.

PHYS 632-3. Electromagnetic Theory II. Electromagnetic fields; applications of Maxwell's equations to electromagnetic wave propagation, and fundamental properties of light; relativistic electrodynamics, radiation theory. Prer., PHYS 331-332, or equivalent.

PHYS 695-3. Special Topics in Physics. Various topics such as group theory in quantum mechanics, collision, astrophysics, surface physics, magnetism.

PHYS 700-1 to 6. Masters Thesis. An approved problem in theoretical or experimental physics under the direction of faculty members. Intended to introduce the student to procedures in research and development work. Work of an original nature is expected.

PHYS 950-1 to 6. Independent Study: Graduate.

PHYS 999-0. Candidate for Degree.

PHYSICS AND ENVIRONMENTAL SCIENCE

PES 100-3. Physics in Everyday Life. A non-mathematical overview of physics and how it affects our everyday life. Topics to be included are balancing and equilibrium, tornadoes, weather patterns, shock waves, superconductivity, fiber optics and electron microscopes. Recommended for students with no science or mathematics background.

PES 101-4. Physics for Life Science I. General physics with an emphasis on applications to life sciences and health professions. Prer., Two years of high school algebra or equivalent.

PES 102-4. Physics For Life Science II. General physics with an emphasis on applications to life sciences and health professions. Prer., PES 101.

PES 104-3. Physics in Science Fiction. A study of the physics that exists in commonly occurring science fiction themes. Topics include a general discussion of conditions for life on other planets, orbital motion, Einstein's theory of relativity, and electromagnetic phenomena.

PES 105-3. General Astronomy I. The methods and results of modern astronomy (solar systems, stars, galaxies, blackholes, quasars, cosmology) at an elementary level.

PES 106-3. General Astronomy II. The methods and results of modern astronomy (solar systems, stars, galaxies, blackholes, quasars, cosmology) at an elementary level.

PES 109-1. General Astronomy Laboratory I. Evening viewing and field trips.

PES 110-1. General Astronomy Laboratory II. Evening viewing and field trips.

PES 111-4. General Physics I. Rigorous calculus-level course in classical physics for science and engineering students. Includes measurements, vectors, motion in one dimension, motion in a place, particle dynamics, work and energy, momentum conservation, rotational dynamics, rigid bodies, oscillation, and gravity. Coreq., MATH 135.

PES 112-4. General Physics II. Topics covered include electrostatics, the electric field, Gauss's law, electric potential, capacitors and dielectrics, current and resistance, the magnetic field, Ampere's law, Faraday's law, inductance, oscillations, and electromagnetic waves. Prer., PES 111, Coreq., MATH 136.

PES 114-1. Introduction to Physics Laboratory. Experiments designed to qualitatively verify concepts in mechanics, light, hear and optics. To be taken concurrently with PES 100 only. This lab is not required but must be taken if the student wishes credit for a natural science lab course in the natural science requirements. Open only to PES 100 students.

PES 115-1. General Physics Lab I. Designed to be taken with PES 111 or PES 101. Experiments on mechanics and graphical analysis of results.

PES 121-3. Introduction to Physical Science. An integrated presentation of the basic concepts of physics and chemistry for non-science majors. Topics include motion, heat, sound, light, atomic and molecular structure, chemical reactions, acids and bases, and radioactivity. Prer., Two years of high school mathematics. Meets with CHEM 121.

PES 124-1. Physical Science Laboratory. A laboratory to accompany CHEM/PES 121. Includes experiments on mechanics, heat, sound, light, electricity, chemical reactions, stoichiometry, acid-base chemistry, and reaction kinetics. Meets with CHEM 124.

PES 131-3. A Lab of Her Own - Science and Women. Introduction to natural science and its methods for non-science majors. It focuses on women's participation in both the formation of scientific concepts and the development of methodology. Modern concepts of science and mathematics with an emphasis on women's contributions to these fields will be presented. This course will also offer a feminist critique of the traditional methods of science. Meets with PHIL 131 and WMST 131.

PES 150-3. Introduction to Energy Science I. Survey of present and future energy resources and the technology associated with their use. Includes economic and environmental considerations. Meets with ENSC 150.

PES 151-3. Introduction to Energy Science II. Survey of present and future energy resources and the technology associated with their use. Includes economic and environmental considerations. Meets with ENSC 151.

PES 160-3. Introductory Solar Energy. Introduction to the technology of solar heating. Includes experience in practical

aspects of solar collection and conversion. Meets with ENSC 160.

PES 162-1. Solar Energy Laboratory. Course designed to provide practical experience in designing and measuring characteristics of active and passive solar heating systems. Prer., or Coreq., PES 160. Meets with ENSC 162.

PES 197-1 to 3. Special Topics. Course covering subjects of current interest on a one-time basis. See schedule of courses for titles.

PES 213-3. General Physics III. A continuation of PES 112. Topics covered include fluid mechanics, waves temperature, heat and the first law of thermodynamics, kinetic theory of gases, entropy and the second law of thermodynamics, geometrical optics, interference, diffraction, light, and quantum physics. Prer., PES 112; Coreq., MATH 235.

PES 215-1. Physics Laboratory II. Radiation physics, electrostatics, AC and AC circuits, magnetic fields. Prer., PES 115.

PES 250-3. Energy Fundamentals. Energy, work, power, and thermodynamic efficiency. World and U.S. Energy sources, consumption, and policy. Conservation methods. Introduction to long- term energy sources: solar, breeder reactors, thermonuclear fusion, geothermal, and tidal. This survey course is designed for science majors and assumes some knowledge of calculus and the physical sciences. Meets with ENSC 250.

PES 306-3. Astrophysics. A classic look at stellar characteristics, the structure and content of our galaxy and the universe in a rigorously mathematical fashion. The theory of stellar spectra is stressed along with stellar distances, magnitudes, and stellar evolution on the Hertzsprung-Russell diagram. Prer., PES 213.

PES 313-3. Modern Physics. Special relativity, development of wave-particle duality, atomic structure, Schroedinger wave equation, the hydrogen atom, atomic and molecular spectra, introduction to the solid state and band theory. Prer., PES 213.

PES 315-2. Modern Physics Laboratory. Teaches the methods and procedures of experimental physics at an advanced level, including such topics as physical optics, high resolution spectroscopy, and energies of radioactive decay products.

PES 317-2. Instrumentation Laboratory I. Design and operation of integrated circuits used in the making of computer interfaces. Interfacing computers with real world experiments. Requires a knowledge of BASIC. Prer., PES 215.

PES 318-2. Instrumentation Laboratory II. Design and operation of integrated circuits used in the making of computer interfaces. Interfacing computers with real world experiments. Requires a knowledge of BASIC. Prer., PES 215.

PES 321-3. Classical Mechanics I. Newtonian mechanics, oscillations, Lagrange's and Hamilton's equations, central forces, scattering, and rigid body motion. Employs vector analysis and calculus. Prer., PES 213; Prer., or Coreq., MATH 235.

PES 325-3. Mathematical Methods of Physics and Engineering. Survey of mathematical methods as preparation for advanced physics and engineering courses. Includes vector calculus, partial differential equations, special functions, Fourier analysis, and generalized functions such as the Dirac delta function.

PES 331-3. Principles of Electricity and Magnetism. Elements of the mathematical theory of electricity and magnetism, including electrostatics, magnetostatics, polarized media, direct and alternating current theory, and introduction to electromagnetic fields and waves. Prer., PES 213 and MATH 235.

PES 332-3. Principles of Electricity and Magnetism II. Elements of the mathematical theory of electricity and magnetism, including electrostatics, magnetostatics, polarized media, direct and alternating current theory, and an introduction to electromagnetic fields and waves. Prer., PES 331.

PES 341-3. Thermodynamics and Statistical Mechanics. Statistical mechanics applied to macroscopic physical systems; statistical thermodynamics; classical thermodynamic systems; applications to simple systems. Relationship of statistical mechanics to thermodynamics. Prer., PES 313.

PES 365-3. Nuclear Physics and Energy Technology. Nuclear structure, radioisotopes, nuclear reactions, fission, and fusion. Emphasis on nuclear power production and its environmental impact. Prer., PES 313.

PES 367-3. Wind Energy. A survey of the technology of wind energy conversion, including climatic aspects, site selection and tower height, generator and propeller design, control systems, and legal aspects.

PES 397-1 TO 3. Special Topics. Course covering subjects of current interest on a one- time basis. See schedule of courses for titles. Prer., PES 313.

PES 415-2. Solid State Laboratory. Advanced laboratory on the measurement of fundamental properties of solids. Includes introduction to vacuum and cryogenic technologies. One lecture and one laboratory session per week. Prer., PES 215 and 313. Meets with PHYS 515.

PES 416-1. Thin Films Laboratory. Introduction to thin film deposition and characterization. Facilities include evaporation, sputtering, Auger electron spectroscopy, ellipsometry and scanning electron microscopy. Coreq., PES 449

PES 425-3. Quantum Mechanics. A sophisticated treatment of quantum theory for students intending graduate work in physics. Topics included are foundation of wave mechanics, wave pockets and the uncertainty principle, Schroedinger's equations, operators and eigenfunctions, scattering and matrix mechanics. Prer. PES 313.

PES 426-3. Quantum Mechanics II. A sophisticated treatment of quantum theory for students intending graduate work in physics. Topics included are foundations of wave mechanics, wave pockets and the uncertainty principle, Schroedinger's equation, operators and eigenfunctions, scattering and matrix mechanics. Prer. PES 425.

PES 442-3. Physics of Materials. An introduction to the physics of materials. Topics will include crystallography and defects, phase diagrams, phase transformations, diffusion, mechanical properties, and electrical properties. Prer., PES 313.

PES 446-3. Solid State Physics Theory of solids including crystal structure, x-ray diffraction, phonons, thermal properties of insulators, theories of metals, band structure, semiconductor impurities and doping semiconductors, junctions, superconductivity, and magnetism. Prer., PES 313. Meets with PHYS 546.

PES 448-3. Surface and Interface Physics. An introduction to the solid state physics of surfaces and interfaces including structural, thermodynamic and electrical properties. Gas-surface interactions and characterization techniques will also be examined. Prer., PES 313.

PES 449-3 to 4. Physics of Thin Films. A combined lecture/lab course covering common techniques for the production and characterization of thin films and the physics which underlies these methods. Lab equipment includes evaporation, Auger spectroscopy, ellipsometry and scanning electron microscopy. Offered as 3 credit lecture or 4 credits with integrated lab. Prer., PES 313. Meets with PHYS 549.

PES 451-3. Optics. An advanced undergraduate treatment of topics in geometrical, physical, and quantum optics. Prer., PES 213 and either PES 313 or 331.

PES 472-3. Stellar Structure and Evolution. Basic stellar astronomy and astrophysics. H-R diagrams. Principles of stellar structure including generation and energy transport. Stellar formation and evolution to compact objects. Prer., PES 306 and PES 341.

PES 481-2. Senior Physics Seminar. Presentation methods in physics. Students present on a wide variety of topics in physics culminating in a formal presentation by the student on a current research topic. Student is graded by a faculty panel on his/her presentation, defense of topic and general knowledge of physics. Prer., Senior status in physics or consent of instructor.

PES 485-3. Senior Project. Special experimental or theoretical research project in a field of physics or physics-related energy science. Project to be chosen in conjunction with instructor and should represent a new contribution to knowledge in the field, or a repetition of current experimental research, or a literature search and demonstrated knowledge of current theoretical research. A written report is required. Prer., Senior status in department and permission of instructor.

PES 930-1 to 3. Independent Study for Physics, Undergraduate. Prer., Consent of instructor.

POLITICAL SCIENCE

P SC 101-3. Introduction to Global Politics. Introductory analysis of the contemporary international system and major state and non-state actors in world politics. Considerable attention is given to internal political features and to the problems/perceptions of the various actors that shape their external behavior.

P SC 110-3. The American Political System.A general introduction to the American political system with emphasis on the inter-relations among the various levels and branches of government, formal and informal political institutions, processes, and behavior. Required of all majors. Not open to those who have had other beginning courses in American government.

P SC 210-3. Politics and Policy in State and Local Communities. Focuses on regional, state, and local government where politics is face to face and where political decisions regularly affect our daily lives. The political systems that teach children, issue building permits, collect garbage, determine welfare eligibility, operate parks, issue drivers licenses, and enforce traffic rules.

P SC 250-3. Introduction to Political Inquiry. An introduction to the basic methods and tools of research in political science. Topics will include discussions of the resources available for political research, the study of politics as a science, common techniques of political analysis, the development of research designs, research report writing, and the ethics of political research. The course will be largely experiential, directly involving students in research experiences.

P SC 301-3. Women in Politics. An examination of the role of women in American politics. Topics will include an historical perspective of women's political activity, the political interests and group activities of women, the legal status of women, political attitudes of and toward women, and women's political behavior. Meets with WMST 301.

P SC 303-3. Political Parties. Party politics in the United States. Nature, structure, organization, and functions of political parties. Analysis of political behavior.

P SC 305-3. Race and Ethnicity in American Politics. An examination of the role of U.S. ethnic minority groups in American politics from the perspectives of the groups themselves. Topics will include historical and contemporary perspectives on the political activities, interests and legal status of U.S. ethnic minorities; the relationship of power, race/ethnicity and class in determining the effects of the political system on these groups; and the impact of these groups on the political system. Meets with EST 305.

P SC 311-3. Emerging Nations. Analysis of third world developmental problems such as lack of economic growth, corruption, military coups, arms sales, international debts, and the role of nature. Approaches to theory are discussed.

P SC 321-3. Western European Political Systems. Governments and politics of selected countries of contemporary western Europe, with emphasis on Britain, France, Germany and certain others.

P SC 322-3. Eastern European Political Systems. Examines the politics and policies of Eastern Europe during the 20th century and into the 21st century; analyzes Easter European politics from WWI, the revolutions of 1989 and consideration of issues, problems, and paradoxes of the post-socialist transition.

P SC 330-3. The Bureaucrats. National, state, and local public service career systems in the United States and selected foreign countries. How the bureaucracy makes public policy.

P SC 348-3 to 6. Legislative Internship. The department places students in legislative internships, usually with state legislators, but Washington internships are possible. Student normally spends 15-20 hours per week working with a legislator or legislating office in the Capitol of Denver. Credit dependent upon hours worked. Prer., 2.8 cum GPA; 45 hrs; consent of instructor.

P SC 398-3 to 6. Internship: Public Administration. The department works with students placed in a public agency (governmental or non-profit agencies). Students spend 12 hours weekly working for the host organization in return for 3 credit hours. Prer., Open to upper division students of good academic record and with consent of the instructor.

P SC 402-3. The American Congress. A survey of the development, practice, and theory of the contemporary Congress. Particular attention is paid to the origins of lawmaking and institutional change.

P SC 404-3. Political Interest Groups. Nature, structure, organization, and functions of pressure groups. Analysis of pressure politics.

P SC 406-3. State Political Systems. National, state, and interstate relations; constitutional development; legislative, executive, and judicial processes and problems; administrative organization and reorganization; state finances; major state services; future of the states. Special attention is given to the government of Colorado.

P SC 407-3. Urban Politics. Political and social influence in urban areas; selection of urban leadership; relationship of the political system to governmental and social institutions. Meets with P AD 5626.

P SC 408-3. US Electoral Process. Examines campaigns and voting, as well as the roles of parties interest groups and the media in the electoral process in the United States, with special attention to the legal and institutional context in which US elections take place. Prer., P SC 110.

P SC 413-3. Latin-American Political System. Governments and politics of selected countries of Latin America. Constitutions and governments in theory and practice. Political parties, movements, and conflicts. The relationships between political problems and physical and social environments. Meets with P SC 514.

P SC 415-3. United States Space Policy. Examination of historical origins, policy evolution, and future prospects of the US civilian space program. Meets with P SC 515.

P SC 418-3. Gender in International Politics. Looks at issues of gender and sexuality in an international context. Covers war and militarism and their effect on women, the international division of labor, the effects of religious fundamentalism, international trafficking in women and sexual violence issues. Meets with WMST 418.

P SC 421-3. International Politics. The system of national states, concepts of national interest, goals of foreign policies, conduct of diplomacy, the role of non-state actors, and the bearing of these elements on the problem of peace. Great powers and regions of the earth in international politics today, their roles in international tensions, and the development of international relations theory. Meets with P SC 521.

P SC 422-3. Comparative Politics. Advanced course examining and comparing the political process in a broad range of political, economic, and socio-cultural environments. Case studies and cross-national analysis of states and non-state actors are utilized to explain and predict political phenomena across a range of states and societies. Prer., P SC 101.

P SC 423-3. The United States in World Politics. The foundations, assumptions, objectives, and methods of U.S. Foreign policy. The domestic and external problems of adapting U.S. Policy to the changing world environment.

P SC 424-3. Russian Foreign Policy. Foreign policy of the Russian Federation, its impact on international politics, and its relations to domestic developments.

P SC 425-3. International Law. A survey of public international law with special emphasis on source of international law and instruments for adjudication as well as on international treaties and the rules of land and sea warfare. Meets with P AD 598 SEC 003.

P SC 426-3. International Organization. A comparative analysis of governmental and non- governmental international organizations. Special attention is paid to the United Nations and certain regional organizations such as the European community, NATO and the organization of American states.

P SC 427-3. Latin America in World Politics. Basic elements in Latin American international relations. United States-Latin American relations and policies. Foreign policy formulation in major Latin American republics. Formerly P SC 477. Not open to those who have taken P SC 477.

P SC 428-3. International Political Economy. Overview of the world political economy, especially in the post-WWII period. The central goal of the course is to provide information and develop analytical tools necessary for students to grasp the political issues inherent in international economic relations. Meets with ECON 328.

P SC 429-3. International Environmental Politics. Study of the ways in which the international community reacts to environmental problems of a transboundary nature. Examination of theoretical frameworks used, policies developed, actors involved and analysis of a number of important cases and issues in international environmental politics. Meets with P SC 529.

P SC 432-3. Public Administration. Role of administration in government; trends in American public administration; problems in organization; techniques of management.

P SC 434-3. National Security Organization and Policy Making. Analysis of the governmental structure and the and the policy-making processes for American national security planning, decision making, and action.

P SC 435-3. Environmental Policies and Administration. Resources in the American economy; consideration of constitutional, political, and geographic factors in the development of resources policy; organization, procedures, and programs for administration and development of natural resources.

P SC 439-3. The Presidency. An examination of the historical, functional, constitutional, and political aspects of the presidency. An analytical comparison of the presidency with other executive systems.

P SC 440-3. Government and Society. Examines the normative and positive theoretical underpinnings of government processes and policies in the United States. Emphasis is placed on the formal theoretical analysis of institutions and policies. Prer., P SC 110.

P SC 442-3. Political Ideas. Main currents of political thought from ancient times to the present as seen in the writings of political theorists from Plato and Aristotle through Locke, Hobbes, Rousseau, Kropotkin, and Marx to contemporary exponents of ideologies from right to left.

P SC 445-3. American Political Thought. History and development of American political theories and ideas from colonial period to present.

P SC 446-3. Administrative Law. General nature of administrative law, types of administrative action and enforcement, analysis of rule-making and adjudication, and administrative due process.

P SC 447-3. Introduction to Constitutional Law. Role of the Supreme Court in development of principles of constitutional law, beginning with the concept of judicial review. Federalism, jurisdiction of the federal courts, separation of powers, the taxing power, the commerce power, the doctrine of implied powers and other principles and doctrines which are relevant to contemporary interpretation of the constitution.

P SC 448-3. The Constitution and Individual Rights. Nature and scope of American constitutional principles as developed by the U.S. Supreme court, with emphasis on the war power, power of the president, citizenship, the Bill of Rights, and the Civil War amendments.

P SC 449-3. The Judicial System. Examination of the principal actors in the legal system police, lawyers, judges, citizens and the roles they play in the political process.

P SC 450-3. Senior Research Seminar. A course designed to directly involveSenior students in political science in major research projects. The emphasis of the course will be on the development by the students of research topics and designs which fit their individual interests. Major papers will be required of all students. Research reports will be presented orally and critiqued in class. Required of all majors.

P SC 451-3. Defendant's Constitutional Rights. Nature and scope of American constitutional principles as developed by the United States Supreme Court, with emphasis on habeas corpus, search and seizure, grand jury, double jeopardy, self-incrimination, due process of law, speedy and public trial, right to counsel, trial by jury, bail, and cruel and unusual punishment.

P SC 452-3. Model Organization of American States (MOAS). The course assists and supervises students in the preparation and execution of the Model Organization of American States for Universities (MOAS) in Washington, D.C. Students learn about the role, structure and operation of the MOAS by representing a member-state in the Inter-American system, students gain broad understanding of issues in International Politics and the practice of diplomacy and international organizations. Prer., Application and consent of instructor.

P SC 453-3. Model United Nations. Course assists and supervises students in preparation and execution of the Model United Nations (MUN) college conference. The course catapults students into the world of diplomacy and negotiation. Students learn about the role, structure and operation of the United Nations. Prer., instructor consent.

P SC 498-1 to 3. Special Problems in Political Science. A study of special problems relevant to political science taught by a highly qualified person in the particular problem area. Each semester that the course is offered, a different problem of high impact is studied.

P SC 515-3. United States Space Policy. Examination of historical origins, policy evolution, and future prospects of the US civilian space program. Meets with P SC 415.

P SC 529-3. International Environmental Politics. Study of the ways in which the international community reacts to environmental problems of a transboundary nature. Examination of theoretical frameworks used, policies developed, actors involved and analysis of a number of important cases and issues in international environmental politics. Meets with P SC 429.

P SC 598-3. Special Topics. Each semester that the seminar is offered a different area of political science will be the focus of intensive study and analysis.

P SC 940-1 to 3. Independent Study in Political Science. Intended to give an opportunity for advanced students with good scholastic records and with appropriate courses completed to pursue independently the study of some subject of special interest. Subjects are chosen and arrangements are made to suit the needs of each student. Prer., Senior standing, 15 semester hours of political science and consent of instructor.

P SC 948-3. Prelaw Internship. Studies are undertaken concerning the practice of law or the administration of justice while the student has full or part-time employment with a law office, court, prosecutor, public defender, administrative hearing officer, or other individual or agency involved with the practice of law or the administration of justice. Prer., Consent of instructor; above average score on LSAT; and Senior status.

PSYCHOLOGY

PSY 100-4. General Psychology. An introduction to the scientific study of behavior. Covers psychoanalytic and Jungian theory, physiological bases of behavior, behaviorism and humanistic/existential theories. Includes psychology discipline areas of clinical, experimental, developmental, abnormal, and social.

PSY 210-4. Introduction to Psychological Statistics. Descriptive statistics including graphs, frequency distributions, measures of central tendency and variability. Inferential statistics such as correlation, T-tests, chi-square tests, and analysis of variance including two-factor designs and multiple comparison tests. Prer., PSY 100 and Math 104 or equivalent.

PSY 211-4. Introduction to Psychological Research and Measurement. An introduction to research methods used in psychology including experimental designs, quasi-experiments, correlation research and developmental methods. Methods of measuring psychological concepts, as well as the reliability and validity of those measurements are discussed. Students will write reports in APA format. Prer., PSY 210. Prer. or Coreq., ENGL 141.

PSY 230-3. Psychology of Adjustment. A survey of concepts bearing upon the processes of normal psychological adjustment, with emphasis upon using the concepts to understand common human problems in personal growth and relationships with others.

PSY 245-3. Social Psychology of Social Problems. An examination of social psychological aspects of a variety of social issues and problems in contemporary society. Issues may include television violence, race and I.Q., ethics of human experimentation, privacy, and pornography. Psychological theory and research relevant to these areas will be considered as will the processes involved in defining social behavior as a problem. Prer., PSY 100. Meets with WMST 245.

PSY 300-3. Honors Seminar. Advanced seminar focused on research methods and the nature of psychological research. Open only to students formally accepted into the Department of Psychology honors program. Prer., PSY 210, PSY 211, Junior status and consent of instructor.

PSY 303-1 to 3. Undergraduate Practicum. Students participate in supervised service or research activities. Prer., Consent of instructor.

PSY 306-3. Psychology and Health. Introductory course on the application of psychological principles to the enhancement of physical health. Class utilizes an experiential format with students actually conducting their own health behavior change program. Prer., PSY 100.

PSY 310-3. Statistical Models in Psychology. The role of statistical models in psychological research, including models of error and inference, and analysis of selected variance. Prer., PSY 210.

PSY 313-3. Learning and Cognition. Survey of animal and human theories of learning and an introduction to contemporary theories of human cognition including memory and information processing. Prer., PSY 100.

PSY 314-4. Cognitive Psychology. A survey of the core areas of human cognition: attention, reasoning, memory, problem-solving, and decision making. History, theory, methodology, and research from related disciplines are discussed. Prer., PSY 210 and PSY 211.

PSY 315-3. Psychology of Motivation. Psychological and physiological factors in the motivation of behavior. Prer., PSY 100.

PSY 320-4. Psychology of Learning. Course designed to provide an overview of learning. An emphasis will be placed on the theoretical formulation of the conditions that are necessary for learning and retention. Practical applications of learning principles will be considered. Prer., PSY 210 and PSY 211.

PSY 321-3. Human Sexuality. Covers in substantive form the interdisciplinary field of human sexuality. The topic is

approached from the perspectives of physiology, endocrinology, behavior, sociology, ethnology, and anthropology. Prer., PSY 100.

PSY 324-3. Psychology of Personality. A review of various theories of personality ncluding psychodynamic, behavioristic, humanistic, and existential approaches. Prer., PSY 100.

PSY 326-4. Comparative Psychology. Behavior of animals from an evolutionary perspective. Principles of behavior in a variety of animal species, including humans. Prer., PSY 100, or consent of instructor.

PSY 327-4. Introduction to Biopsychology. A broad survey course in the biological basis of behavior. Anatomy, physiology and chemistry of the nervous system (with special emphasis on the brain), endocrinology, and genetics are discussed as they apply to the study of behavior. Prer., PSY 100 or consent of instructor.

PSY 328-3. Abnormal Psychology. The origin, symptoms, classification, and treatment of abnormal behavior. Prer., PSY 100.

PSY 340-3. Social Psychology. Survey of contemporary social psychological theory and research. Analysis of basic principles underlying human social behavior. Prer., PSY 100.

PSY 345-3. Psychology of Diversity. A basic survey of myths and realities of multiculturalism and diversity using the theories and data from several subfields within psychology. Racial and ethnic diversity are emphasized, but diversity due to gender, age, sexual preference, and SES will also be explored. Prer., PSY 100.

PSY 348-1 to 4. Selected Topics in Psychology. Subject matter will change depending upon individual instructors and time of offering. The topic for any given semester will be specified in the Schedule of Courses. May be repeated for credit.

PSY 351-3. Psychology of Aging. An overview of gero-psychology covering such topics as the aging central nervous system, cognitive aging, cultural contexts of aging, personal transitions in later life, mental disorders, and gero-psychology in the future. Prer., PSY 100. Meets with GRNT 463.

PSY 355-3. Psychology of Women. A survey of female psychology and the study of sex differences through an examination of theories and determinants of female personality, traditional and alternative lifestyles, women in psychotherapy, and women at work. Prer., PSY 100.

PSY 362-3. Developmental Psychology. Survey of human development from conception to death emphasizing physical, cognitive, emotional, and psychosocial development. Prer., PSY 100.

PSY 364-3. Psychology of the Exceptional Child. This survey course studies children with learning and cognitive differences, behavioral and emotional disorders, and sensory and physical differences. Emphasis on etiology, diagnosis, treatment, and prevention of various disorders from different theoretical perspectives. Prer., PSY 100.

PSY 365-3. Clinical Neuropsychology. Organization, function, and dysfunction of the human brain across the life span. Neuropsychological assessment techniques. Reviews behavioral, cognitive, and personality changes as a result of disease, injury, and aging. Prer., PSY 100 or consent of instructor.

PSY 366-3. Service-Learning Internship. As a service-learning course, students will serve in the community and learn beginning helping skills. Assistance will be provided in locating volunteer positions. Prer., PSY 211 and consent of instructor.

PSY 371-3. Survey of Clinical Psychology. A view of the area of clinical psychology including such topics as clinical assessment, therapies, and community intervention. Prer., PSY 100.

PSY 372-3. Community Psychology and Mental Health. Focus on issues in the organization, financing, and delivery of mental health services within the community, innovative techniques for the provision of mental health-related services, the role of community factors in the production of emotional disorders, and technologies of community change. Prer., PSY 100 and PSY 328.

PSY 384-3. SPSS and other Statistical Packages. The use of computers for statistical analysis of social science data. Topics include how to organize data collections, the selection and use of appropriate statistical packages, and storing and retrieving files. Prer., PSY 210 or equivalent.

PSY 385-3. Principles of Psychological Testing. A psychological and statistical analysis of the principles underlying construction and use of tests of ability and personality. Prer., PSY 210.

PSY 386-3. Theories of Psychotherapy. An introduction for the upper-division undergraduate into the theories and techniques of psychotherapy. Various approaches to psychotherapy will be examined (e.g., psychoanalysis, behavioristic, and humanistic/ existential). Prer., PSY 100 and PSY 328.

PSY 393-3. Industrial/Organizational Psychology. An introduction to the scientific study of people in work organizations. Emphasis on understanding people in organizations and applying this knowledge to resolve problems of human behavior at work. Prer., PSY 100.

PSY 394-3. Psychology and the Law. An introductory survey course covering selected topics relating to the interaction of psychology and the law. Prer., PSY 100.

PSY 395-3. Applied Psychology. Examines the application of psychological research and theory to "real world" issues; organizational behavior, health and health care, environmental, legal, educational issues, and public policy. Prer., PSY 100.

PSY 400-3. Honors Seminar. Advanced seminar focused on contemporary issues in psychology. Open only to students formally accepted into the Department of Psychology Honors program. Prer., PSY 210, PSY 211, PSY 300, junior status, and consent of instructor.

PSY 405-3 to 4. Physiological Psychology. The morphological, neurochemical, and physiological bases of behavior. Topics include the physical substrate for emotion, motivation, consciousness, sleep, learning, and memory. Prer., PSY 327 or consent of instructor. If course is taken for 4 hours credit, one 2 hour lab per week is required.

PSY 406-3. Seminar in Health Psychology. In-depth focus on selected topics in health psychology. Topics will vary. Prer., PSY 211 and PSY 306 or PSY 328.

PSY 411-3. Seminar in Methodology. In-depth focus on selected topics in methodology, statistics, and measurement. Topics will vary. Prer., PSY 210 and PSY 211.

PSY 412-3. Human Memory. Psychological research and theories about memory. Its focus will be on the memory abilities of normal- functioning adults. Memory functions and structures will be inferred from research studies, several of which will be demonstrated in class. Some implications for improving memory will be discussed. Prer., PSY 100.

PSY 413-3. Seminar in Learning and Cognition. In-depth focus on selected topics in learning and cognition. Topics will vary. Prer., PSY 211 and PSY 313, or PSY 314.

PSY 417-3 to 4. Sensation and Perception. Introduction to psychophysical scaling, the physical senses (with special emphasis on audition and vision), and perceptual phenomena. One 2-hr. lab. per week required if course taken for four hours credit. Prer., PSY 210 and PSY 211 or consent of instructor.

PSY 419-3. Conditioning: Principles and Application. Principles of classical and operant conditioning in humans and other animals. Presentation of the theoretical basis of behavior modification. One 2-hour lab required if course taken for 4 hours credit. Prer., PSY 100.

PSY 421-1 to 3. Practicum in Experimental Psychology. Laboratory for advanced psychology majors. Emphasis will be on individual projects. Prer., Consent of instructor.

PSY 422-3. Introduction to Language Behavior. Introduction to general communication theory with special emphasis on human communication and relation of language to thought. Prer., 16 hours of PSY or consent of instructor.

PSY 424-3. Seminar in Psychology of Personality. In-depth focus on selected topics in personality. Topics will vary. Prer., PSY 211 and PSY 324.

PSY 427-3. Seminar in Biopsychology. In-depth focus on selected topics in biopsychology. Topics will vary. Prer., PSY 211 and PSY 327.

PSY 428-3. Seminar in Abnormal Psychology. In-depth focus on selected topics in abnormal psychology. Topics will vary. Prer., PSY 211 and PSY 328.

PSY 440-3. Seminar in Social Psychology. In-depth focus on selected topics in social psychology. Topics will vary. Prer., PSY 211 and PSY 340.

PSY 443-3. Seminar in Social Issues. In-depth focus on social issues. Topics will vary. Prer., PSY 211.

PSY 444-3. Drugs and Behavior. A behavioral analysis of the effects of psychoactive compounds including stimulants, depressants and antidepressants, antipsychotics, anxiolytics, opiates, and psychedelics. Presentation of neurobiological models of affective disorders (e.g. schizophrenia, endogenous depression, mania, and anxiety). Prer., 10 hours of PSY or consent of instructor, PSY 327 or introductory biology and/or chemistry recommended.

PSY 451-3. History of Psychology. Outline of the development of psychological theories since the Greek philosophies. The story of experimental psychology and its problems. Schools of psychological thinking. Readings of original sources in English and English translations. Prer., PSY 211.

PSY 462-3. Seminar in Developmental Psychology. In-depth focus on selected topics in developmental psychology. Topics will vary. Prer., PSY 211 and PSY 362.

PSY 499-1 to 3. Teaching of Psychology. A consideration of problems, techniques, and subject matter related to the teaching of psychology. Prer., Consent of instructor.

PSY 521-3. Psychology of Aging I. An advanced orientation to developmental research across the lifespan in biological, neurological, sensory/perceptual and cognitive domains with a focus on older adulthood and aging. Students explore theory research methodology, and empirical studies on the psychology of aging. Prer., Graduate status.

PSY 522-3. Psychology of Aging II. An advanced-level orientation to developmental research across the lifespan in personality, social, and health domains. Age-related pathologies will also be considered. Students explore theory, research methods, and empirical studies on the psychology of aging. Prer., Graduate status.

PSY 570-1. Ethical, Legal, and Professional Issues for Clinicians. This course covers extent legal and ethical principals and standards for professional conduct in clinical psychology. It considers legal and ethical decisions that clinicians must make, such as scope of professional competence, confidentiality, duty to warn and protect, and dual relationships. Prer., Psych graduate status or consent of instructor.

PSY 571-3. Clinical Skills Laboratory. An introductory practicum course which emphasizes psychotherapy skills and concepts related to therapeutic interaction. A prerequisite for the clinical practicum, PSY 671. Prer., Psy graduate status or consent of instructor.

PSY 580-3. Behavioral Science Statistical Packages. The use of the computer for statistical analyses will be reviewed. Topics include how to organize data collections, selection and use of appropriate statistical packages and storing and retrieving files. Prer., PSY 585 or equivalent, grad status in psych or consent of instructor.

PSY 581-4. Research Statistics and Methodology I. Advanced statistical techniques and research methodology for psychological research. Focuses on methods for use with experimental research design, including factorial, repeated measures and mixed design ANOVA models. Computer lab focuses on use of statistical packages for analysis of data. Prer., Introductory statistics; graduate status in psychology; or consent of instructor.

PSY 582-4. Research Statistics and Methodology II. Advanced statistical techniques and research methodology for pyschological research. Focuses on methods for use with nonexperimental research design, including correlation and multiple regression. Measurement issues are covered, including reliability and validity. Computer lab uses statistical packages for analysis of data. Prer., PSY 581.

PSY 583-3. Applied Multivariate Techniques I. Multivariate statistical methodology and design for psychological research. Topics include test construction, factor analysis, MANOVA, canonical correlation, and other selected techniques. Prer,. Graduate Status, PSY 581, PSY 582 or equivalent, SPSS skills.

PSY 584-3. Methods and Design for Analyzing Change. Research design and statistical analysis for the study of change. Topics include developmental research design techniques, covariance structure analysis, multilevel modeling, and growth curve analysis. Computer programs will be used. Prer,. PSY 581, PSY 582.

PSY 585-3. Research Statistics. Advanced statistical techniques for research psychologists, including specialized in-depth treatment of analysis of variance. Prer., Introductory statistics, psychology graduate status, or consent of instructor.

PSY 587-3. Multivariate Statistics. Multivariate procedures are described extensions of the general linear model. Procedures include: multiple regression, canonical correlation, MANOVA, factor analysis, discriminant function analysis, and other selected topics. Prer., Psychology graduate status or consent of instructor.

PSY 590-3. Basic and Applied Research Methods. Advanced survey of research design and methodology. Prer., PSY 585 and psychology graduate status or consent of instructor.

PSY 595-3. Psychometric Theory. Theory of psychological test construction. Emphasis on scaling models and the assessment of reliability and validity by univariate and multivariate methods. Prer., PSY 585, Psychology graduate status, or consent of instructor.

PSY 603-3. Research Practicum. Students will be placed in a clinical or research program for the application phase of their psychology training. Prer., Psychology graduate status.

PSY 610-3. Proseminar: Developmental. Prer., Psychology graduate status or consent of instructor.

PSY 611-3. Proseminar: Cognition. Prer., Psychology graduate status or consent of instructor.

PSY 612-3. Proseminar: Neuropsychology. Prer., Psychology graduate status or consent of instructor.

PSY 613-3. Proseminar: Social. Prer., Psych grad status or consent of instructor.

PSY 614-3. Proseminar: Personality. Study of measurement methods and their psychological and mathematical bases, with special emphasis on the measurement of attitude. Prer., Psychology graduate status or consent of instructor.

PSY 641-1-3. Aging Seminar (Special Topics). Current research on aging and psychology. Topics to be specified for particular semester. See instructor for details. May be repeated for credit. Prer,. PSY 521, PSY 522, or consent of instructor.

PSY 642-3. Aging Proseminar. In-depth examination of theory and research on aging on a focused topic within a core content area of psychology (e.g. cognitive, personality, social). May be repeated for credit. Prer., Graduate status, PSY 521, PSY 522, or consent of instructor.

PSY 648-1 to 3. Selected Topics in Psychology. Subject matter will change depending upon individual instructor and time of offering. The topics for any given semester will be specified in the semester schedule. May be repeated for credit. Prer., Psychology graduate status or consent of instructor.

PSY 651-3. History of Psychology. An advanced level overview of the development of psychological theories since the Greek philosophies. Prer,. Psychology Graduate Status.

PSY 661-3. Clinical Geropsychology I. Prepares students to work in geriatric health settings. Content includes health psychology, interdisciplinary teamwork, long-term care, policy issues, and community resources. Prer., PSY 521, PSY 522, and PSY 571.

PSY 662-3. Clinical Geropsychology II. Course prepares students to work in geriatric health settings. Content includes health psychology, interdisciplinary teamwork, long-term care, policy issues, and community resources. Prer,. PSY 521, PSY 522, PSY 571, Graduate Status.

PSY 667-1 to 3. How to Teach More Effectively. Designed to help college professors become more effective teachers. Readings, discussions, and videotaped consultation. Prer., Psychology graduate status or consent of instructor.

PSY 672-3. Professional Development I. Training in standards of professional practice, including theoretical and practical aspects of ethics (e.g. record keeping, confidentiality, supervision). Students engage in 12 hours/week of direct clinical experience in the community, and attend seminar. Prer., Psychology graduate status, PSY 571, PSY 692, and PSY 698.

PSY 673-3. Professional Development II. Training in professional practice standards related to cultural and family systems, competency and related ethics. Includes strategies for delivering services to various populations. Students engage in 12 hours/week of clinical practice, and attend seminar. Prer,. PSY 571, PSY 672, PSY 678, PSY 692.

PSY 674-1-3. Practicum in Clinical Psychology. Direct clinical experience for graduate candidates in psychology only. Students provide clinical services under supervision in community setting. May be repeated for credit. Prer,. PSY 571.

PSY 678-3. Advanced Psychopathology. An intensive survey of the major theories, research findings, and behavioral characteristics associated with deviant reaction patterns. Prer., Psych grad status or consent of instructor.

PSY 679-3. Psychopharmacology. Physiological and behavioral factors associated with medications used to treat psychological disorders. Topics include drug metablism (including age effects), common medication, behaviors associated with use and abuse, selection of medications to minimize adverse effects. Prer,. PSY 678 or consent of instructor.

PSY 680-3. Clinical Geropsychology Special Topics. Current research on clinical geropsychology. Topics to be specified for particular semester. See instructor for details. May be repeated for credit. Prer,. Graduate Status.

PSY 685-3. Clinical Interviewing. Theory and practice in interviewing for the purpose of determining a diagnosis using the DSM. Practical skill instruction in mental status exams, interviewing strategies, integration of interview and testing data, and report writing. Prer., PSY 571, PSY 678, psychology graduate status or consent of instructor.

PSY 686-3. Objective Testing in Clinical Psychology. Course will focus on administering and interpreting objective test results commonly used in clinical psychology practice. Case study format and test battery interpretation will also be considered. Probable tests: MMPI, CATI, and others. Prer., PSY 571; for Psychology master's candidates only.

PSY 687-3. Clinical Neuropsychology. Course will cover basic foundations of human neuropsychology and neuropsychological assessment of adults. Topics will include brain-behavior relationships, differential diagnosis and report writing. Prer., PSY 686.

PSY 688-1. Clinical Neuropsychology Lab. Training in practice of clinical neuropsychology through supervised experience administering, scoring, interpreting, and reporting test results. May be repeated. Prer., Psychology graduate status. PSY 686 and PSY 687 (may be concurrent).

PSY 692-3. Seminar: Psychotherapy. Readings and discussion of the psychotherapeutic process from various theoretical perspectives. Prer., Psychology graduate status or consent of instructor.

PSY 700-1 to 6. Masters Thesis. A research project under the supervision of the graduate faculty of the psychology department.

PSY 703-3. Doctoral Research Practicum. Students participate in a research laboratory for instruction in research methods in psychology. Prer,. Doctoral Candidacy, PSY 581, PSY 582, PSY 587, Graduate Status.

PSY 800-1 to 12. Dissertation. Prer,. Doctoral students only

PSY 930-1 to 3. Independent Study in Psychology: Undergraduate. Prer., 20 hours of psychology or equivalent and consent of instructor.

PSY 950-1 to 3. Independent Study in Psychology: Graduate. Prer., Consent of instructor.

PSY 999-0. Candidate for Degree.

RUSSIAN

RUSS 101-5. Beginning Russian I. Skills in listening to and speaking Russian. Emphasis on useful expressions with cultural orientation.

RUSS 102-5. Beginning Russian II. Continued skills in listening to and speaking Russian. Reading and writing intensified with further study of Russian civilization. Prer., RUSS 101 or its equivalency.

RUSS 211-3. Intermediate Russian I. Russian at the intermediate level. Speaking, reading, and writing. Prer., RUSS 102 or its equivalency.

RUSS 212-3. Intermediate Russian II. An intermediate Russian course continuing conversational usage and cultural integration utilizing contemporary materials, newspapers, etc. Prer., RUSS 211 or its equivalency.

RUSS 920-1 to 4. Independent Study: Undergraduate. Independent work for undergraduates. By special arrangement with the faculty. Only for students presenting strong Russian preparation. May be repeated up to three times for credit. Prer., Consent of instructor.

RUSS 930-1 to 4. Independent Study: Undergraduate. Independent work for undergraduates. By special arrangement with the faculty. Only for students presenting strong Russian preparation. May be repeated up to three times for credit. Prer., Consent of instructor.

RUSS 940-1 to 3. Independent Studies in Russian. May be repeated up to three times for credit. Prer., Consent of instructor.

SOCIOLOGY

SOC 111-4. Introduction to Sociology. General survey of the field of sociology. Sociology as a science; society and culture; social groups; social institutions; social interaction; social change.

SOC 211-3. Sex and Society. The course will critically examine theoretical perspectives on sexuality and sexual identity; varying historical and cultural constructions of sexuality; the relationship between sexual attitudes, behaviors and larger social forces and institutions; how sexuality is intertwined with other social constructs, especially gender and race; as well as contemporary political issues and debates.

SOC 212-4. Introduction to Social Research. An elementary examination of the various methods used in social research with emphasis on the scientific method and the role of empirical inquiry in sociology.

SOC 220-3. Introduction to Racial and Ethnic Groups. A survey of contemporary racial and ethnic group relations in the U.S. Includes discussion of the history and development of the current situation of the largest minority groups, emphasizing comparisons of social situations, values, discrimination, and cultural identities.

SOC 222-3. Communities in a Global Environment. Examines the challenges in developing sustainable communities within a framework that is sensitive to both social and environmental justice. Special attention is devoted to the impact of the process of globalization on community development and organization.

SOC 224-3. Childhood Socialization. An examination of the process through which children define themselves as members of their culture. The influence of such "cultural communicators" as the family, school, television, day care, children's literature, games, toys and peer relations will be examined.

SOC 225-3. Images of Women in Society. Study of the images of women in American society, relating these stereotypes to actual conditions and experiences of women. Recommended to the returning student. Meets with WMST 225.

SOC 250-3. Social Problems. An introduction to the sociological perspective on social issues and problems such as deviance, race and ethnic relations, aging, crime and delinquency, war, drug abuse, alienation, mental illness, etc.

SOC 315-3. Modern Sociological Theory. A review of major theorist in sociology from the late 19th century through recent and current works. Prer., 9 Hours of sociology or consent of instructor.

SOC 317-4. Social Statistics. Quantitative techniques used in analyzing social phenomena, including an introduction to the use of calculators and SPSS computer programs in statistical analysis. Prer., SOC 212 or equivalent

SOC 321-3. American Minority Communities. Examines the forces involved in shaping the development of ethnic minority communities in the United States. The course helps students understand contemporary minority communities via analyses of important historical moments, the unique cultures of each of the four large ethnic minorities, and social problems. While each community is examined independently of the others, interethnic relations are seen as important factors in the development of each community.

SOC 322-3. Urban and Community Sociology. The city in terms of its social structure, residential and institutional patternings, processes of interaction, demographic processes and patterns of growth and change. Prer., SOC 111 or consent of instructor.

SOC 323-3. The Chicano Community. Study of the origin, development, and current order of the Chicano community. Includes studies of the "Barrio," ethnic identity, social values, consequences of prejudice and discrimination. Prer., SOC 111 or SOC 220. Meets with EST 323.

SOC 324-3. African American Community. Study of the origin, development, and contemporary nature of black community. Includes understanding of black culture and values, consequences of prejudice and discrimination. Prer., SOC 111 or 220. Meets with EST 324.

SOC 325-3. Power, Privilege and Social Difference. A survey of the approaches to the study of women characteristic in the various disciplines in the social studies and humanities with an emphasis on common themes and issues. Meets with WMST 325.

SOC 329-3. Perspectives on Race and Ethnic Relations. A survey of racism, discrimination, prejudice, and relationships between dominant and minority groups in selected areas of the world. Prer., SOC 220 or consent of instructor.

SOC 330-3. Sociology of Sport. Analysis of sport and its place in the culture life of contemporary societies. Focus on how sport and sport experiences are related to social development, social relations and major spheres of social life such as the economy, political order, education and religion. Prer., SOC 111 or consent of instructor. Meets with S L 400 and S L 500.

SOC 331-3. Sociology of the Family. The family as a social institution. Historical development and contemporary cross-cultural analysis with emphasis on the contemporary American family. Prer., 6 Hours of sociology.

SOC 335-3. Sociology of Health and Illness. This course examines the sociological dimensions of health and illness - how health issues are culturally framed; the impact of social position including race, class, and gender; and the

social organization and power dynamics of health and healthcare institutions.

SOC 340-3. Criminology. A basic survey course in criminology. The nature and development of law, theories of causation, empirical studies, crime, delinquency, courts, police, and corrections are studied. Approach is multidisciplinary.

SOC 341-3. Sociology of Law. Emphasis is on the sociology of law, and the "new criminology" the criminal justice system is analyzed principally from the sociological viewpoint.

SOC 357-1 to 3. Field Experience in Sociology. Opportunity to obtain academic credit for directed learning in an ongoing social organization. The experience may be paid or volunteer. It is the principle responsibility of the student to obtain access to an appropriate placement. One hour of credit may be earned for each three hours a week of experience, up to a maximum of three credit hours.

SOC 360-3. Introduction to Social Psychology. A survey of the filed of social psychology, with an emphasis on socialization, relationships, self- concept, and identity. Prer., SOC 111 or consent of instructor.

SOC 361-3. Gender and Society. Causes and consequences of gender differentiation at the individual, group, and societal levels. Review of biological, psychological, and sociological explanations for gender differences; emphasis on socialization processes. Prer., 6 Hours of SOC or instructor consent. Meets with WMST 361.

SOC 364-3. Sociology of Popular Culture. Survey of critical approaches to leisure popular culture. Specific topics may include advertising, television, music, sport, subcultures and the body in popular culture. Prer., SOC 111.

SOC 401-3. Special Topics in Sociology. Offered to allow intensive study in a specific area on a "demand" basis. Meets with SOC 526.

SOC 404-3. Sociology of Gender and Sexuality. Examines historical and contemporary theories of gender and sexuality; the course is structured around questions which consider the relationship between masculinities/femininities, ideologies of the family, and the politics of sexuality. Prer., SOC 225 or WMST 200. Meets with WMST 404.

SOC 408-3. Sociology of Men's Lives. This class undertakes a critical exploration of men and masculinities, exploring men as gendered beings. It explores manhood as a social construct, both historically and cross-culturally, and provides an overview of theories of male gender role development as well as a variety of topics including power and patriarchy; race, class and sexuality; men in families; work; violence; health; friendship and intimacy; men's movements; and the growing field of men's studies. Meets with WMST 408.

SOC 409-3. Research Practicum. Practical experience in application and principles of research design and data processing to a social research problem selected by instructor. Prer., SOC 507 or consent of instructor.

SOC 415-3. Social Theory II. Explicit focus on contemporary social theory and the sociology of knowledge, with special attention to the proposed natureof the relationship between knowledge and reality. Prer., SOC 315.

SOC 417-4. Advanced Statistics and Methods. Designed to provide student competence in the appropriate use and interpretation of statistical techniques through multivariate analysis. Advanced research methodology is also introduced. Instruction in the use and application of the SPSS computer program package is stressed. Includes practice in assessing and analyzing large scale databases available on internet. Prer., SOC 317. Meets with SOC 517.

SOC 418-3. Community Organization and Analysis. Study of community variables; economic, cultural, political and social. Comparative analysis of race, class, gender, and ethnicity in community settings and review of a range of research methods. Prer., Upper division social science major.

SOC 419-3. Deviant Behavior. An examination of the definition, nature, perspectives and theories, consequences, and social control of deviant behavior. Various forms of problematic deviant behavior will be examined such as drug abuse, alcoholism, mental illness, suicide, and crime. Prer., SOC 111 or consent of instructor.

SOC 420-3. Sociology of Poverty. Consideration of structural origins of poverty; the underclass and the dual economy. Analysis and evaluation of consequences of poverty, especially in relation to family, children, and career. Review of antipoverty programs.

SOC 431-3. Social Inequalities. An examination of social inequalities and the process of social stratification in various social systems (small groups, formal organizations, communities, and societies) with emphasis on the American class system. Economic, status, and power differentials will be explored as well as life styles, life chances, class correlates, and social mobility. Prer., 6 hours of sociology or consent of instructor. Meets with SOC 531 and WMST 431.

SOC 432-3. Sociology of Religion. Social origin of religion. Religious factor in culture. Significance of religion as social control in contemporary society. Religion as an institution and its relation to other institutions. Prer., 6 hours of sociology or consent of instructor.

SOC 433-3. Sociology of Education. Analysis of the school as a social organization. Among the topics considered are power and control in the school; classroom organization and procedures and their relation to learning and personality development in children; role of educators; and reciprocal relations of school and community. Prer., 9 Hours of sociology.

SOC 434-3. Political Sociology. Analysis of the political order by means of specific sociological theory and method to relate power to social contexts, structural forms, and behavioral patterns. Prer., SOC 111 or consent of instructor.

SOC 435-3. Formal Organization. An examination of the nature and types of formal organizations; their growth and development; the connections between them and the larger social context of which they are a part; and of various aspects of their internal structure, such as peer group and hierarchical relations, bureaucracy, processes of communication, management, and impersonal mechanisms of control. Prer., 6 Hours of sociology. Meets with SOC 535.

SOC 437-3. Technology, Media, and Society. A description and analysis of changing social structures and social relationships as a response to technological innovation and change. Emphasis also given to the role of technology in the development of selected countries outside the United States. Prer. 9 hrs. of sociology including SOC 317.

SOC 438-3. Globalization and Development. Analyzes societies and cultures in light of increasing global interdependency. Studies the interaction between local and global levels in the development process and impacts on areas such as economic organization, technology, environments, political systems, transnational organizations, and everyday life. Comparison of alternative responses to globalization and development.

SOC 440-3. Contemporary Social Movements. Examination of the impact of social movements on the political, social and cultural practices of contemporary society. The course includes a brief review of the 'movement politics' of the 1960's, contrasts these to the labor movement and other historical predecessors, with major attention devoted to the infusion of social movement practices and technology into the 'mainstream' structures of power and organization.

SOC 443-3. Social Work Practice with Individuals and Families. Public welfare services including problems involved in reconstructing personalities and improving relationships between them; the scope of social case work; and social worker as visiting teacher, family case worker, and investigator in other fields. Prer., Upper division social science major. Meets with SOC 543.

SOC 450-4. Applied Sociology: Organizational Applications. Includes 1 credit hour for class related field experience. Applying critical analysis, social theory, social research methods to individual, organizational, and community problems. Participants work on projects involving problem assessment, development and implementation of plans and programs, and evaluation of outcomes.

SOC 451-3. Community Development Field Work. Students will be involved in community settings and learn to identify issues in terms of causes and develop proposals of action that might enhance community organization and structure. Pass/Fail only.

SOC 452-3. Sociology of Corrections and Rehabilitation. Reviews programs demonstrated as effective in reducing criminal and delinquent behavior. Examines social, psychological and behavioral problems that influence intervention within custodial settings in comparison to community based alternatives. Meets with SOC 552.

SOC 456-3. Internship in Applied Sociology. Participate in supervised activities in a structured program to facilitate learning in conjunction with concurrent cognate course. One hour class time per week plus 3 hours internship for each one hour of credit. Prer., Must be an upper division social science major. Meets with SOC 556.

SOC 461-3. Youth and Society. Adolescence in primitive, traditional, and modern society, with special emphasis on the contemporary United States. The possible existence of a "youth culture" is investigated. The relationship between social climates and individual academic orientations, dating patterns, etc., is analyzed. Prer., 6 Hours of sociology or consent of instructor.

SOC 462-3. Sociology of Aging. Examination of the aging process in American society. Focus on development from late adolescence through old age and death. Meets with GRNT 462.

SOC 463-3. Social Self and Identity. Focus on processes through which we develop a concept of who we are and how we are socially connected with others; examine connections between social and cultural context and how we identify ourselves and other people and make identity claims in relationships.

SOC 465-3. Sociology of Mental Illness. A study of the nature, history, perspective and theories, and social control of mental illness. Societal factors related to the prevalence and labeling of mental illness, prepatient and mental hospital patient experiences, contemporary mental health facilities and public policies will be examined. Prer., SOC 111 or consent of instructor.

SOC 467-3. Sociology of Death and Dying. Study of mortality, who dies and how, the experience of dying, and ethical and political issues related to life and death. Also includes study of the hospice ideal, social and cultural norms regarding death, and the disruption of interpersonal relationships.

SOC 480-3. Sociology of the Military. Sociological perspective on the organization and function of the military, considered as a social institution. Prer., 9 Hours of social science.

SOC 496-3. Juvenile Delinquency. Factors involved in delinquent behavior. Problems of adjustments of delinquents and factors in treatment and post-treatment and adjustment.

SOC 501-1 to 3. Seminar: Special Topics in Sociology. Prer., Consent of instructor and graduate status. Meets with SOC 401.

SOC 502-1. Proseminar: Social Statistics. An intensive introduction to basic and intermediate statistics for graduate students.

SOC 503-1. Proseminar: Social Theory. An intensive study of social theory for selected students entering the graduate program.

SOC 504-3. Sociology of Gender and Sexuality. Examines historical and contemporary theories of gender and sexuality; the course is structured around questions which consider the relationship between masculinities/femininities, ideologies of the family, and the politics of sexuality. Meets with SOC 404.

SOC 505-1. Proseminar in Sociology. Introduction to professional sociology for graduate students. Course will explore careers in sociology and discuss research, teaching, and publishing as the relationship between academics and applied work. Prer., Graduate student in Sociology.

SOC 507-4. Seminar: Research Methods. Problems and procedures of research design and data processing in social research. Topics covered include role of theory in research, concept formulation, design of proof and hypothesis, testing, schedule construction, sampling, interviewing, scaling techniques, analysis procedure and report preparation. Includes some limited participation in conducting research. Prer., SOC 317.

SOC 509-3. Research Practicum. Practical experience in application and principles of research design and data processing to a social research problem selected by the instructor. Prer., SOC 507 or consent of instructor.

SOC 514-3. Seminar: Applied Sociology. Exploration of the role of sociology and the sociologist in relation to the solution of social issues and problems. Addresses the questions of knowledge for what and for whom and assesses the possibility of a relevant social science. Meets with SOC 450.

SOC 515-3. Seminar: Social Theory I. A review of the major sociological theorists of the 20th century. Will consider the major works of such pre-World War II writers as Emile Durkheim and Max Weber and the post war work of Merton and others.

SOC 516-3. Seminar: Social Theory II. Explicit focus on continuing social theory and the sociology of knowledge, with special attention to the proposed nature of the relationship between knowledge and reality. Prer., SOC 315.

SOC 517-4. Advanced Statistics and Methods. Designed to provide student competence in the appropriate use and interpretation of statistical techniques through multivariate analysis. Advanced research methodology is also introduced. Instruction in the use and application of the SPSS computer program package is stressed. Includes practice in assessing and analyzing large scale databases available on the internet. Prer., SOC 317. Meets with SOC 417.

SOC 518-3. Community Organizations and Analysis. Study of community variables; economic, cultural, political and social. Comprehensive analysis of race, class, gender, and ethnicity in community settings and review of a range of research methods.

SOC 519-3. Seminar: Deviant Behavior. An examination of the various perspectives, theories, and research on deviant behavior and its control.

SOC 526-3. Seminar: Urban Sociology. Intensive examination of the social and cultural organization of the urban complex. History, contemporary growth, and future of the city are major perspectives; cross-cultural aspects of urban development also are emphasized.

SOC 531-3. Seminar: Social Inequalities. A critical analysis of the perspectives, theories, and research in the field of social stratification with emphasis on the American class system. Meets with SOC 431 and WMST 431 and EMST 401 SEC 002.

SOC 534-3. Seminar on Sociology of Politics. Analysis of the political order by means of specific sociological theory and method to relate power to social contexts, structural forms, and behavioral patterns.

SOC 540-3. Social Psychology. Sociological approaches in the study of the self, role theory, persons in situations, identifications, socialization, and other characteristics of persons in society. Studies of group processes bearing upon personality processes.

SOC 552-3. Sociology of Corrections and Rehabilitation. Reviews programs demonstrated as effective in reducing criminal and delinquent behavior. Examines social, psychological and behavioral problems that influence intervention within custodial settings in comparison to community based alternatives. Meets with SOC 452.

SOC 555-3. Seminar: The Family. Recent trends in research and theory with emphasis on the American family in a comparative perspective. Family function and dysfunction will be considered.

SOC 556-3. Internship in Applied Sociology. Participate in supervised activities in a structured program to facilitate learning in conjunction with concurrent cognate course. One hour class time per week plus 3 hours internship for each one hour of credit. Meets with SOC 456.

SOC 564-3. Seminar: Power and Privilege. An introduction to the cultural studies which focuses on the key theoretical debates and applied studies which have constituted the field. Topics may include ideology and power, subcultures, media studies, ethnographic and interpretive methods and the cultural politics of science.

SOC 583-1 to 3. Seminar: Race and Ethnic Relations. A rigorous examination of macro-level theory in race/ ethnic relations and its applicability both to race/ ethnic relations case studies drawn from a number of societies and to the general topics of ethnic communities, protest and change, assimilation, prejudice-discrimination, and contemporary social policies.

SOC 590-3. Seminar: Analysis of Criminal Justice. Analysis of the policies and practices of agencies involved in the criminal justice process. Comparison of due process and crime control models; of social and legal justice; and decision making and discretion. Prer., Graduate standing. Meets with C J 5100.

SOC 594-3. Seminar: Sociology of Law. Analysis of legal procedures encountered by juvenile and adult offenders, and the effect of these procedures on goals.

SOC 595-3. Seminar: Criminology. Theories of causation of crime as a social phenomenon theories of rehabilitation and disposition of cases. Meets with C J 5120.

SOC 700-1 to 6. Masters Thesis.

SOC 940-1 to 4. Independent Study in Sociology: Undergraduate. In order to obtain an independent study course, the student must submit a written description of learning objectives and procedures to a full-time faculty member. Each faculty member may supervise a maximum of three students per semester. This course is specifically to allow individual students to study intensively in areas which are within the fields of specialization of faculty members but not offered as a regular part of the course curriculum. Offered annually.

SOC 950-1 to 3. Independent Study in Sociology: Graduate. In order to obtain an independent study course, the student must submit a written description of learning objectives and procedures to a full-time faculty member. Each faculty member may supervise a maximum of three students per semester. This course specifically allows individual students to study intensively in areas which are within the fields of specialization of faculty members but not offered as a regular part of the course curriculum.

SOC 999-0. Candidate for Degree.

SPANISH

SPAN 101-5. Beginning Spanish I. Essentials of Spanish, oral-aural skills stressed with additional reading, writing, and grammar.

SPAN 102-5. Beginning Spanish II. Essentials of Spanish continued. Additional oral- aural skills practice with increased grammar, reading, and writing. Prer., SPAN 101 or its equivalency.

SPAN 211-3. Intermediate Spanish I. Spanish at the intermediate level with concentration on conversation, culture, and civilization or literature at that level. Prer., SPAN 102 or its equivalency.

SPAN 212-3. Intermediate Spanish II. An intermediate Spanish course continuing conversational usage and cultural integration utilizing contemporary materials, newspapers, etc. Prer., SPAN 211 or its equivalency.

SPAN 213-3. Applied Conversation. Conversation at the intermediate level on contemporary topics in Spanish culture. Prer., SPAN 102 or its equivalency.

SPAN 216-3. Intermediate Grammar. The structure and application of written and spoken language at the intermediate level. Prer., SPAN 102 or its equivalency.

SPAN 292-3. Spanish for Health Profession. The vocabulary and usage of the world of health care. Applied language and cultural values of Latino cultures. Prer., SPAN 212 or its equivalency.

SPAN 293-3. Business Spanish. The vocabulary and usage of the world of finance and commerce. Applied business correspondence, marketing and accounting terminologies. Prer., SPAN 212 or its equivalency.

SPAN 300-3. Spanish Grammar. A course designed to review intensively the functional application of modern Spanish. A skill-development approach featuring material encountered in everyday conversational situations. Prer., SPAN 212 or its equivalency.

SPAN 301-3. Spanish Conversation and Composition I. Practice in conversation with emphasis on pronunciation and diction together with exercises in oral composition and grammar review. Prer., SPAN 212 or its equivalency.

SPAN 302-3. Conversation and Composition II. Practice in conversation with emphasis on both oral and written composition. Prer., SPAN 212 or its equivalency.

SPAN 310-3. Literary Analysis. Students read different genres - narrative, essay, short story, drama and poetry to facilitate the acquisition of critical skills in the identification of basic ideological and formalistic issues within texts being studied. Prer., SPAN 300; SPAN 301 or SPAN 302.

SPAN 319-3. Introduction to Hispanic Literature I. Introduction to literary form and expression through selected masterpieces of Peninsular, Hispanic American and U.S. Latino literatures—essay, short story, and novel. Prer., SPAN 310 or its equivalency.

SPAN 320-3. Introduction to Hispanic Literature II. Introduction to literary form and expression through selected masterpieces of Peninsulor, Hispanic, American and US Latino Literatures, poetry and drama. Prer., SPAN 310 or its equivalency.

SPAN 323-3. Applied Conversation. Conversation at the advanced level on contemporary topics in Spanish culture. Prer., SPAN 212 or its equivalency.

SPAN 325-3. Hispanic Culture Studies. Cultural history of Spain. Readings of selected masterworks with discussion about art, music, architecture, folklore, and customs. Taught in Spanish

SPAN 336-3. Hispanic Short Story. Readings and discussions of first-rate Hispanic short stories with which to build reading and verbal skill on an intermediate level. Provides a wide variety of language learning experiences. Prer., SPAN 310 or its equivalency.

SPAN 337-3. The Latin American Essay. Readings from essay. Writings from the conquest to contemporary society including Las Casas, Sarmiento, Hostos, Sierra, Gonzalez, Prada, Rodo, Paz. Prer., Survey of literature courses.

SPAN 349-1 to 3. Internship in Applied Spanish. The Language and Culture department will offer to advanced language students the opportunity to apply their knowledge in settings such as schools, social support agencies, etc. May be repeated up to three times for credit. Prer., Departmental permission.

SPAN 369-3. Hispanic Culture Through Film. The cinematic manifestations of the richness and the variety of Hispanic culture as expressed through an artistic and humanistic vision. May be repeated once provided the topic is different. Meets with F CS 369 and FILM 369.

SPAN 391-1 to 3. Spanish Theatre Workshop. A theatre practicum in Spanish stressing proper diction, articulation, and pronunciation as well as active involvement in public presentation of selected dramatic writers. Prer., Permission of instructor.

SPAN 392-3. Advanced Spanish for Health Care. Advanced study of the vocabulary, language and cultural values of Latino cultures for the health care professional. Prer., SPAN 292.

SPAN 393-3. Advanced Business Spanish. Advanced study of the vocabulary and usage of the world of business and commerce. Prer., SPAN 293.

SPAN 401-3. Advanced Spanish Communication I. Designed to improve written expression Spanish. Detailed study of the nuances of grammar. Attention given to points most difficult for students, to composition skills, and to various styles of written Spanish. Prer., SPAN 302 or permission of instructor.

SPAN 403-3. Advanced Conversation and Composition. Active involvement in the oral and written discussion of relevant contemporary themes: urban life, prejudice, cultural conflict, machismo and marianismo, etc. Weekly short compositions and presentation. Interaction with native informants. Prer., SPAN 302. Meets with SPAN 503.

SPAN 411-3. Women in Hispanic Literature. An overview of Hispanic women as seen by Hispanic male and female writers; may be included as part of women's studies program. Prer., SPAN 310 or its equivalency. . Meets with Span 511.

SPAN 415-3. Masterpieces of Spanish Literature. Masterworks of major Spanish authors: readings and discussions. Prer., SPAN 310 or its equivalency.

SPAN 421-3. Hispanic Heritage of Colorado. The study of the history and traditions of Hispanics in the state from the 16th century to the present. Meets with SPAN 421.

SPAN 425-3. The Cultural Heritage in Latin America. The historical, cultural and political currents in Latin America beginning with Pre-Colombian indigenous cultures and continuing to the present. Prer., SPAN 301 or its equivalency. Meets with SPAN 525.

SPAN 428-3. Generation of 1898. Reading and discussion of selected works by Unamuno, Barojo, ValleInclan, Azorin, and A. Machado. Study of the significance of this celebrated generation's contribution to Hispanic literature and thought. Prer., SPAN 310 or its equivalency. Meets with SPAN 528.

SPAN 440-3. Topics in Contemporary Literature. Selected topics in Spanish or Latin American literature. Contents will vary according to the instructor and the research interests of the class. Possible themes include post World War II novelists, the boom, post-Franco Spanish drama and Cuban American writers. May be repeated once for credit if the topic is different. Prer., SPAN 310 or its equivalency. Meets with SPAN 540.

SPAN 442-3. Hispanic/Latino U S Literature. Study of the works of the leading Chicano, Puerto Rican, and Cuban-American writers in the U.S. Taught in Spanish. Prer., SPAN 310 or consent of instructor. Meets with SPAN 542 and EST 442.

SPAN 443-3. Hispanic US Drama. Theatrical work of Chicano, Puerto Rican and US Cuban writers including Valdes, Pinero, Munoz and Morton. Taught in Spanish. Prer., Survey course in literature. Meets with SPAN 543 and EST 443.

SPAN 444-3. Hispanic, Chicano, and Mexican-American Literature. The literary manifestation individuals of Mexican origin in theater, prose, and poetry. Taught in Spanish. Prer., Survey course in literature. Meets with SPAN 544 and EST 444.

SPAN 445-3. US Cuban Literature. Since 1960, and even in the 19th century, Cubans migrated to the US and began to write poems, essays, fiction, and theater; a study of these works. Taught in Spanish. Prer., Survey course in literature. Meets with SPAN 545 and EST 445.

SPAN 451-3. Contemporary Hispanic American Literature. Reading and discussion of contemporary Hispanic American masterworks. Prer., SPAN 310 or its equivalency. Meets with SPAN 551.

SPAN 461-3. Latin American Authors. Bilingual. Reading and discussion of selected material. Prer., Good command of Spanish.

SPAN 462-3. Don Quijote I. Background and study of the first part of Cervantes' Don Quijote (1605); the 52 chapters. Prer., Survey course in literature.

SPAN 463-3. Don Quijote II. Background and study of the second part of Cervantes' Don Quijote (1615). Prer., SPAN 462 or its equivalency.

SPAN 465-1. Spanish or Latin American or Chicano Authors. Offered as three five-week mini-courses (each course carrying 1 credit). This course sequence will deal with three engaging writers of either Spanish or Latin American or

Chicano masterpieces. Students are encouraged to take the entire three-course sequence, which will be offered during the regular semester in successive segments during the same day/time block. See the schedule of courses for specific topics. Prer., SPAN 310 or its equivalency. Meets with SPAN 565.

SPAN 466-1. Spanish Authors-Poetry. Offered as three five-week mini-courses (each course carrying one credit). This course sequence will deal with three engaging writers of either Spanish or Latin American or Chicano masterpieces. Students are encouraged to take the entire three-course sequence, which will be offered during the regular semester in successive segments during the same day/time block. See schedule of courses for specific topics. Prer., SPAN 410 or its equivalency. Meets with SPAN 566.

SPAN 467-1. Spanish Authors-Drama. Offered as three five-week mini-courses (each course carrying 1 credit). This course sequence will deal with three engaging writers of either Spanish or Latin American or Chicano masterpieces. Students are encouraged to take the entire three-course sequence, which will be offered during the regular semester in successive segments during the same day/time block. See the schedule of courses for specific topics. Prer., SPAN 310 or its equivalency. Meets with SPAN 567.

SPAN 497-3. Senior Seminar: Spanish. Required capstone course for graduate with a major in Spanish. Monographic study of a period, author, genre or topic. Prer., Five previous literature courses. Consent of instructor. Senior status only.

SPAN 511-3. Women in Hispanic Literature. Prer., Graduate status. Meets with Span 411.

SPAN 516-3. Masterpieces of Hispanic American Literature. Advanced work beyond the SPAN 416 course. Prer., Graduate status. Meets with SPAN 416.

SPAN 525-3. Cultural Heritage in Latin America. The historical, cultural and political currents in Latin America beginning with Pre-Columbian indigenous cultures and continuing to the present. Prer., Graduate status. Meets with SPAN 425.

SPAN 528-3. Generation of 1898 Reading and discussion of selected works by Unamuno, Baroja, ValleInclan, Azorin and A. Machado. Study of the significance of this celebrated generation's contribution to Hispanic literature and thought. Prer., Graduate status. Meets with SPAN 428.

SPAN 541-3. Modernism. Study of Spanish-American literary movement of late 19th century. Additional work required beyond the SPAN 441 level. Prer., Graduate status.

SPAN 542-3. Hispanic/Latino US Literature. Study of the works of the leading Chicano, Puerto Rican, and Cuban-American writers in the US. Advanced work beyond SPAN 442. Taught in Spanish. Prer., Graduate status. Meets with SPAN 442 and EST 442.

SPAN 543-3. Hispanic US Drama. Theatrical work of Chicano, Puerto Rican, and US Cuban writers including Valdes, Pinero, Munoz, and Morton. Taught in Spanish. Prer., Graduate status. Meets with SPAN 443 and EST 443.

SPAN 544-3. Hispano/Chicano/Mexican American Literature. The literary manifestation of individuals of Mexican origin theater, prose and poetry. Taught in Spanish. Prer., Graduate status. Meets with SPAN 444 and EST 444.

SPAN 545-3. US Cuban Literature. Since 1960, and even in the 19th century, Cubans migrated to the US and began to write poems, essays, fiction and theater. Taught in Spanish. Prer., Graduate status.

SPAN 551-3. Contemporary Hispanic American Literature. Advanced work beyond the SPAN 451 course. Prer., Graduate status. Meets with SPAN 451.

SPAN 561-3. Latin American Authors. Three Latin American authors: Luisa Valenzuela, Isabel Aslant, and Marta Trapa. Reading and discussion of selected material. Advanced work beyond SPAN 461 course. Prer., Graduate status.

SPAN 562-3. Don Quijote I. Background and study of the first part of Cervantes' Don Quijote (1605) the 52 chapters. Prer., Graduate status.

SPAN 563-3. Don Quijote II. Background and study of the second part of Cervantes' Don Quijote (1615). Prer., Graduate status.

SPAN 565-1. Spanish or Latin American or Chicano Authors. Offered as three five-week minicourses (each course carrying 1 credit). Course sequence will deal with three writers of either Spanish, Latin American, or Chicano masterpieces. Students are encouraged to take the entire three-course sequence, which will be offered during the regular semester in successive segments during the same day/time block. See Schedule of Courses for specific topics. Advanced work beyond SPAN 465, 466, 467 level. Prer., Graduate status. Meets with SPAN 465.

SPAN 566-1. Spanish Authors Poetry. Offered as five three-week minicourses (each course carrying 1 credit). Course sequence will deal with three writers of either Spanish or Latin American or Chicano masterpieces. Students are encouraged to take the entire three-course sequence, which will be offered during the regular semester in successive segments during the same day/time block. See Schedule of Courses for specific topics. Prer., Graduate status. Meets with SPAN 466.

SPAN 567-1. Spanish Authors - Drama. Offered as three five week minicourses (each course carrying 1 credit). Course sequence will deal with three writers of either Spanish or Latin American or Chicano masterpieces. Students are encouraged to take the entire three-course sequence, which will be offered during the regular semester in successive segments during the same day/time block. See Schedule of Courses for specific topics. Advanced work beyond the SPAN 465, 466, 467 level. Prer., Graduate status. Meets with SPAN 467.

SPAN 920-1 to 4. Independent Study in Spanish. May be repeated up to three times for credit. Prer., Consent of instructor.

SPAN 930-1 to 4. Independent Study in Spanish. May be repeated up to three times for credit. Prer., Consent of instructor.

SPAN 940-1 to 4. Independent Study in Spanish. Independent work for undergraduates only. By special arrangement with the faculty. Only for students presenting strong Spanish preparation. May be repeated up to three times for credit. Prer., Consent of instructor.

SPAN 950-1 to 4. Independent Study in Spanish: Graduate. Independent work for graduate students only, by special arrangement with the faculty. May be repeated up to three times for credit. Prer., Graduate status.

THEATRE

THTR 100-3. Introduction to Theater. An introduction to the art and practice of theatre, including acting, directing, playwriting, scenic and lighting design. Course includes required attendance at theatre productions.

THTR 200-3. Introduction to Technical Theatre. An introduction to scene design, stage lighting, and all the fundamentals of technical theatre. Students will actively

participate in university stage production. May be taken as an alternative to THTR 100.

THTR 201-1. Stagecraft Laboratory. A hands-on practicum in stagecraft. Students will be given specific responsibilities in production work. Required of all students taking THTR 233 or 234.

THTR 202-3. Acting Workshop I. An introduction to stage acting, with an emphasis on theatre games designed to develop imagination and concentration. Several physical and improvisational exercises and a basic approach to character development.

THTR 203-3. Acting Workshop II. Continuation to THTR 202, designed for those who have completed 202 or who have had previous acting experience. Increased emphasis on character development and scene work. Prer., THTR 202 or consent of instructor.

THTR 204-3. Voice and Articulation I. Special training of the voice. Topics include breathing techniques, voice quality, projection, articulation, and basic IPA (International Phonetic Alphabet). Prerequisite for THTR 304-Voice and Articulation II.

THTR 250-3. Movement for the Actor. Focuses on the physical training of the actor. Stage combat, period movement, mask work, and various character development work will be explored. Performance required in either Fall Student Showcase or Spring Festival.

THTR 260-3. Theatre for Children. A lecture and practicum in Children's Theatre and educational theatre techniques. Various sources examined for dramatizing: children's stories, fairy tales, poems, and existing scripts. Recommended for actors and soon-to-be educators. Fall only. Prer., THTR 100.

THTR 280-2. Theatre Tour. Class will travel to a major city (London, New York) to attend stage productions. Readings, discussion, and written assignments organized around productions chosen. Additional fees.

THTR 290-3. Special Topics in Theatre. Topics will vary from year to year, and may be taught by guest instructors.

THTR 302-3. Advanced Acting Studio I. Intensive studio work on scenes and monologues (Shakespearean and contemporary). Prer., Open ONLY to those who have completed THTR 203, or by special audition and permission of instructor PRIOR to first day of class. Performance required in Fall Student Showcase.

THTR 303-4. Advanced Acting Studio II. A continuation of THTR 302, or by special permission of the instructor. Students will study, research, and perform a variety of works by one playwright. Class will culminate with a performance project to be showcased in the Spring Student Theatre Festival. Prer., THTR 202, 203, 302.

THTR 304-3. Voice and Articulation. Continuation of the THTR 204. Intense study of Edith Skinner's vocal technique and the IPA. Introduction of dialects and voice-over commercial work. Prer., THTR 204 or permission of instructor.

THTR 310-3. On-Camera Performance. An introduction to skills necessary for communicating through a camera, to include basic acting techniques. This is a studio course which will involve on-camera experiences with commercial copy, commentary, news copy, dramatic scenes and industrial copy.

THTR 320-3. History of Theater I: Greeks through Restoration. The basic development of theatre from the Greeks through Restoration. The emphasis is on theatre as a performance art. Satisfies a General Humanities requirement.

THTR 321-3. History of Theater II: Realism to the Present. The development of theatre from Realism (Henrik Ibsen) to the present. Examination of 19th and 20th century drama in Europe and America, with emphasis on Contemporary theatre. Satisfies a General Humanities requirement.

THTR 322-3. What's Funny? The Nature and Form of Dramatic Comedy. An advanced survey of dramatic comedy from ancient times to the present with particular emphasis on continuity of routines, comic acting, and variety of comic forms.

THTR 328-3. Women in Theatre. An exploration and examination of women's history of, participation in, and contributions to the performing arts as actresses, playwrights, directors, theorists. Combining theory and practice, each semester the students will prepare a staged reading of a female- authored text.

THTR 336-1 to 6. Theatre in Production: Technical Practicum. Participation and technical assistance in the spring student production and the Student Theatre Festival. Enrollment by permission of instructor only. Prer., THTR 200 or permission of instructor. Meets with THTR 200.

THTR 337-1 to 6. Theatre in Production: Acting Practicum. Participation and performance in the Spring Student Production. Prer., Enrollment by audition and/or permission of instructor only. Meets with THTR 390.

THTR 338-1 to 6. Shakespeare in Production. Special production-related projects in conjunction with the Theatreworks Summer Shakespeare Festival. Enrollment by permission of instructor only. Prer., THTR 100.

THTR 350-3. Theatre for Children. A seminar and practicum in Children's Theatre. Students examine various sources for dramatizing children's stories, fairy tales, poems, and existing scripts. Course includes a full production to be toured to area schools. Recommended for actors and soon-to-be teachers. Prer., THTR 100 and 203/Special permission and/or by audition.

THTR 390-3. Special Topics in World Theater. Varying topics relating to theory, practice, and text of world theater. May be repeated for credit if topic is different. Meets with THTR 337.

THTR 403-1 to 3. Internship in Theatre. Designed theatrical experiences involving specific application of relevant concepts and skills in supervised professional situations. Pass/Fail only. Prer., Permission of Program Director.

THTR 406-3. Directing I. An introduction to directing for the stage. Exploration of various staging techniques and the essential technical areas (lights, sound and design) as well as intense script analysis. Prer., THTR 100 and/or THTR 203.

THTR 407-3. Directing II. A seminar and practicum in directing for the stage. Students will apply learned techniques from THTR 406 by directing one-act plays, which will be performed in the Spring Student Theatre Festival. Prer., THTR 406.

THTR 940-1 to 6. Independent Study in Theatre. Independent study in theatre history, production or performance by permission of department chair.

VISUAL ARTS

V A 101-3. Beginning Studio 2D. A basic course exploring fundamental two-dimensional concepts used in the production of visual art, including color theory, composition, and patterning. Prer. to all 200 and 300 level V A courses in two- dimensional art.

V A 102-3. Beginning Studio 3D.A basic course in fundamental three dimensional concepts and processes including problems in form, space, and 3D construction techniques. Prer. to all 200 and 300 level courses in three-dimensional art.

V A 103-3. Introduction to Photography. An introduction to the techniques and concepts of photography as it relates to the fine arts. Practical assignments will involve the fundamental use of light, camera, lens, and darkroom equipment in the production of black and white negatives and prints. Students must have access to an adjustable camera.

V A 104-3. Beginning Drawing. A basic course in drawing, exploring the principles of line, form, and space in a variety of drawing techniques and media. Concentration on still life subject matter with some drawing of the human model.

V A 201-3. Intermediate Drawing. Continuation of the study of line, form, and space in a variety of drawing media with emphasis on the nude model. Prer., V A 104 or consent of instructor.

V A 202-3. Printmaking. Introduction to selected printmaking techniques, including silkscreen, Xerox, intaglio, and etching. Specific content will be determined by instructor.

V A 203-3. Intermediate Photography. Continuation of the study of black and white photography as a controlled creative art media. Prer., V A 103 or consent of instructor.

V A 204-3. Beginning Painting. Introduction to painting, using a variety of paint media.

V A 205-3. Ceramics. Introduction to hand-built ceramic forms with a variety of clay bodies.

V A 206-1 to 3. Two-Dimensional Topics. A mixed media course concentrating on surface design. Technical aspects may include airbrush, blueprinting, dyeing, stamp-printing, and Xerox. Specific content will be determined by the instructor. Meets with V A 306.

V A 207-1 to 3. Three-Dimensional Topics. A mixed media course concentrating on structural form. Specific content will be determined by the instructor. Media may include paper, wood, fabric, and plastic.

V A 208-3. Begin Figure Sculpture. Introduction to sculpture and to several media including wood, paper, metal and plastics.

V A 209-3. Textiles. Introduction to various nonloom fiber processes, including sewn forms, crochet, knotting, net-making, and hand-made felt. Meets with V A 307 and V A 309.

V A 210-3. Digital Imaging. Introduction to digital media and theprocess of editing through the examination of multiple software programs. An inquiry into the four fundamentals of media and time-based art: Text, graphics, audio, and video. Prer., V A 101 or consent of instructor.

V A 212-3. Introduction to Artists' Books. Students will explore various methods of book construction, including use of several media for page/cover design, as well as book-binding fundamentals. Prer., V A 101 and V A 102.

V A 219-3. Weaving. Introduction to the four-harness loom, including pattern drafting, 3D forms, and basic weaving techniques.

V A 230-3. Introduction to Watercolor/ Watermedia. Designed to familiarize students with the materials and techniques of watercolor painting with attention to past and contemporary masters of the medium and their techniques.

V A 244-3. Papermaking. Students will be taught to work with paper and pulp in the creation of handmade papers and related two- dimensional and three-dimensional objects.

V A 301-3. Advanced Drawing. Drawing with emphasis on development skills and concepts including work with a human model.

V A 302-3. Advanced Printmaking. Continuation of V A 202, with emphasis on experimentation and development of skills and concepts.

V A 303-3. Advanced Photography. Exploration of advanced techniques and concepts dealing with the development of personal expression through photographic media.

V A 304-3. Advanced Painting. Continuation of V A 204, with emphasis on development of skills and concepts in contemporary painting.

V A 305-3. Advanced Ceramics. Continuation of V A 205, with emphasis on development of skills and concepts in ceramic sculpture.

V A 306-1 to 3. Two-Dimensional Topics. Advanced work in surface design principles and techniques. Meets with V A 206.

V A 307-1 to 3. Three-Dimensional Topics. Advanced work with structural form in mixed media. Credits may be offered as 1 or 2 or 3 hours. Meets with V A 209 and V A 309.

V A 308-3. Advanced Sculpture. Continuation of V A 208, with emphasis on development of skills and concepts in a variety of sculpture media.

V A 309-3. Advanced Textiles. Fiber sculpture using basic fiber construction principles and processes. Meets with V A 209 and V A 307.

V A 310-3. Advanced Digital Imaging. An exploration of electronic and time-based media as the primary tools for refining an individual approach to artmaking structured to address the integration, expansion, and deepening of a conceptual reference point. Prer., V A 210 or consent of instructor. Meets with V A 410.

V A 312-3. Intermediate Artists' Books. Emphasis will be placed on the sculptural aspects of the book as an art object, including experimentation with a variety of media and formats. May meet with V A 212 or V A 412. Prer., V A 101, V A 102, and V A 212.

V A 319-3. Advanced Weaving. Continuation of V A 219, with both four and eight- harness loom work and concentration on 3-D form.

V A 344-3. Advanced Papermaking. A continuation of V A 244 with advanced processes and dyeing techniques.

V A 398-3. Seminar in Studio Problems. Intended for the advanced visual art student, will emphasize thematic development, articulation of content and considerations of processes necessary for the completion of a body of work reflecting personal expressiveness.

V A 403-1 to 3. Internship in Visual Arts. Supervised opportunities for advanced studio students to apply relevant concepts and skills in professional situations. Pass/Fail only. Prer., Permission of advisor.

V A 410-3. Advanced Projects in Electronic Imaging. Emphasizes the articulation of a personal aesthetic, as well as the development of expertise in use of multiple platforms, visual communication with remote sites and comparison of hard copy alternatives. It is planned for students intending to pursue studies in electronic media at the graduate level. Prer., V A 310. Meets with V A 310.

V A 412-3. Advanced Artists' Books. Intended for students with previous experience in the book arts. Emphasis will be placed on sculptural mixed media aspects of book construction and on unique personal expression in the book format. Prer., V A 312.

V A 444-3. Contemporary Handmade Papermaking Techniques. Supplemented with lectures on historical methods. Includes in-depth exploration of pulp varieties and coloring processes, as well as numerous three- dimensional possibilities.

V A 495-1 to 3. Professional Development for Artists. Business development for professional artists; seminars in a variety of subjects including but not limited to: pricing artwork, marketing and gallery representation, framing, presentation and shipping, self-promotion, legal liabilities and obligations, artist statements.

V A 498-3. Professional Seminar. A required course for studio area majors, this deals with the preparation of a resume, slide portfolio, graduation school applications and exhibition organization and installation.

V A 940-1 to 4. Independent Study in Visual Art. Independent Study in Visual Arts undergraduate. May be taken in any media with any full-time professor for up to 4 credit hours, by arrangement.

WOMEN'S STUDIES

WMST 131-3. A Lab of Her Own-Science and Women. Introduction to natural science and its methods for non-science majors. It focuses on women's participation in both the formation of scientific concepts and the development of methodology. Modern concepts of science and mathematics with an emphasis on women's contributions to these fields will be presented. This course will also offer a feminist critique of the traditional methods of science. Meets with PES 131 and PHIL 131.

WMST 200-3. Introduction to Women's Studies. An interdisciplinary course designed to introduce students to theories, concepts, and debates through which women's historical, material, and cultural conditions have come to be understood. Considers these theories as they have developed within and across disciplines. Analysis of the intersections of Race, Class, Gender and Sexuality, i.e., the diversity Women's experience, is central to course consideration.

WMST 201-3. Introduction to Race and Gender. Through critical analysis, this course will examine race and gender in society. It will focus on how systems of inequality are maintained and perpetuated. A strong emphasis will be placed on the concept of social change. Meets with EST 201.

WMST 215-3. Male and Female Communication. A lecture/discussion approach to the study of contemporary theories and research in male/female communication. The course will involve reading and discussion in such areas as gender differences in self-perception, social and media images of men and women, language usage and nonverbal behavior differences between genders. Prer., COMM 102. Meets with COMM 215.

WMST 224-3. Childhood Socialization. An examination of the process through which children define themselves as members of their culture. The influence of such "cultural communicators" as the family, school, television, day care, children's literature, games, toys and peer relations will be examined. Meets with SOC 224.

WMST 225-3. Images of Women in Society. Study of the images of women in American society, relating these stereotypes to actual conditions and experiences of women. Recommended to the returning student. Meets with SOC 225.

WMST 245-3. Social Psychology of Social Problems. An examination of social psychological aspects of a variety of social issues and problems in contemporary society. Meets with PSY 245.

WMST 290-3. Special Topics in Women's Studies. A detailed examination of a special topic taken from any field of women's studies which is not covered by the regular women's studies course offerings.

WMST 300-3. Race and Gender at the Movies. Through critical analysis, this class will focus on race and gender in movies to facilitate an understanding of student's own identities, roles, and behavior in society, and the potential for social change. Meets with EST 300.

WMST 301-3. Women in Politics. An examination of the role of women in American politics. Topics will include a historical perspective of women's political activity, the political interests and group activities of women, the legal status of women, political attitudes of and toward women, and women's political behavior. Meets with P SC 301.

WMST 304-3. Women Around The World. Provides a global, cross-cultural perspective on women, using an anthropological framework to examine women's status, issues and general cultural experience in the context of gender systems of different types of societies. Prer., WMST 200, ANTH 104 or ANTH 240, or permission of instructor. Meets with ANTH 304.

WMST 310-3. Women of Color: Image and Voice. An examination of the ways in which the intersections of race, ethnicity, and gender are constructed both within and against traditional American feminism and gender critiques. The course will address areas of divergence from mainstream feminism and the construction of alternative representations by women of color. Prer., WMST 200 or EST 200. Meets with EST 310 or EST 201/WMST 201.

WMST 311-3. Women and Religion. Examines the way(s) in which women have been, and continue to be viewed in various religions through comparing sacred and other texts with actual religious practices and beliefs. This course engenders an appreciation of the tension between the ideal expectation for and the real possibilities available to women in religious traditions. Meets with PHIL 311.

WMST 320-3. Women Writers and Women's Experience. Study of some women writers deserving attention because of their artistry and depiction of women's lives. Meets with ENGL 320.

WMST 323-3. Women's Equality, Women's Differences. An introductory course that presents both the history of philosophical treatments of women and contemporary philosophical analyses of women's social, political, artistic, scientific, and philosophical roles. Prer., PHIL 100 or WMST 200. Meets with PHIL 323.

WMST 324-3. Women, Visual Arts and Culture I. A survey of the lives and contributions of women artists, from Ren. to c. 1900. The primary objectives are to introduce issues of gender in the production of visual culture and familiarize the student with the critical literature of art history. Prer., A H 100 or permission of instructor. Meets with A H 325.

WMST 325-3. Power, Privilege, and Social Difference. A survey of the approaches to the study of women characteristic in the various disciplines in the social studies and humanities with an emphasis on common themes and issues. Meets with SOC 325.

WMST 326-3. Women, Art, and Culture II. Introduction to feminist theory and women's artistic production

from 1970 to the present. Focuses on how women's art attempts to resist normative ideals of femininity, subvert aesthetic hierarchies, and illuminates the intersections of race, gender, and sexual orientation. Prer., A H 200 or permission of instructor. Meets with A H 326.

WMST 328-3. Introduction to Feminist Film, Video and Digital Media. A survey of major themes in feminist independent film, video and web-based projects produced since the mid-1970s. Meets with A H 328.

WMST 331-3. Sociology of the Family. The family as a social institution. Historical development and contemporary cross-cultural analysis with emphasis on the contemporary American family. Prer., Six hours of sociology. Meets with SOC 331.

WMST 355-3. Psychology and Women. A survey of female psychology and the study of sex differences through an examination of theories of female personality development, biological determinants of female personality, traditional and alternative lifestyles, women in psychotherapy, and women at work. Prer., PSY 100. Meets with PSY 355.

WMST 361-3. Gender and Social Behavior. Causes and consequences of gender differentiation at the individual, group, and societal levels. Meets with SOC 361.

WMST 363-3. Gender and Race in Biblical Literature. This course examines the presence(s), result(s), and interpretation(s) of gender and race in biblical literature and the issues and problems those categories present to the reader. Prer., WMST 200 recommended. Meets with PHIL 363 and EST 363.

WMST 371-3. Good Wives and Nasty Wenches: American Women's History, 1607-1877. Study the history of American women from the Colonial era through the Civil Wars concentrating on the nineteenth century. It will introduce students to the changing economic, gender, and familial roles of American women. Meets with HIST 371.

WMST 390-1 to 3. Special Topics in Women's Studies. A detailed examination of a special topic taken from any field of women's studies which is not covered by the regular women's studies course offerings. Repeatable for up to 9 credit hours only if a different topic.

WMST 395-3. Women in Film. Selected topics dealing with the various roles of women in international cinema history. Meets with FILM 395.

WMST 404-3. Gender and Sexuality. Focus on the various roles of women in American society within historical, socioeconomic, and cultural contexts; changes of these roles and contexts. Prer., Three credits in WMST or SOC 225. Meets with SOC 404.

WMST 408-3. Sociology of Men's Lives. This class undertakes a critical exploration of men and masculinities, exploring men as gendered beings. It explores manhood as a social construct, both historically and cross-culturally, and provides an overview of theories of male gender role development as well as a variety of topics including power and patriarchy; race, class and sexuality; men in families; work; violence; health; friendship and intimacy; men's movements; and the growing field of men's studies. Meets with SOC 408.

WMST 411-3. Women and Hispanic Literature. An overview of hispanic women as seen by Hispanic male and female writers. Prer., SPAN 301, SPAN 302 or consent of instructor. Meets with SPAN 411.

WMST 418-3. Gender in International Politics. Looks at issues of gender and sexuality in an international context. Covers war and militarism and their effect on women, the international division of labor, the effects of religious fundamentalism, internationaltrafficking in women and sexual violence issues. Meets with P SC 418.

WMST 420-3. Sociology of Poverty. Consideration of structural origins of poverty; the underclass and the dual economy. Analysis and evaluation of consequences of poverty, especially in relation to family, children, and career. Review of antipoverty programs. Meets with SOC 420 and EST 401.

WMST 431-3. Social Inequalities. An examination of social inequalities and the process of social stratification in various social systems (small groups), formal organizations, communities and societies with emphasis on the American class system, economic, status, and power differentials will be explored as well as life styles, life chances, class correlates and social mobility. Prer., Six hours of sociology or consent of instructor. Meets with SOC 431 and SOC 531.

WMST 455-3. Feminism, Sexuality, and Culture. An examination of selected philosophical issues in the context of recent developments in feminist thought. Course will consider the question of whether traditional patterns of philosophical thought express gender bias, and if so why. Meets with PHIL 455.

WMST 476-3. Women's Space, Women's Place: Women's Role in Changing the Face of the Earth. A re-examination of traditional aspects of cultural and regional geography from a feminist perspective. Meets with GES 476.

WMST 490-1 to 4. Special Topics in Women's Studies. A detailed examination of a special topic taken from any field of women's studies which is not covered by the regular women's studies course offerings.

WMST 491-3. Selected Topics in History and Women. These courses are usually taught on a one-time basis. The subject matter will change from year to year and will cover an important but rarely taught subject in history.

WMST 498-3. Seminar on Major Authors: Virginia Woolf. An intensive investigation into the life, the times, and especially the writing of Virginia Stephen Woolf (1882-1941). Readings will include several of Woolf's novels, including To The Lighthouse and Mrs. Dalloway, a large sampling of her short stories, plus various of her essays critical pieces and journals. Collateral readings will include the standard biography by Bell and de Salvo, Virginia Woolf: The Impact of Childhood Sexual Abuse on Her Life and Work. Prer., ENGL 150. Meets with ENGL 498 and ENGL 598.

WMST 940-1 to 3. Independent Study in Women's Studies. A student desiring independent study credit must present to the faculty a well-defined written project for research which is not included in the ordinary offerings of the departments whose courses are included in the W. S. Program. Students must secure approval from the faculty member with whom they wish to work, as well as from the Women's Studies program director. Prer., Consent of instructor and Women's Studies program director.

BETH-EL COLLEGE OF NURSING AND HEALTH SCIENCES

HEALTH SCIENCE

HSCI 100-4. Basic Emergency Health Services. Provides the beginning preparation for Basic Emergency Medical Technician practice. Introduces the basic concepts foundational to emergency care which includes baseline assessment, history, airway management, physical assessment skills, communication and documentation.

HSCI 101-1. Pharmacological Math. A prerequisite for medication administration. Prepares the student to work with common drug calculations applicable to concepts of measurement, conversions, and calculation of oral, parenteral, and intravenous drug dosages. Prer., Nursing majors only.

HSCI 102-3. Personal Fitness and Wellness. Investigates the value of fitness and nutrition in daily life. Activities include the development of an individualized fitness program, assessment of personal fitness, and nutrition status. The value of a healthy lifestyle throughout the life span is emphasized.

HSCI 104-3. Physiological Chemistry. Introduces basic chemical principles through the investigation of human biochemical and physiological process. Basic chemistry, biochemistry, organic chemistry and pharmacological concepts are foundational to understanding human physiology and pathophysiology.

HSCI 105-3. Introduction to Basic Emergency Services. Introduces students to clinical experiences in emergency service settings. Prer., HSCI 100.

HSCI 106-3. Personal Nutrition. Factors influencing human nutritional requirements and food sources to meet them. Emphasis on application of biological principles in the students own diets and lives. Course will include how to evaluate one's own nutritional needs and the adequacy of personal diet. Meets with BIOL 105.

HSCI 120-3. Future of Health Care. A futuristic perspective of health care. Finance and delivery systems, professional roles, changing consumer involvement, ethical issues, impact of technology and world-views of tomorrow are explored. A dynamic learning environment will allow students to foster creativity and critical thinking.

HSCI 200-3. Professional Practice Foundations. Provides the foundation for the evolving professional practice in health care sciences. Introduces elements of professionalism, including therapeutic communication, critical thinking and problem solving. Includes an understanding of medical terminology, language usage, and writing format in keeping with professional standards.

HSCI 205-3. Pharmacology. Provides foundation for understanding pharmacodynamics and drug administration. Therapeutic interventions are emphasized, including patient teaching, safety considerations and legal and ethical issues. Prer., BIOL 201 and BIOL 202. Nursing majors only. Concurrent: HSCI 101.

HSCI 206-3. Health Science Statistics. Introduction to statistical methods utilized for analysis of health sciences data. Includes descriptive statistics such as frequency distribution, measures of central tendency and variability. Inferential statistics such as correlation, T-test and analysis of variance are studied.

HSCI 207-3. Nutrition for Health Professionals. An introductory course for health sciences students which focuses on biological and environmental influences on nutritional needs and status. The role of nutrients in energy metabolism and physiology, and the teaching role of the health professional will be emphasized, as well as personal dietary assessment. Meets with BIOL 205.

HSCI 210-3. Patient Assessment. Focuses on the empirical knowledge necessary to provide initial, focused, detailed and ongoing assessments. Evaluation of the accident scene and mechanism of injury focus on the development of general impression and plan of treatment. Ethical implications of assessment findings are explored. Meets with NURS 210.

HSCI 245-3. Health Care Environment. Introduces students to the complex health care environment and role of health personnel. Focuses on the historical and contemporary forces on the health care delivery system, roles of health professionals, social, political and economic influences will be explored.

HSCI 247-3. Spanish for Health Care Providers. Introductory conversational Spanish and orientation to health care needs.

HSCI 280-3. Biomedical Aging: Myths and Realities. Study of the processes related to biological, medical and physical aspects of aging. Meets with BIOL 204 and GRNT 204.

HSCI 301-3. Pathophysiology. Pathophysiological concepts build on previous principals and basic science. Correlates underlying pathophysiological process at the cellular system level with manifestations in individuals as signs, symptoms, or laboratory findings. Explores various factors in relationship to the pathogenesis of disease process. Prer., BIOL 201, BIOL 202, BIOL 203, CHEM 101 and CHEM 102.

HSCI 302-3. Intro to Emergency Medical Service. An overview of the roles and responsibilities of the professional prehospital care provider. Explores relation to socio-political, medical/legal and ethical considerations. Emphasizes meeting the emotional and physical need of patients throughout the life span.

HSCI 304-3. Yoga Theory and Practice. Explores yoga theory and practice. Focus is on strength, flexibility, balance and harmony as tools of daily life that enhance holistic health. Practice of relaxation and meditation will deepen understanding of and ability to care for others.

HSCI 306-3. Pathophysiology (RN). Builds on basic sciences. Correlates underlying pathophysiological processes at the cellular/system level to manifestations in individuals as signs, symptoms, or laboratory findings. Various factors will be discussed in relationship to the pathogenesis of disease process.

HSCI 311-3. Fundamental Emergency Skills (EMS). Introduces fundamental skills associated with emergency care, including patient assessment, airway management, medication administration, and cardiac monitor application and interpretation. Clinical lab required.

HSCI 312-3. Cardiac Emergencies (EMS). Introduces the interpretation of the cardiac rhythm, variations, and presenting signs and symptoms of common cardiac conditions. Includes 12-lead monitoring, electrical and pharmacologic interventions for cardiac dysrhythmias. Includes psychological and sociological perspectives of care.

HSCI 313-3. Pulmonary and Neurological Disorders (EMS). Introduces the pathophysiology evaluation and emergent treatment of patients with acute pulmonary and non-traumatic neurological disorders across the lifespan.

HSCI 345-3. Trends and Issues. Provides the student with an historical perspective of the social political context of the health care delivery system and concepts include health care economics, medical ethics, health care politics and professional empowerment.

HSCI 348-3. Sports for Special Populations. Provides the opportunity to adapt sport principles and activities to meet the needs of individuals with disabilities. Concepts include theories of motivation, psychology of adjustment, adapted physical education and coaching principles.

HSCI 350-3. Prehospital Nursing. Expands critical thinking skills to the prehospital environment. Prepares the student to provide basic and advanced life

support skills in emergency situations. Provides entry level knowledge and skills for advanced prehospital practice in collaboration with EMTs, paramedics, nurses, and physicians.

HSCI 392-2. Nutrition Science and the Community. Introduces food delivery systems, procurement, food safety and sanitation issues, community nutrition programs. Includes policy and environmental issues, laws and regulation of food and nutrition. Prer., HSCI 200, HSCI 207, and HSCI 245.

HSCI 394-3. Nutrition Science and Preparation. Provides the tools to calculate and interpret nutrient composition, evaluation and preparation of menus and meal development. Provides modification of individual/group dietary needs associated with disease or lifespan variations. Prer., HSCI 207, BIOL 110, BIOL 201, BIOL 202, BIOL 203, CHEM 103, and CHEM 106.

HSCI 401-3. Health Science Research. Develops a fundamental understanding of the research process. Enables students to critically analyze the merit of published health science research. Students begin to derive a theoretical and research knowledge base of therapeutic care interventions. Meets with NURS 401.

HSCI 402-3. Food Systems Management. Equipt students with understanding of managing a complete food service operation in any food system and the ability to write an applicable business plan. Learn how to identify and control all operational and financial elements of a food system operation. Prer., HSCI 394, HSCI 206 or PSY 210, ECON 101 or ECON 202 or MKTG 300.

HSCI 410-4. Advanced Emergency Skills (EMS). Introduces participants to advanced skills associated with emergency care, including cardiac arrest management, needle thoracostomy, trauma management skills, and specialized pediatric techniques. Environmental disasters, major incident response and rescue modalities are addressed.

HSCI 412-3. Medical Emergencies (EMS). Introduces medical complications likely to present in the pre-hospital setting. Includes pathophysiology, common presentations of complications and emergency stabilization of diabetic and endocrine disorders, toxicologic emergencies, environmental emergencies, allergies, anaphylaxis, infectious disease, OB/GYN emergencies and behavioral disorders.

HSCI 413-3. Trauma Management (EMS). Introduces the epidemiology and common injury patterns seen in varipid traumatic situations. Includes pathophysiology, common presentations, and emergency stabilization of head, chest, abdominopelvic, spine, and extremity trauma.

HSCI 416-3. Community and Home Care (EMS). Provides an overview of home health and community based health care service. Models of patient and family education for self management and rehabilitation are introduced. Community assessment, collaboration and networks, and mobilization are explored.

HSCI 417-3. Paramedic Practicum I (EMS). Provides an opportunity to apply specific clinical concepts, strategies, and skills in supervised clinical setting. Clinical skills included are patient interviews, physical assessment, airway management, cardiac rhythm interpretation and treatment, administration of medications and the assessment and management of neurologic emergencies.

HSCI 418-3. Paramedic Practicum II (EMS). This field internship is the culmination of the paramedic practicum program, and provides an opportunity to practice as a paramedic under the direct supervision of a clinical preceptor. Clinical skills included in this practicum encompass the entire scope of practice.

HSCI 426-3. Praxis: Therapies of the Imagination. Applies imagery, memory and reflection, dreams and the creative process in holistic health practice. The focus is on the professional's role and the practical application of theories and techniques of these therapies in various clinical situations. Intuitive and analytical thinking are emphasized. Meets with NURS 647.

HSCI 427-3. Praxis: Therapies of Human Energy Field. Theories and practices of healing modalities which emphasize touch, energy systems, and movement that nourish and strengthen the body/mind/spirit are interpreted artistically and scientifically. Learners explore the use of these modalities in experiential situations. The theoretical, personal, aesthetic, empirical, ethical, and sociopolitical implications of energy modalities are explored. Meets with NURS 648.

HSCI 429-3. Legal Aspects of Forensic Science: Civil and Criminal. Criminal, civil and family law will be discussed as they relate to forensic issues. Prer., HSCI 200, HSCI 245 or permission of instructor. Meets with HSCI 636 and NURS 636.

HSCI 430-3. Sexual Assault: Implications for Health Care Delivery. Focuses on the problem of sexual violence and medicolegal aspects of health care. Explores the interdisciplinary and holistic approach to enhance quality of care for victims, perpetrators and involved families are explored. Models for preventive strategies and public education are investigated. Meets with NURS 630.

HSCI 431-3. Introduction to Forensics. Provides an introduction to clinical forensics with an emphasis on emergency department and community health forensic issues through the study of forensic science. Explores the principles and philosophy of clinical forensics and role of forensic practitioners in community based settings. Meets with HSCI 631 and NURS 631.

HSCI 432-3. Investigation of Injury and Death. An exploration of concepts and principles related to investigation of injury and death. Forensic pathology and forensic autopsy procedures are included. Specialized topics in clinical practice such as medicolegal evidence, violence injury and environmental pathology are included. Meets with HSCI 632 and NURS 632.

HSCI 433-3. Crime Scene & Crime Lab. Introduces the areas of crime scene preservation, investigation and the scientific tactics, procedures, and techniques employed by forensic experts. As an advanced course, attention will be given to homicide investigation and its central role in forensic examinations.

HSCI 434-3. Psychosocial and Legal Aspects of Forensic Science. Introduces the psychological, neurocognitive, social-sociological and legal dimensions of forensics. Attention will be given to assessment and diagnosis of mental disorders, and the interface between the psychosocial effects of injury and illness and the judicial system. Criminal, civil and family law applications of forensics will be considered. Meets with HSCI 634 and NURS 634.

HSCI 435-2. Internship in Clinical Forensics. Arranged to expand clinical application of theory content in forensics. Arrangements can be made for experiences with coroners, emergency departments, crime investigation units, prisons or other clinical settings which are congruent with student goals. Meets with HSCI 440, NURS 635, and HSCI 635.

HSCI 436-3. Health Care Management. Provides the framework for the managerial role in the health care context. Leadership in healthcare organizations is addressed

with the focus on models, motivational theory, organizational communication, management and strategic planning. Prer., HSCI 245 and HSCI 345.

HSCI 437-3. Violence and Human Right Issues. Provides the opportunity to explore the impact of violence in relation to the responsibilities of the investigator, assessor, evaluator and therapist. Includes strategies of care for individual, family, and community survivors. Principles and philosophies of victimology, traumatology, domestic violence. Meets with HSCI 637 and NURS 637.

HSCI 438-3. Substance Abuse. Presents the most recent findings regarding the pathology of substance abuse. The misuse of drug and alcohol and the associated effects that influence key dynamic processes in family system functioning are discussed.

HSCI 439-3. Forensic Photography. Designed to assist professionals in forensic science and health care in the basic principles and techniques associated with forensic photography at the crime scene, in the hospital setting, or in the autopsy laboratory. Meets with NURS 650.

HSCI 440-4. Forensic Practicum. Allows the student the opportunity to implement skills and knowledge assigned with a preceptor in a health delivery setting. Student initiated contract with approval of faculty and preceptor. Prer., HSCI 431 and HSCI 432. Meets with HSCI 435, HSCI 635, and NURS 635.

HSCI 441-4. Forensic Chemistry and Toxicology. Introduces the chemical science of forensic investigative techniques including the principles of biochemistry, toxicology, and serology. Prer., BIOL 101, BIOL 102, CHEM 101, and CHEM 102.

HSCI 450-3. Legal/Ethical Issues. A theoretical basis for ethical/legal decision-making is applied to contemporary situations encountered in nursing and medical practice.

HSCI 451-3. Hearing and Vision Alterations. Designed for students who desire greater depth of knowledge in special health care and communication needs of individuals with alterations in hearing and vision. Prer., All second year courses or consent of lead faculty.

HSCI 452-3. Health Teaching. The principles of learning/teaching are applied to problems in clinical settings. Teaching programs for individuals and groups are planned, implemented and evaluated as part of the course.

HSCI 453-3. Therapeutic Touch. Provides an opportunity to explore and experience energy based healing methods. Therapeutic touch is studied as a healing modality.

HSCI 454-3. Death and Dying. A comprehensive introduction to the study of death and dying with integration of a wide range of interdisciplinary approaches. Providing a theoretical basis and current research on the topic. The course also allows for the opportunity to apply theory to life situations and personal experiential discovery.

HSCI 455-3. Complementary Healing Methods. A survey course which presents an overview of the history, theoretical bases, applications, resources, and trends of complementary healing methods. The evolution of Western scientific thought and Eastern medical theories is examined as a basis for understanding current health perspectives and treatment modalities. The course is not intended as an endorsement of any of the methods studied.

HSCI 456-3. Women's Health Care Issues. Selected women's issues are explored from a historical, psychological and socio-political focus in order to increase understanding of the experience and impact on the woman, her significant others, health care professionals and the health care system.

HSCI 457-3. Creative Journey. This interdisciplinary course explores the concepts which link the esthetic experience and holistic healing within a cultural framework. The idea of life as a journey provides the foundation for the student to encounter deep dimensions of their inner being through experiential learning techniques.

HSCI 459-3. Concepts of Health & Disease. Provides background and rationale for the dynamic biological, sociological and spiritual influences on health and illness and dimensions of illness that affect the individual and family. Implications of long-term catastrophic illness and life threatening illnesses are addressed. Prer., BIOL 201, BIOL 202 and HSCI 301.

HSCI 460-3. Fitness and Wellness Concepts. Introduces the concepts and frameworks for health promotion and fitness. Provides an overview of factors influencing wellness of individuals, families and society. Prer., BIOL 201, BIOL 202, HSCI 110, HSCI 200, and HSCI 301. Meets with BIOL 403.

HSCI 461-3. Sports Injury and Prevention. Focuses on empirical and esthetic knowledge of emergency treatment, rehabilitation mechanisms, and prevention of sports injury. Emphasis will be on prevention of injury by incorporating fitness principles related to cardiovascular endurance, flexibility, strength training, muscular endurance, and nutrition and body composition. Meets with BIOL 423 and BIOL 523.

HSCI 462-4. Internship in Sports Health. Provides a clinical opportunity within the community to develop and apply sports medicine concepts. Field work will be supervised in public and private agencie and institutions. Prer., Senior status or permission of instructor.

HSCI 463-3. Culture and Health. Explores health/illness concepts of various populations and introduces cross cultural assessment skills. Cultural health belief systems, biological variation and patterns of adaptation to the environment are included.

HSCI 464-3. Program Planning and Implementation. Provides introductory knowledge for planning and developing health promotion programs. Delineates criteria for development of health related programs and addresses ethical and legal issues in health promotion and education. Content includes issues related to resource development, community assessment and mobilization, marketing and adapting to diverse audiences in a variety of settings.

HSCI 465-3. Principles of Instructional Design. Provides an opportunity to begin to develop the skill of planning instructional designs to facilitate the learning process for a variety of learners. The course introduces teaching/learning theory and principles, and teaching-learning methodologies and addresses the application to classroom and clinical settings. The course provides an overview of methods of evaluation including the use of tests and measurements.

HSCI 466-3. Teaching Internship. This clinical course provides the student the opportunity to teach in a classroom and/or clinical setting under the direction of an assigned preceptor. A variety of settings are available for internships. Students contract for teaching experience in identified settings. The internship provides the student the opportunity to work with expert teachers and function as a part of a teaching team.

HSCI 467-3. Health Assessment. Provides the knowledge and skills

necessary for holistic health assessment of individuals. Includes parameters for physical, emotional, spiritual and social assessments. Ethical implications of assessment and findings are explored. Introduces the variety of tools to facilitate health assessment and documentation of findings.

HSCI 468-3. Health Promotion and Wellness. Introduces the concepts and a framework for health promotion in a pluralistic society. Provides an overview of factors influencing health promotion behaviors of individuals and families. Introduces the student to models and theories related to health behavior and provides a framework for assisting the person or family to adapt or to cope with change.

HSCI 469-3. Clinical Practicum. A clinical course that provides the health science student the opportunity to function as a member of a health care team under the direction of an assigned preceptor. Clinical placements are assigned based on the student's career plans and goals.

HSCI 470-3. Critical Care Transport I. Introduces issues related to providing transport for critical care patients of all ages. Introduction of clinical conditions which are common to ICU/CCU patients, and advanced assessment techniques for patients with cardiovascular, pulmonary, neurologic, and GI/GU/renal conditions. Clinical relevance of various laboratory tests and purpose and operation of various critical care instruments. Prer., Registered nurse or certification as a paramedic.

HSCI 471-3. Critical Care Transport II. Introduces issues related to providing transport for critical care patients of all ages. Introduction of clinical conditions which are common to ICU/CCU patients, and advanced assessment techniques for patients with cardiovascular, pulmonary, neurologic, and GI/GU/renal conditions. Clinical relevance of various laboratory tests and purpose and operation of various critical care instruments. Prer., Registered nurse or certification as a paramedic.

HSCI 472-3. Health Care Finance. Introduces the health care financial system, accounting, budgeting and resource allocation. Includes mechanisms of financial management, credit and debits, and balances. Social and political influences are explored. Prer., FIN 305 and ACCT 201.

HSCI 473-3. Community Network Development. Focuses on the assessment, purpose and development of community networks. Methods and types of partnerships and collaborative relationships are explored. Students are involved in assessing community resources, coalitions and existing networks. Prer., HSCI 200, HSCI 245 or permission of instructor.

HSCI 475-3. Clinical Trials Management. Course presents theory and operational information related to clinical trials for drug approval. Regulatory requirements, cost analysis, contract issues, staffing, protocol development and audit information is included.

HSCI 477-4. Management Practicum. Designed to integrate the theoretical concepts and knowledge of health care management into a variety of health care settings. Students will function with a management preceptor in the community agency. Prer., HSCI 472 and HSCI 473.

HSCI 479-3. Management Synthesis Seminar. Explores the dynamic role of the health care manager, focusing on personal skills, theory and outside influences. Provides a framework for developing professional debate skills associated with health care management issues and synthesis of role. Prer., ACCT 201, MK 300 and FIN 305.

HSCI 489-3. Special Topics in Health Sciences. This course provides the opportunity to investigate and obtain empirical knowledge in an area of health care associated with their career plans and goals. Students develop learning objectives and evaluation methodology in collaboration with the assigned faculty. Prer., Faculty consent must be secured prior to registration.

HSCI 492-3. Nutritional Assessment Across the Lifespan. Introduces students to the complex elements of nutritional assessment accross the lifespan. Includes socioeconomic, cultural and psychological factors influencing nutrition. Prer., HSCI 207, HSCI 392, and HSCI 394.

HSCI 493-3. Diet Therapy and Intervention Across the Lifespan. Provides the pathophysiology, assessment, management and interventions of common acute and chronic diseases of the general population. Prer., HSCI 492.

HSCI 494-4. Nutrition Science Practicum I. Practical experiences working in the community settings applying nutritional assessment, analysis, and interventions in a variety of settings. Prer., HSCI 492. Pre-coreq., HSCI 493.

HSCI 495-3. Exercise Testing and Prescription. Emphasis on risk stratification, assessment procedures, physiology of prescription and general exercise prescription principles. Upon successful completion of the course, students will have knowledge/skills necessary to obtain professional certification through the American College of Sports Medicine or other highly reputable certifying organization. Prer., HSCI 210, BIOL 201, BIOL 202, and BIOL 330.

HSCI 521-3. The Healing Power of Dreams. Prepares student to work with patients' dreams by teaching basic dream analysis principles according to Carl Jung.

HSCI 619-3. Health Care Administration. Examines the social, political and economic influences on health care administrators in the health care system. Analyzes leadership, management and organizational theories, human resource management, strategic management and professional development issues. Prer., MSN or MBS admission.

HSCI 629-3. Health Care Policy. Focuses on the knowledge and skills needed to effect change in health care policy and delivery. Advanced nursing practice is explored in the health care system focusing on financing, delivery and reimbursement models, regulatory issues, and the legal/ethical parameters. Emphasis is placed on empowerment and the development of leadership skills within the social/ political context of health care. Building collaborative interactions within systems is stressed as the policy-making process is studied.

HSCI 630-3. Sexual Assault: Implications for Health Care. Focuses on sexual violence and expands personal knowledge of medicolegal aspects of health care. The alliance of health care, law enforcement, and forensic science is explored. Models for preventive strategies and public education are investigated. Meets with HSCI 430 and NURS 630.

HSCI 631-3. Introduction to Forensic Science. Introduces clinical forensic science with emphasis on emergency and community forensic issues. Explores principles and philosophy of clinical forensic science and practice roles of the forensic professional. Meets with HSCI 431 and NURS 631.

HSCI 632-3. Investigation of Death & Injury. Explores principles related to investigation of injury and death.

Forensic pathology and forensic autopsy procedures are included. Explores topics medicolegal evidence, violence injury and environmental pathology. Meets with HSCI 432 and NURS 632.

HSCI 633-3. Advanced Crime Scene & Crime Lab. Explores areas of advanced crime scene preservation, investigation and development and scientific tactics, procedures and techniques employed by forensic scientists. Meets with NURS 633.

HSCI 634-3. Psychosocial Aspects of Forensic Science. Introduces the psychological, neurocognitive, sociological and legal dimensions of forensic science, assessment and diagnosis of mental disorders, and the interface between the psychosocial effects of injury and illness and the judicial system. Explores criminal, civil and family law applications. Meets with HSCI 434 and NURS 634.

HSCI 635-2. Internship in Forensic Science. The internship is arranged to expand clinical application of theory content in forensic science. Arrangements can be made for experiences with coroners, emergency rooms, crime investigation units, prison or other clinical settings which are congurent with student goals. Prer., HSCI 631, HSCI 633, and HSCI 634. Meets with HSCI 435, HSCI 440 and NURS 635.

HSCI 636-3. Legal Aspects of Forensic Science. Criminal, civil and family law will be discussed as they relate to forensic science issues. Meets with HSCI 429 and NURS 636.

HSCI 637-3. Violence and Human Rights. Provides the opportunity to explore the impact of violence in relation to the responsibilities of the investigator, assessor, evaluator, and therapist. Includes strategies of care for individual family and community survivors. Principles and philosophies of victimology, traumatology and domestic violence. Meets with HSCI 437 and NURS 637.

HSCI 639-3. Health Care Ethics & Law. A theoretical basis for ethical/ legal decision-making as applied to contemporary situations encountered in health care settings.

HSCI 649-3. Health Care Budget & Finance. Introduces systems of resource managment in health care delivery. Emphasis on strategies of finance and budget, personnel management, management research, and information systems as tools used by nurse administrators to impact the health care environment. Individual, societal, and political influences which may alter the process of management will be examined.

HSCI 659-3. Clinical Research Application. Develops skills in scientific inquiry through an understanding and utilization of research in practice. It requires the student to apply the research process in a practice setting using different evaluation techniques. Prer., HSCI 619, HSCI 629, HSCI 639, and HSCI 649.

HSCI 702-3. Clinical Research Application. Develops skills in scientific inquiry through an understanding and utilization of research in practice. It requires the student to apply the research in process in a practice setting using different evaluation techniques. Prer., HSCI 631, HSCI 633, HSCI 634. Meets with NURS 702.

HSCI 930-1 to 3. Independent Study - Undergraduate. Arranged with a specific faculty member in an area of interest. Independent study can fulfill elective or core course requirements. Prer., Permission of instructor required.

HSCI 940-1 to 3. Independent Study - Undergraduate. Arranged with a specific faculty member in an area of interest. Independent study can fulfill elective or core course requirements. Prer., Permission of instructor required.

NURSING

NURS 123-3. Foundations of Nursing Practice. Introduction to the philosophical and theoretical underpinnings of nursing practice. Concepts foundational to the college's conceptual framework are explored. Legal aspects of nursing practice, issues and trends within nursing are presented. Prer., Nursing majors only.

NURS 208-2 to 3. Health Promotion. Health promotion behaviors throughout the life span. Students will develop personal insight integral to health risk behaviors and clients across the life span. Clinical settings vary. Prer., Admission to Nursing major.

NURS 210-3. Basic Health Assessment. Focuses on the empirics and esthetics of health assessment. Develops knowledge and skills integral to the acquisition of health assessment in clinical practice lab. Prer., BIOL 201, BIOL 202, and BIOL 205 or consent of lead of faculty. Meets with HSCI 210.

NURS 220-6. Fundamentals of Nursing Practice. Presents the empirical fundamental knowledge of basic nursing care. Clinical practice labs and seminars provide the student the opportunity to develop psychomotor skills and recognize the impact of personal, esthetic and ethical knowing on caring in beginning nursing practice. (Theory and clinical laboratory) Prer., NURS 208, NURS 210, HSCI 101 and HSCI 205.

NURS 299-1 to 3. Basic Clinical Practicum. Offers a clinical laboratory experience in settings that increase proficiency in technical skills, communication, health assessment and the nursing process. Prer., NURS 210 and NURS 220. Meets with NURS 399.

NURS 304-3. Patterns of Knowing (RN). An overview of concepts of professional nursing practice for the registered nurse student. Includes history and trends of professional nursing, universal theories and various theorists, professional roles, Beth-El College philosophy and conceptual framework, nursing process and socialization into nursing. Prer., RN status.

NURS 305-3. Health Assessment (RN). Focuses on the empirics and esthetics of health assessment. Enhances further development of health assessment skills in laboratory. Prer., RN Status, BIOL 201 and BIOL 202, or consent of lead faculty.

NURS 310-6. Mental Health Nursing. Focuses on the practice of mental health nursing. Students develop critical thinking skills to create the environment for exploring the human health experience. (Theory and clinical laboratory) Prer., All second year courses.

NURS 320-5. Nursing Care of Adults I. Emphasizes the art and science of nursing care for the adult. Explores medical-surgical nursing concepts using a scientific problem-solving approach. Clinical laboratory experiences are in the acute care setting. (Theory and clinical laboratory) Prer., All second year courses; prior or concurrent enrollment in HSCI 301.

NURS 321-5. Nursing Care of Adults II. Emphasizes the art and science of nursing care of the adult. Continues to explore medical-surgical concepts from Adult Health I. Clinical laboratory experiences are in the acute care settings. Prer., All second year courses, NURS 320.

NURS 357-3. Therapeutic Touch and Health. Provides an opportunity to explore and experience energy based healing methods. Other selected healing modalities will include stress reduction techniques, meditation, centering, creative visualization, use of color and other energy techniques.

NURS 358-3. Palliative and End of Life Care. Focus is on nursing care for the

chronically and terminally ill. Principles of palliative and end of life care using an interdisciplinary and holistic approach is applied across all practice settings. Prer., HSCI 301 or current RN license.

NURS 370-1 to 3. Partners in Practice I. Provides nursing students the opportunity to refine nursing skills in actual practice situations. Provided through a collaborative agreement with acute care delivery settings and therefore credit to contact hours may vary dependent on the educational/work relationship established. Prer., NURS 210 and NURS 220, and permission of instructor.

NURS 385-2 to 3. Nursing Externship. Externs, under the preceptorship of a registered nurse, provide direct patient care in selected clinical areas. Enhances competency and critical decision making in the reality of the practice setting. Prer., All third year courses.

NURS 399-1 to 3. Clinical Practicum. Offers a clinical laboratory experience in settings that increase proficiency in technical skills, communication, health assessment and the nursing process. Prer., NURS 220 and NURS 320 or consent of lead faculty. Meets with NURS 299.

NURS 401-3. Nursing Research. Develops a fundamental understanding of the research process. Enables students to critically analyze the merit of published nursing research. Prer., All second year courses, PSY 210 or HSCI 206 may be taken concurrently. Meets with HSCI 401.

NURS 410-6. Nursing Care of Children. Explores the holistic care of children from infancy to adolescence, and their families in ambulatory, outpatient and acute care settings. (Theory and clinical laboratory) Prer., All third year courses.

NURS 420-6. Nursing Care of the Childbearing Family. Provides an opportunity to explore family dynamics and the health care experience during the childbearing process. Expands critical thinking skills specific to the childbearing arena. (Theory and clinical laboratory) Prer., All third year courses.

NURS 425-3 to 4. Professional Nursing Practice. Focuses on selected nursing practice topics that build upon the student's personal knowledge. Opportunities are provided to enhance principles of teaching, utilize critical thinking and further explore nursing roles. (Theory and clinical laboratory) Prer., R.N. status NURS 304, NURS 305 and HSCI 301 or HSCI 306; or consent of lead faculty.

NURS 429-5. Advanced Nursing. Synthesizes nursing content necessary for therapeutic interventions for the care of complex adult patients in the acute and critical care settings. Emphasis on prioritization of care and management of groups of complex patients. (Theory and clinical laboratory) Prer., All third year courses.

NURS 430-3. Leadership and Management. Introduces and develops leadership and management theories, discusses professional issues and trends, enhances organizational and personnel issues. Prer., All second year courses.

NURS 435-3 to 4. Nursing Management (RN). Develops management theories and professional issues and trends. Emphasizes organizational and financial principles. Clinical preceptors provide the student with opportunities to explore application of management skills. (Theory and clinical laboratory) Prer., RN status.

NURS 440-6. Community Health Nursing. Focuses on health promotion and prevention in the delivery of nursing care to aggregates. Studies high risk individuals, families and groups. Develops community health nursing competencies. (Theory and clinical laboratory) Prer., All third year courses. Meets with NURS 445.

NURS 445-6. Community Health Nursing (RN). Focuses on health promotion and prevention in the delivery of nursing care to aggregates. Studies high risk individuals, families and groups. Develops community health nursing competencies. (Theory and clinical laboratory) Prer., RN Status, NURS 305 or consent of lead faculty. Meets with NURS 440.

NURS 448-1 to 2. Clinical Capstone - RN. Provides opportunity to integrate and synthesize theory and clinical from all prior courses in a student selected setting. Prer., Must be a registered nurse and have completed all required nursing courses.

NURS 449-3. Clinical Capstone. Provides an opportunity to integrate and synthesize theory and clinical from all prior courses in a student selected setting. Seminar allows student to explore professional issues encountered in clinical.

NURS 453-3. Creativity and Critical Thinking. Creativity will be explored experientially and conceptually through innovative processes of art and literature, whole brain learning, imagery. Critical thinking will be theoretically analyzed as well as practiced.

NURS 454-3. Images of British Nursing: Past and Present. A study of the life, work and times of Florence Nightingale and exploration of the current status of nursing in England. Both historical and contemporary perspectives on nursing will be explored. The setting for the course is in London, England. Prer., Consent of lead faculty.

NURS 455-1 to 3. Partners in Nursing Practice II. Provides nursing students the opportunity to enhance nursing skills in actual practice situations. Assigned expert clinicians will facilitate learning in an identified clinical setting. Provided through a collaborative agreement with acute care delivery settings. Credit to contact hours may vary dependent on the educational/work relationship established. Prer., NURS 210, NURS 220 and NURS 320.

NURS 456-3. Lactation Counselor. Prepares nurses to be Lactation counselors in a clinical setting. A Lactation Counselor Certificate is granted at the completion of the study.

NURS 457-3. Emergency Nursing. Incorporates theoretical and didactic learning in the specialty area of emergency care including assessment, diagnosis, triage, and treatment of both emergent and non-emergent conditions. Opportunities are provided for application of skills in the lab setting. Prer., NURS 210, HSCI 205 and NURS 220.

NURS 458-1 to 3. Basic EKG Interpretation. Provides students with the skills necessary for basic electrocardiogram (EKG) interpretation. All basic dysrhythmias will be covered. The clinical portion of this course will allow students to observe EKG monitoring in local facilities. Prer., BIOL 201 and BIOL 202.

NURS 459-3. Advanced Practicum: Clinical. Elective course in selected clinical placements. Promotes synthesis of nursing skills and advanced clinical concepts. Clinical experience develops increased depth of practice in specific clinical settings. Prer., All first and second year courses, NURS 429, or by permission of the instructor.

NURS 462-3. Dynamics of Unity. Explores the scientific and cultural underpinnings of holistic thought. The evolution of Western Science, the essential unity of diverse spiritual traditions, and the development of society from industrialism and isolation to the age of information and global economy. Prer: RN status. Meets with NURS 642.

NURS 463-3. Psychophysiology of Holistic Health. Provides an advanced

foundation in the physiological phenomena associated with holistic health. Explores mind/body concepts such as stress and disease, alternative medicine outcomes, spontaneous healing, psychoneuroimmunology and the placebo effect. Prer., Junior/seniors only with RN status. All others only with permission of instructor. Meets with NURS 643.

NURS 465-3. The Art of Holistic Nursing. Explores theories of esthetics and art for application in healing. Theories of the psychology of the spirit are considered within the caring context of nursing. The processes of imagination are investigated. Prer: RN Status. Meets with NURS 645.

NURS 469-2. Holistic-World Views of Health & Healing. Explores various cultural traditions in health and healing. Traditional Chinese Medicine, Auyerveda, Shamanism, Curanderismo, Native American healing, and selected complementary and alternative therapies are examined. Prer., RN status.

NURS 489-1 to 3. Special Topics in Nursing. Elective course which provides an in-depth study of a specific topic in nursing. Students may repeat this course as long as the topic changes each time it is repeated. Prer., Permission of instructor required.

NURS 540-3. Nurse as Healer. An integrated synthesis course applying holistic nursing principles to self-care and care of others. Course includes preparation for certification exam in holistic nursing.

NURS 601-3. Models of Clinical Supervision. Identifies major models of clinical supervision, examines models which have been empirically validated. Explores how these models can be applied in variety of settings. Issues and factors related to clinical supervision will be delineated.

NURS 610-3. Philosophical Foundations of Advanced Nursing Practice. Explores theoretical and philosophic foundations of human caring and nursing's epidemiology and ontology. Contents include methods for analysis and evaluation of nursing knowledge, ethical, and moral foundations, and frameworks for caring/healing practice. Prer., Graduate admission or permission of instructor.

NURS 611-3. Advanced Nursing Practice and Health Care Policy. Focuses on the knowledge and skills to effect change in health care policy and delivery. Advanced nursing practice is explored in the health care system in relation to financing, delivery and reimbursement models, regulatory issues, and the legal/ethical parameters.

NURS 612-4. Nursing Research. Explores methods of disciplined inquiry to investigate nursing phenomena and establishes a basis for research in advanced practice nursing. Applies data analysis techniques and synthesis of the research process and critique of published research. Prer., NURS 610.

NURS 614-2. Dynamics of Holistic Practice. Enhances personal and esthetic ways of knowing through the exploration of creativity and critical thinking. Examines conceptual and experiential creativity and encourages the expression of self as an esthetic being. Incorporates theories from decision making and logic. Prer., Admission to graduate program or instructor permission.

NURS 615-3. Clinical Nurse Specialist Seminar. Historical, theoretical, and conceptual basis of the clinical nurse specialist (CNS) role will be explored. Collaborative and problem solving skills within advanced nursing practice are presented as well as acquisition of knowledge through patterns of knowing. Prer., NURS 610.

NURS 619-3. Educational Measurement and Evaluation in Nursing. Theories of measurement and evaluation are analyzed as they relate to various aspects of instruction in nursing. Students study and use a variety of measurement and evaluation techniques. Opportunities are provided for students to analyze ethical, legal, and social issues involving measurement and evaluation, as well as uses and limitations of evaluation instruments in a variety of instructional situations. Methods of curriculum and program evaluation will also be addressed. Prer., BSN or graduate department permission.

NURS 620-3. Curriculum Development in Nursing. Introduces the process of curriculum development and the procedures of structuring and evaluating curriculum experiences and outcomes.

NURS 621-3. Transformational Teaching Strategies. Promotes understanding of the political, philosophical and personal tenets of a caring curriculum. Explores advanced concepts of teaching and learning and examines learning theory. Studies the art and science of effective teaching strategies. Includes techniques of media production.

NURS 622-3. Collaborative Health Care Management with the Elderly. Provides students with empirical knowledge needed to manage care of elderly individuals. Sets foundation for an advanced practice role in providing primary care to older adults and their families within a framework of collaborative practice. Prer., NURS 612 (Recommended).

NURS 623-3. Physiological Problems of Aging. Explores the various aspects of aging from a physiological perspective. Health promotion of mature and aging families will be addressed. Management of minor acute health problems will be systematically covered. Cultural and ethnic differences are elucidated.

NURS 624-3. Managed Care Environment. Explores the managed care environment and its evaluation. Explores philosophy of managed care and case management methods, the shift from illness care to illness prevention and community based practice. Focuses on interdisciplinary collaboration, ethics and accountability.

NURS 625-3. International and Cross-Cultural Health Care. Study of selected international health care and nursing issues. Theoretical and conceptual aspects of cross-cultural health care are included. Travel to England with this class and complete graduate requirements with emphasis on social and health care policy in England.

NURS 626-1 to 3. Topics in Nursing. Designed to focus on the explorations of selected topics in advanced nursing practice.

NURS 627-3. Family Theory and Intervention. Explores family theories and their application to advanced nursing. Utilizes a variety of assessment tools to evaluate and plan care for selected families. Applies statistics, demographics of changing families structures, and examples of cultural diversity to the care of families.

NURS 628-4. Clinical Pharmacotherapeutics. Introduces the pharmaceutical management of a range of illnesses which are common in the primary care setting. Emphasizes both acute episodic and chronic illnesses across the age span. Applies pharmacotherapeutic approach in the management of patients in a primary care setting.

NURS 629-3. Resource Management: Budget and Finance. Introduces systems of resource management that may be applied in health care delivery. Emphasis given to strategies of finance and budget, personnel management, management research, and information systems as

tools used by nurse managers to impact the health environment.

NURS 630-3. Sexual Assault: Implications for Nursing Practice. Focuses on sexual violence and expands personal knowledge of medicolegal aspects of health care. The alliance of nursing, law enforcement and forensic sciences is explored. Models for preventive strategies and public education are investigated. Meets with HSCI 430.

NURS 631-3. Forensic Nursing. Introduces clinical forensic nursing with an emphasis on emergency room and community health forensic issues. Explores principles and philosophy of clinical forensic nursing and the role of the forensic nurse in advanced nursing practice in clinical and/or community based settings. Meets with HSCI 431 and HSCI 631.

NURS 632-3. Injury and Death Investigation. Explores principles related to investigation of injury and death. Forensic pathology and forensic autopsy procedures are included. Explores topics medicolegal evidence, violence injury and environmental pathology. Meets with HSCI 432.

NURS 633-3. Crime Scene & Crime Lab. Introduces the student to the areas of crime scene preservation, investigation and development and to the scientific tactics, procedures, and techniques employed by forensic experts and sophisticated scientific techniques by forensic nurses. Meets with HSCI 433.

NURS 634-3. Psychosocial/Legal Aspects of Forensic Science. Introduces the psychological, neurocognitive, sociological and legal dimensions of forensic nursing, assessment and diagnosis of mental disorders, and the interface between the psychosocial effects of injury and illness and the judicial system. Explores criminal, civil and family law applications. Meets with HSCI 434 and HSCI 634.

NURS 635-2. Internship in Clinical Forensics. Arranged to expand clinical application theory content in forensic nursing. Arrangements can be made for experiences with coroners, emergency rooms, crime investigation units, prison or other clinical settings which are congruent with student goals. Prer., NURS 630, NURS 631, NURS 632, NURS 633, and NURS 634. Meets with HSCI 435, HSCI 440 and HSCI 635.

NURS 636-3. Legal Aspects of Forensics: Civil and Criminal. Criminal, civil and family law will be discussed as they relate to forensic issues. Meets with HSCI 429 and HSCI 636.

NURS 637-3. Violence and Human Rights Issues. Provides the opportunity to explore the impact of violence in relation to the responsibilities of the investigator, assessor, evaluator, and therapist. Includes strategies of care for individual family and community survivors. Principles and philosophies of victimology, traumatology and domestic violence. Meets with HSCI 437 and HSCI 637.

NURS 639-3. School Based Nurse Care. Management of the child as a client within the family and school community. Includes pediatric health assessment, health education, family centered care, legal guidelines and related laws. Links the child, the school and geographic community by leadership and management.

NURS 641-3. Complementary Healing Methods. Presents an overview of the history, theoretical bases, applications, resources, and trends of complementary healing methods. The evolution of Western scientific thought and Eastern medical theories will be examined as a basis for understanding current health perspectives and treatment modalities.

NURS 642-3. Dynamics of Unity. Explores the scientific and cultural underpinnings of holistic thought. The evolution of Western Science, the essential unity of diverse spiritual traditions, and the development of society from industrialism and isolation to the age of information and global economy.

NURS 643-3. Psychophysiology of Holistic Health. Provides an advanced foundation in the physiological phenomena associated with holistic health. Explores mind/body concepts such as stress and disease, alternative medicine outcomes, spontaneous healing psychoneuroimmunology and the placebo effect.

NURS 644-3. Advanced Assessment of Holistic Health. Facilitates the recognition and nurturance of the nurse's unique, individual expression of wholeness. Holistic nursing philosophy and the nurse-focused standards of care and practice are discussed. Emphasis is placed on self-reflection, empowerment, personal responsibility, growth, and mutual support.

NURS 645-3. The Art of Holistic Nursing. Explores theories of esthetics and art for application in healing. Theories of the psychology of the spirit are considered within the caring context of nursing. The processes of imagination are investigated. Meets with NURS 465.

NURS 647-3. Holistic-Praxis: Therapies of the Imagination. Applies imagery, memory and reflection, dreams and the creative processes to holistic nursing practice. The focus is on the nurse's role and the practical application of theories and techniques of these therapies in various clinical situations. Meets with HSCI 426.

NURS 648-2. Holistic-Praxis: Therapies of the Human Energy Fields. Theories and practices of healing modalities which emphasize touch, energy systems, and movement that nourish and strengthen the body/mind/spirit are interpreted artistically and scientifically. Learners explore the use of these modalities in experiential situations. Meets with HSCI 427.

NURS 649-3. World Views of Health and Healing. Explores various cultural traditions in health and healing. Traditional Chinese Medicine, Auyerveda, Shamanism, Curanderismo, Native American Healing, and selected complementary and alternative therapies are examined.

NURS 650-3. Forensic Photography. Designed to assist professionals in forensic science and health care in the basic principles and techniques associated with forensic photography at the crime scene, in the hospital setting, or in autopsy laboratory. Meets with HSCI 439.

NURS 651-3. Perinatal/Newborn Health Assessment, Stabilization and Care. Provides the basis for advanced practice nursing care necessary to meet the assessment, stabilization and early care needs of healthy and at risk newborns and their families. Clinical practicum further develops assessment skills and provides opportunities to practice. Prer., Concurrent with NURS 652, NURS 653, NURS 654.

NURS 652-4. Pathophysiology of the Newborn. Synthesis of concepts of embryology, neonatal physiology and pathophysiology and relates these concepts to the rationale for comprehensive management of and the outcomes for illnesses/problems in at risk newborns. Prer., Concurrent with NURS 651, NURS 653, NURS 654.

NURS 653-3. Clinical Management of High Risk Newborn. Integrates research based knowledge of disease/disorders of the newborn within clinical practice. The multiple facets of the advanced practice

neonatal nurse and nurse practitioner roles are analyzed. Prer., Concurrent with NURS 651, NURS 652, and NURS 654.

NURS 654-4. Neonatal Clinical Pharmacotherapeutics. Introduces pharmaceutical management of a range of fetal and neonatal conditions which are commonly seen in perinatal/newborn settings. Integrates patterns of knowing as applied to the pharmacotherapeutic approach in the management of patients in neonatal care settings. Prer., Completion of or concurrent registration in NURS 651, NURS 652 & NURS 653.

NURS 656-3. Women's Health Care Issues. Presents an overview of selected women's experiences and health issues. Exploration from a historical, psychological and socio-political focus in order to increase understanding regarding the impact on the woman, her significant others, health care professionals and the health care system.

NURS 657-2 to 3. Role Transitions. Designed for certificate nurse practitioners who have completed advanced practice core degree requirements. Facilitates the integration of graduate advanced practice theoretical and conceptual knowledge into clinical practice. Prer., NURS 610, NURS 611, NURS 612, and NURS 627.

NURS 661-3. Primary Health Care of Childbearing Families. Provides a basis for the practice of advanced practice nursing care through the exploration of the health needs in the childbearing family. Focuses on comprehensive assessment, intervention, andention, and preventive care for the childbearing family in primary health care settings.

NURS 662-4. Primary Health Care of Families I. Assessment and management of common childhood developmental issues, injury prevention, and common acute/chronic disease alterations in children. Application of theory, research, and accepted modalities of advanced practice nursing relevant to the family nurse practitioner role with child rearing families. Prer., NURS 673, NURS 674, and NURS 628.

NURS 663-2. Community and Rural Health. Provides the student with the opportunity to examine concepts and theoretical frameworks relevant to community and rural health. The major emphasis of this course is to provide a foundation for advanced nursing practice in community and rural settings.

NURS 664-4. Primary Health Care of Families II. The application of theory, research, and accepted modalities of advanced nursing practice relevant to the family nurse practitioner role with young through aging families, including pregnant women and their families. Prer., NURS 673, NURS 674, and NURS 628. Meets with NURS 678.

NURS 666-3. Health Promotion & Disease Management for Clinical Nurse Specialist. Provides a basis for advanced practice nursing through the exploration of the human health experience of clients across health care settings. Emphasizes health promotion, acute episodic and community care within a human caring framework. Prer., NURS 673, NURS 674, and NURS 628.

NURS 667-3. Primary Health Care of Families III. Focuses on comprehensive assessment, intervention, and preventive care for childbearing, adult, and geriatric families in primary health care settings. Explores acute and chronic health issues through the application of theory and research. Prer., NURS 673, NURS 674, and NURS 628. Meets with NURS 679.

NURS 672-1. Assessment Validation. Validation of health assessment skills. Recommended for students who have not been involved with health assessments in past four years.

NURS 673-1 to 4. Advanced Health Assessment. Incorporates the principles and techniques of advanced health assessment across the life span into a plan for advanced nursing care. Clinical practicum develops advanced health assessment skills and provides an opportunity to develop skills for an advanced practice. Prer. or Co-req., NURS 628 and NURS 674.

NURS 674-3. Advanced Pathophysiology. Synthesizes pathophysiologic concepts and theories relating these concepts to the rationale for therapeutic assessment and diagnosis. Provides fundamental knowledge of primary intervention, collaborative interactions, and case management of complex patients in a variety of settings across the age span.

NURS 678-4. Primary Health Care of Adults I. Explores preventive and acute health needs of young through aged adults. Focuses on comprehensive assessment, intervention, and preventive care for young through aged adults in primary health care settings. Prer., NURS 673, NURS 674, and NURS 628. Meets with NURS 664.

NURS 679-3. Primary Health Care of Adults II. Exploration of the acute and chronic health needs of young through aged adults with special emphasis on the health needs of aging adults. Focuses on comprehensive assessment, intervention, and preventive care. Prer., NURS 673, NURS 674, and NURS 628. Meets with NURS 667.

NURS 689-1 to 3. Topics in Nursing. Designed to focus on the explorations of selected topics in advanced nursing practice.

NURS 700-1 to 5. Research Thesis. Provides an opportunity for graduate students to participate in the research process under the direction of an advisory committee. Synthesis of knowledge and skill in selected areas of the research process necessary to organize and conduct a research study. Prer., NURS 612; and the satisfactory completion of a minimum of 20 credit hours in the MSN program.

NURS 702-3. Clinical Research Application. Offers the opportunity to develop and/or revise nursing clinical protocols derived from scientifically rigorous empirical and qualitative evidence. Includes a program evaluation and a brief review of research process and research critique. Prer., NURS 610, NURS 612, NURS 673. Meets with HSCI 702.

NURS 704-3. Health Care Administration. Defines the work of health care organizations. Relates critical aspects of productivity to result oriented management. Defines standards of performance including risk management, qualitative and quantitative measures. Elements of a comprehensive human resource management system and strategies for supportive services are addressed. Prer., NURS 610, NURS 611 and NURS 612.

NURS 705-3. Health Care Ethics and Law. Provides an analysis of the principles of ethics and law as they impact the health care delivery system and role of the health care administrator. Students will analyze federal and state statues as adopted and interpreted through case law.

NURS 706-3. Health Care Administration II. An analysis of leadership, management and organizational theories. An exploration of multilevel communication used in health care organizations. Examines theoretical and pragmatic approaches to communication, leadership, management, and organizational issues from a nursing administrative perspective.

NURS 771-3. Clinical Practicum in Nursing Education. Designed to assist prospective nursing educators to

operationalize the elements of instruction in nursing clinical education. Students will work with a faculty preceptor in a clinical area relevant to their expertise and interest. Philosophical and experiential issues specific to clinical instruction are discussed in seminar format. Prer., NURS 619, NURS 620, and NURS 621.

NURS 772-3. Classroom Practicum in Nursing Education. Assists prospective nursing educators to operationalize the elements of instruction in the classroom setting. Students will work with a faculty preceptor in an area relevant to their expertise and interests. Philosophical and experiential issues specific to classroom instruction are discussed in seminar format. Prer., NURS 619, NURS 620, and NURS 621.

NURS 777-2. Role Synthesis in Family Nurse Practitioner Practice. Synthesis course that brings together the diverse roles of the family nurse practitioner. Collaboration, negotiation, and other intra-organizational strategies. Emphasis is placed on the development of an employment plan including budget development, legal, and key practice issues. Prer., NURS 610, NURS 612, NURS 614 and NURS 673.

NURS 779-7. Woman's Health Practicum. Designed to offer students the opportunity to implement skills and knowledge of woman's health, assessment, intervention and preventative care under the direction of an assigned preceptor.

NURS 780-5. Neonatal Nurse Practitioner Clinical Preceptorship I. Provides concentrated clinical experiences that prepare the student for entry level functioning in the role of the neonatal nurse practitioner and assuming responsibility for the direct management and care of healthy and acutely ill newborns. Prer., NURS 651, NURS 652, and NURS 653.

NURS 781-5. Neonatal Nurse Practitioner Clinical Preceptorship II. Provides concentrated clinical experiences that prepare the student for entry level functioning in the role of the neonatal nurse practitioner and assuming responsibility for the direct management and care of healthy and acutely ill newborns. Prer., NURS 651, NURS 652, and NURS 653.

NURS 782-1 to 5. Clinical Specialist Practicum. Provides the opportunity to enact advanced practice nursing roles in a variety of settings. Applying advanced nursing skills, the student will coordinate, collaborate, network, and develop interdisciplinary skills in the provision of care to clients as they transition through health experiences. Prer., NURS 610, NURS 611, NURS 612, and NURS 615.

NURS 783-1. Community Assessment Practicum. Application of a selected model of population based assessment to a specific community and/or rural aggregate population. Collaboration with health providers is expected to manage health related data and form the foundation for community based advanced practice. Prer., NURS 610, NURS 611, NURS 612, and NURS 615.

NURS 784-1 to 3. Primary Care Practicum. Offers the opportunity to practice the skills and knowledge related to the provision of Primary Care. Provision of primary and specialty care with a preceptor to selected adolescent, adult and geriatric patients in a variety of clinical settings. Prer., NURS 610, NURS 611, and NURS 612. Meets with NURS 789.

NURS 789-1 to 9. Primary Care of Families Practicum. This clinical practicum is a lab course designed to offer the Family Nurse Practitioner student an opportunity to implement skills and knowledge obtained in family focused theory courses. This practicum focuses on the application of comprehensive assessment, intervention, and preventive care for families in various primary and specialty health care settings. Prer., NURS 610, NURS 611, and NURS 612. Meets with NURS 784.

NURS 790-1 to 3. Administrative Internship. Provides administrative experience with an assigned preceptor. Provides foundation for practicum. Prer., NURS 610, NURS 611, and NURS 612.

NURS 791-1 to 3. Administrative Practicum. Provides an opportunity to apply principles and skills in advanced health care administration. Student will coordinate, collaborate, network and develop interdisciplinary skills in health care administration in collaboration with preceptor. Prer., NURS 610, NURS 611, NURS 612, NURS 704, and NURS 705.

NURS 930-1 TO 3. Independent Study. Undergraduate independent study is arranged with a specific faculty member in an area of interest. Independent study can fulfill elective or core course requirements. Prer., Permission of instructor required.

NURS 940-1 to 3. Independent Study. Undergraduate independent study is arranged with a specific faculty member in an area of interest. Independent study can fulfill elective or core course requirements. Prer., Permission of instructor required.

NURS 950-1 to 3. Independent Study. Graduate students investigate an area of interest in the field of health care with the guidance of a faulty member in nursing. Prer., Permission of supervising faculty member.

NURS 960-1 to 6. Independent Study. Graduate students investigate an area of interest in the field of health care with the guidance of a faulty member in nursing. Prer., Permission of supervising faculty member.

NURS 999-0. Candidate for Degree.

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UCCS operates a year-round instructional program consisting of a 16-week fall semester, a 16-week spring semester, and an 8-week summer session.

Although this bulletin was prepared on the basis of the best information available at the time, all information (including the academic calendar, admission and graduation requirements, courses and descriptions, tuition and fees) is subject to change without notice or obligation.

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ACADEMIC *calendar* (tentative)

summer session 2004

Registration — *See the Summer Schedule of Courses*
June 14 (Mon.) — Classes begin
July 5 (Mon.) — Independence Day holiday observance
Aug. 6 (Fri.) — Summer session ends

fall semester 2004

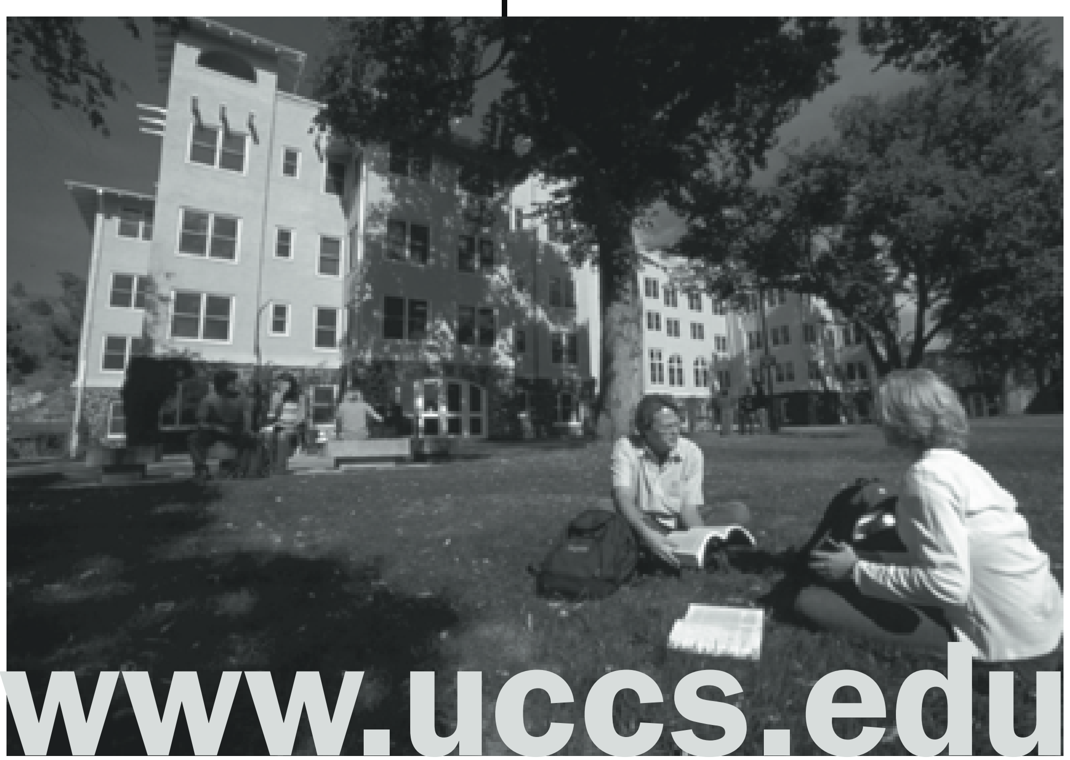
Registration — *See the Fall Schedule of Courses*
Aug. 23 (Mon.) — Classes begin
Sept. 6-7 (Mon.-Tues.) — Labor Day holiday
University offices open on Sept. 7
Nov. 24-28 (Wed.-Sun) — Thanksgiving holiday
University offices open on Nov. 24
Dec. 18 (Sat.) — Semester ends

spring semester 2005

Jan. 17 (Mon.) — Martin Luther King, Jr. holiday
Registration — See the Spring Schedule of Courses
Jan. 18 (Tues.) — Classes begin
Mar. 21-27 (Mon.-Sun.) — Spring vacation from classes
Offices open
May 16 (Mon.) — Semester ends
May 20 (Fri.) — Commencement

summer session 2005

Registration — See the Summer Schedule of Courses
June 13 (Mon.) — Classes begin
July 4 (Mon.) — Independence Day holiday observance
Aug. 5 (Fri.) — Summer session ends



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University of Colorado at Colorado Springs (UPS 551-370) is published five times a year: March, May, June, October and November by UCCS, 1420 Austin Bluffs Pkwy., P.O. Box 7150, Colorado Springs, Colorado 80933-7150. Periodicals postage paid at Colorado Springs, CO, Volume 25, No. 3, June 2004. General series number (128). Postmaster: Send address changes to UCCS, 108 Main Hall, 1420 Austin Bluffs Pkwy., P.O. Box 7150, Colorado Springs, CO 80933-7150.

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